

Prepared for

Sacramento Suburban Water District

2010 Urban Water Management Plan



July 2011



WATER DEMAND

• WATER CONSERVATION

• GROUNDWATER

• SURFACE WATER

• RECYCLED WATER

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July 6, 2011

Brown AND
Caldwell

Mr. Warren Jung
Engineering Services Manager
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Sacramento, California 95821-5346

1017-138919

Subject: 2010 Urban Water Management Plan

Dear Mr. Jung:

We are pleased to submit to you the 2010 Urban Water Management Plan (UWMP) for the Sacramento Suburban Water District (District). We have updated your 2005 UWMP to incorporate updated and more recent data and information as well as new requirements in the law and new requirements from the California Department of Water Resources. The new DWR requirements are based on the Final Guidebook to Assist Urban Water Suppliers to prepare a 2010 Urban Water Management Plan that was released in March, 2011.

Brown and Caldwell will submit the required hardcopy and electronic files to DWR and the California State Library. Please let me know if you have any comments or questions.

Very truly yours,

Brown and Caldwell,
a California Corporation



Melanie Holton, P.E.
Project Manager

MH:ds

Enclosure (1):

1. 2010 Urban Water Management Plan for the Sacramento Suburban Water District

2010 Urban Water Management Plan

Prepared for
Sacramento Suburban Water District
July 2011



138919



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List of Abbreviations

AASA	Arbors at Antelope Service Area	°F	degrees Fahrenheit
ac-ft	acre-feet		
ac-ft/yr	acre-feet per year	GPCD	gallons per capita per day
Act	Urban Water Management Act	gpd	gallons per day
ACP	Antelope Conveyance Pipeline	gpm	gallons per minute
ACWS	Arden Cordova Water Service	GWTP	groundwater treatment plant
AFRPA	Air Force Real Property Agency	GMP	Groundwater Management Plan
ARWEC	American River Water Education Center		
AWWA	American Water Works Association	HCF	hundred cubic feet
		HUD	The United States Department of Housing and Urban Development
B/C	benefit/cost		
BMP	Best Management Practices		
BPS	booster pump station	IGSM	Integrated Groundwater and Surface Water Model
		in	inch
Cal Am	California American Water Company	IRWMP	Integrated Regional Water Management Plan
CBSM	community based social marketing		
CDPH	California Department of Public Health		
cfs	cubic feet per second	JPA	Joint Powers Authority
CHWD	Citrus Heights Water District		
City	City of Sacramento	MBPSA	McClellan Business Park Service Area
CII	commercial, industrial, and institutional	MCLs	Maximum Contaminant Levels
CIMIS	California Irrigation Management Information System	MG	million gallons
CREEC	California Regional Environmental Education Community	mgd	million gallons per day
CTP	Cooperative Transmission Pipeline	MIE	media in education
CUWCC	California Urban Water Conservation Council	MOU	Memorandum of Understanding
CVP	Central Valley Project	NPDES	National Pollutant Discharge Elimination System
CWD	Carmichael Water District	NSA	North Service Area
		PCWA	Placer County Water Agency
District	Sacramento Suburban Water District	PG&E	Pacific Gas and Electric Company
DOF	Department of Finance	Plan	Urban Water Management Plan
DMM	Demand Management Measure	PSA	public service announcement
DWR	California Department of Water Resources	psi	pounds per square inch
		PVC	polyvinyl chloride
ETo	evapotranspiration		
ft	feet/foot	RLECWD	Rio Linda Elverta Community Water District
FOWD	Fair Oaks Water District	RWA	Regional Water Authority

RWEP	Regional Water Efficiency Program
SACOG	Sacramento Area Council of Government's
SAWWA	Sacramento Area Water Works Association
SBx7-7	Senate Bill 7-7
SGA	Sacramento Groundwater Authority
SJWD	San Juan Water District
SRCS D	Sacramento Regional County Sanitation District
SSA	South Service Area
TAF	thousand acre feet
TAZ	traffic analysis zone
TCE	trichloroethylene
UAW	unaccounted-for water
UIFR	unimpaired inflow into Folsom reservoir
ULFTs	ultra low flush toilets
USBR	United States Bureau of Reclamation
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
Project WET	Water Education for Teachers Project
WFA	Water Forum Agreement
WRCC	Western Regional Climate Center
WROS	Water Recycling Opportunities Study
WTP	water treatment plant
WWTP	waste water treatment plant
°F	degrees Fahrenheit

Section 1

Introduction

This Urban Water Management Plan (Plan) is prepared for the Sacramento Suburban Water District (District) in cooperation with the District staff. This Plan addresses the District's water system and includes a description of the water supply sources, magnitudes of historical and projected water use, and a comparison of water supply water demands during normal, single-dry, and multiple-dry years. Also described is the District's conservation program. The District was organized on February 1, 2002, through the consolidation of Northridge Water District and Arcade Water District. This Plan is the year 2010 Urban Water Management Plan as required by the Urban Water Management Planning Act (Act) (California Water Code Division 6, Part 2.6, Sections 10610 through 10657).

The remainder of this section provides an overview of the Urban Water Management Planning Act, public participation, agency coordination, plan implementation, and plan organization.

1.1 Urban Water Management Planning Act

The Act became part of the California Water Code with the passage of Assembly Bill 797 during the 1983–1984 regular session of the California legislature. The Act was most recently amended in November 2009 with the adoption of Senate Bill 7-7 (SBx7-7). The most significant revision is the requirement for establishing per capita water use targets and an option to delay Plan adoption to July 1, 2011.

The Act requires every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to adopt and submit an urban water management plan every five years to the California Department of Water Resources (DWR). The Act describes what must be included in the Plan as well as how urban water suppliers should adopt and implement the Plan.

1.2 Public Participation and Plan Adoption

The Act requires the encouragement of public participation and a public hearing as part of the Plan development and approval process. As required by the Act, prior to adopting this Plan, the District made the Plan available for public inspection and held a public hearing. The District notified cities and county within the service area 60 days before the public hearing. Appendix A provides documentation that the cities and county within which the District provides water supplies were notified at least 60 days prior to the Plan public hearing. This hearing provided an opportunity for the District's customers including social, cultural, and economic community groups to learn about the water supply situation and the plans for providing a reliable, safe, high-quality water supply for the future. The hearing was an opportunity for people to ask questions regarding the current situation and the viability of future plans.

Per the requirements of Government Code Section 6066, a Notice of Public Hearing was published twice in the Sacramento Bee to notify all customers and local governments of the public hearing, and copies of the draft Plan were made available for public inspection at the District's administration building, three local libraries within the District's service area, as well as on the District's website. By conducting a public hearing and making the draft document available for public inspection and multiple locations, the District was able to encourage the active involvement of diverse social, cultural, and economic elements of the population prior to and during the preparation of the Plan. A copy of the published Notice of Public

Hearing is included in Appendix B. The public hearing for this Plan was held at the District's Board of Directors regular public meeting on May 16, 2011. A copy of the adopted resolution is provided in Appendix C. The adopted Plan will be provided to DWR and the appropriate cities and county within 30 days of adoption. The adopted Plan will also be available for public review during normal business hours at the District's administration building and on the District's web site at www.sswd.org.

1.3 Agency Coordination

The Act requires the District to 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. The District sent a copy of this Plan to the agencies as noted in Table 1-1. Table 1-1 provides a summary of the plan coordination with the appropriate agencies.

Table 1-1. (DWR Table 1) Coordination with Appropriate Agencies						
Coordinating Agencies	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt
Golden State Water Company (Arden Cordova Water Service)					X	X
California American Water Company					X	X
Carmichael Water District					X	X
City of Citrus Heights					X	X
Citrus Heights Water District					X	X
Del Paso Manor Water District					X	X
City of Folsom					X	X
Fair Oaks Water District					X	X
McClellan Business Park					X	X
Orange Vale Water Company					X	X
Placer County Water Agency					X	X
Rio Linda Elverta Community Water District					X	X
City of Roseville					X	X
City of Sacramento					X	X
Sacramento County					X	X

Table 1-1. (DWR Table 1) Coordination with Appropriate Agencies

Coordinating Agencies	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt
San Juan Water District					X	X
Regional Water Authority/Sacramento Groundwater Authority					X	X
Sacramento Area Council of Governments				X		
Sacramento Regional County Sanitation District				X	X	X
United States Bureau of Reclamation					X	X

The District also is a member of the Regional Water Authority (RWA). RWA is a joint powers authority that serves and represents the interests of 21 water providers in the greater Sacramento, Placer and El Dorado County region. The Authority's primary mission is to help its members protect and enhance the reliability, availability, affordability and quality of water resources. Two of RWA's regional programs in which the District participates are a water efficiency program designed to help local purveyors implement best management practices on a regional basis and implementation of the American River Basin Regional Conjunctive Use Program, utilizing a \$22 million grant from DWR. The District has completed all of its projects under this grant.

RWA developed a Regional Water Master Plan in 2003 that reviewed the concepts on how the region could utilize groundwater and surface water conjunctively to meet the objectives set forth in the Water Forum process. In June 2006 RWA developed an Integrated Regional Water Management Plan (IRWMP) that identifies specific projects and implementation programs and agreements between different affected agencies to identify projects to put conjunctive use in place. Conjunctive use is the coordinated management of the water supplies (surface water, groundwater, recycled water, etc) to maximize the yield of the overall water resource. An intended purpose of this IRWMP is to provide and encourage regional opportunities for water resources planning and project development. A comprehensive update is underway and is expected to be completed by December 2012.

1.4 Plan Implementation

The District will implement this 2010 Plan by taking steps to meet the SBx7-7 gallons per capita per day (GPCD) target. The District will continue implementation of their water conservation program as well as continue to track the groundwater quality and contamination plumes nearby. The District implemented the 2005 Plan in close accordance with the information that was projected in that plan.

1.5 Plan Organization

This section provides a summary of the sections in this Plan.

- Section 2 provides a description of the service area, climate, water supply facilities, distribution system, and historical and projected population.
- Section 3 presents historical and projected water use.

- Section 4 describes the water supplies.
- Section 5 describes recycled water.
- Section 6 addresses water conservation.
- Section 7 provides a comparison of future water supply to demand.
- Section 8 describes the District's water shortage contingency plan.
- References provides a list of references.
- Appendices A through J provide relevant supporting documents.

DWR has provided a checklist of the items that must be addressed in the Plan based upon the Act. This checklist makes it simple to identify exactly where in the Plan each item is addressed. The completed checklist is provided in Appendix D. It references the sections in this Plan where specific items can be found.

Section 2

Description of Existing Water System

This section describes the District's system. It contains a description of the service area, its climate, and the water supply facilities, including the groundwater wells, surface water supply facilities, booster pumping stations, reservoirs, piping system, and historical and projected population estimates.

2.1 Description of Service Area

The District serves a population of approximately 171,000 in Sacramento County. Within the District are four service areas: the North Service Area (NSA), the Arbors at Antelope Service Area (AASA), McClellan Business Park Service Area (MBPSA), and the South Service Area (SSA). The term NSA is also used to describe a larger area consisting of the Arbors at Antelope housing area, McClellan Business Park, and the previously mentioned NSA. The SSA includes the Town and Country service area of the former Arcade Water District. Figure 2-1 illustrates the location of the District and the neighboring water agencies. The service areas within the District are shown on Figure 2-2.

2.2 Local Climate

The service area experiences cool and humid winters and hot and dry summers. Based on the historical data obtained from the Western Regional Climate Center, the average monthly temperature ranges from 50 to 73 degrees Fahrenheit, but the extreme low and high daily temperatures have been 18 and 115 degrees Fahrenheit, respectively. The combination of hot and dry weather results in higher water demands during the summer than in winter months.

Table 2-1 summarizes the Sacramento Region's average climate conditions based on the California Irrigation Management Information System (CIMIS) database.

Table 2-1. Average Climate Characteristics			
	Standard average ETo, in	Average rainfall, in	Average temperature, °F
January	1.6	3.6	47
February	2.2	4.5	51
March	3.7	2.2	55
April	5.1	1.7	58
May	6.8	1.0	66
June	7.8	0.0	72
July	8.7	0.0	76
August	7.8	0.0	75
September	5.7	0.1	71

Table 2-1. Average Climate Characteristics

	Standard average ETo, in	Average rainfall, in	Average temperature, °F
October	4.0	1.2	62
November	2.1	2.1	53
December	1.6	4.0	47
Annual	57.1	20.5	--

Notes:

Data recorded from Sacramento Valley, Fair Oaks station 131, CIMIS www.cimis.water.ca.gov (1997 through 2010).

ETo (evapotranspiration), is the loss of water from the soil both by evaporation and by transpiration from the plants growing thereon.

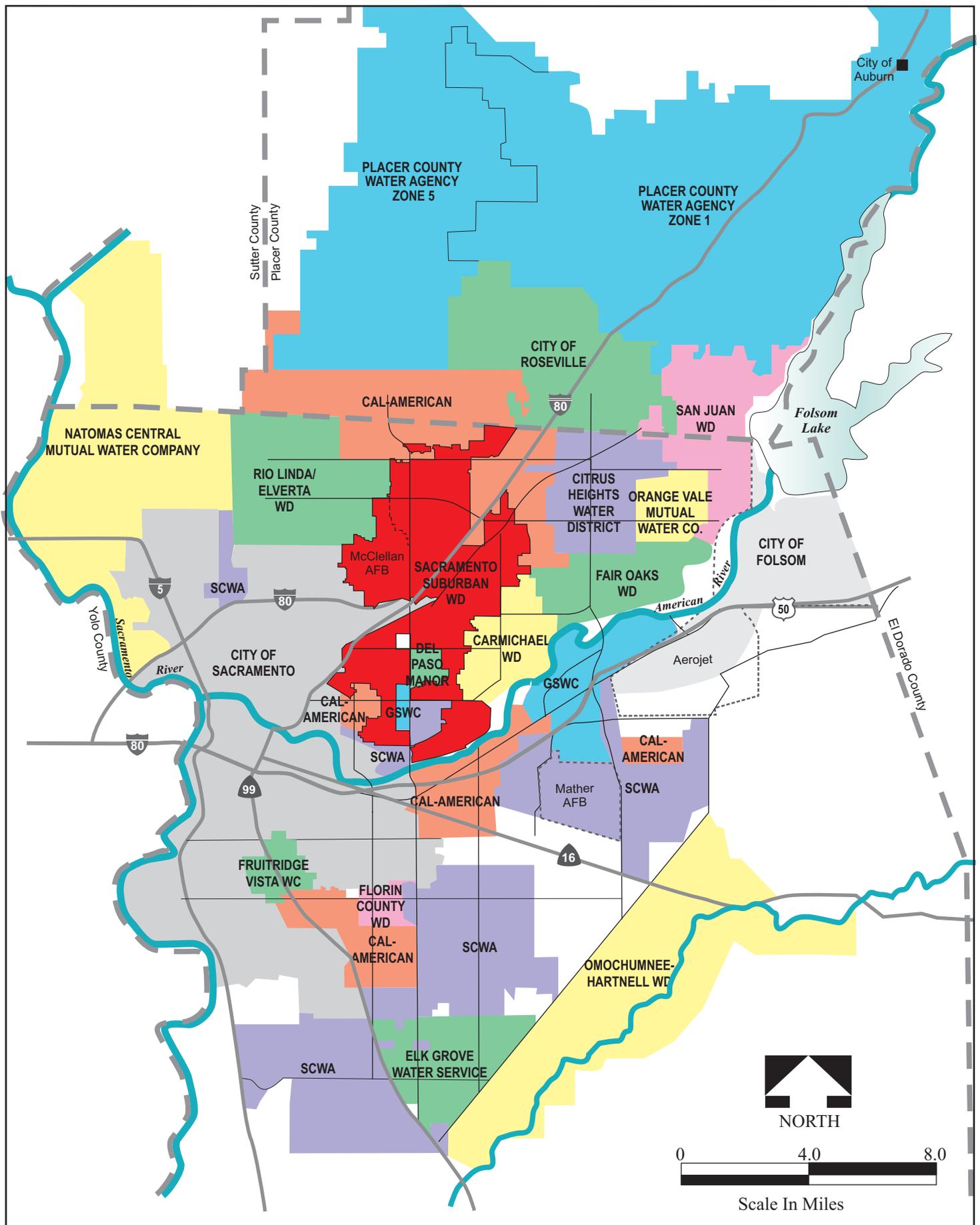
2.3 Water Supply Facilities

Water supply for the District is currently derived from active groundwater wells and surface water from Placer County Water Agency (PCWA) and the United States Bureau of Reclamation (USBR) via Folsom Reservoir and San Juan Water District's (SJWD) Peterson Water Treatment Plant (WTP) and from the American River via the City of Sacramento's (City) Fairbairn WTP. This section describes the District's wells and surface water facilities. Figure 2-3 depicts the locations of the water system facilities. The Area D place of use boundary (for the City of Sacramento supply) and the PCWA Water Rights place of use are also shown on this figure.

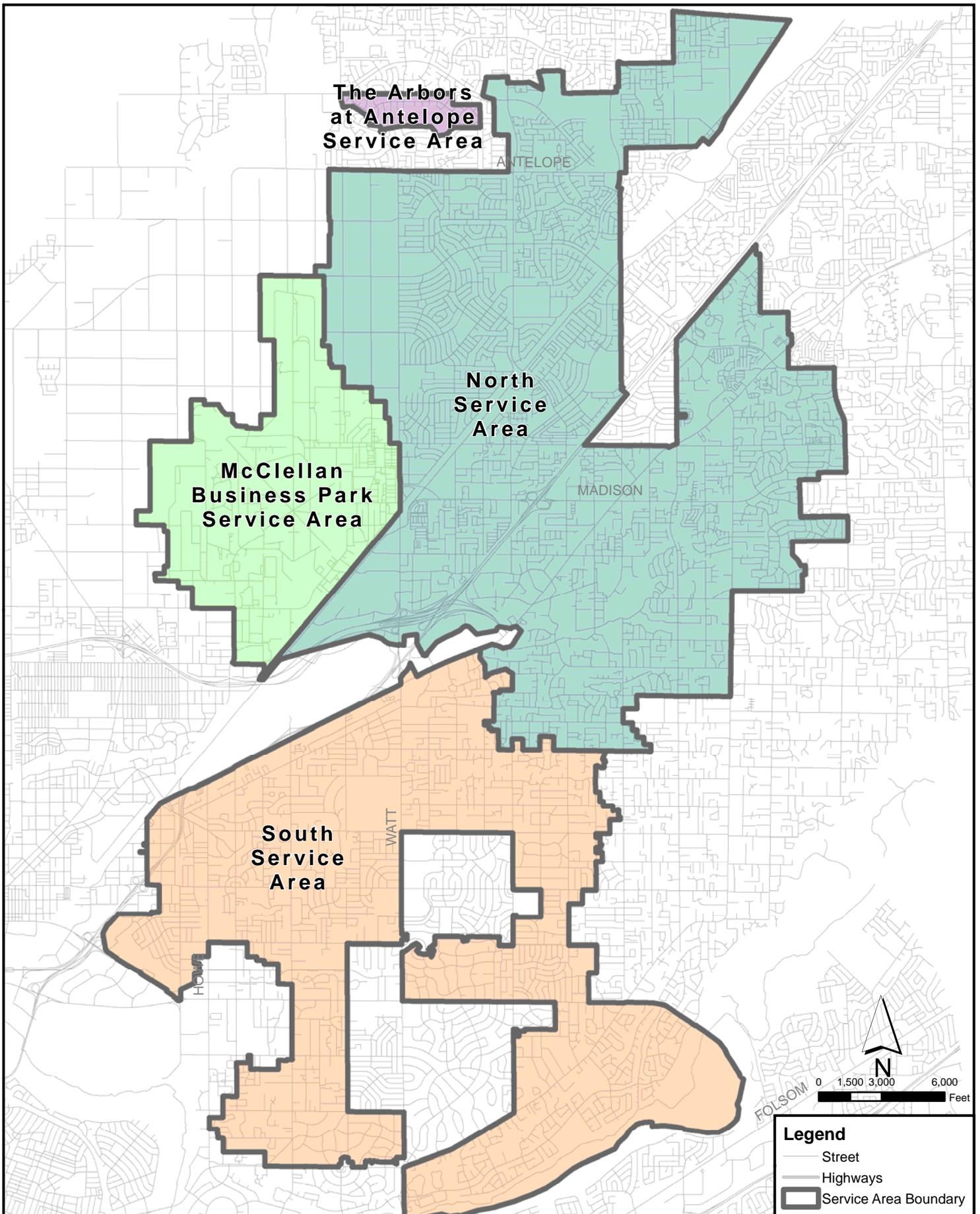
2.3.1 Groundwater Facilities

Groundwater has been the primary source of water for both the NSA and SSA. The District's groundwater supply infrastructure has a total groundwater pumping capacity of 98,390 gallons per minute (gpm) from 89 active wells. All of the wells pump directly into the distribution system. The larger NSA contains 42 active wells with a combined capacity of 49,195 gpm. There are two new wells currently under construction within the NSA. Within the SSA there are 47 active wells with a combined capacity of 49,195 gpm.

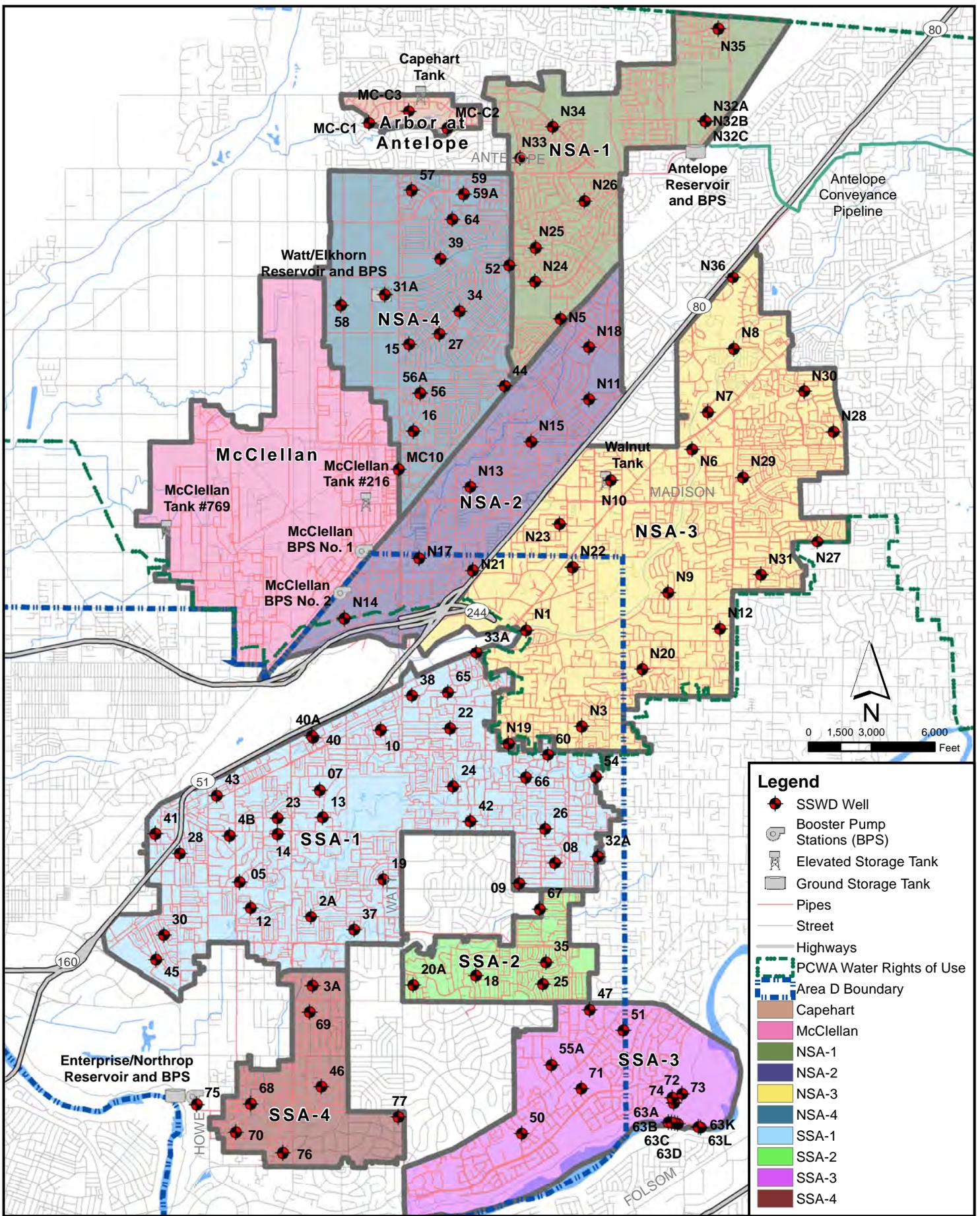
Wells throughout the District are generally between 200 and 1,300 feet deep and draw water primarily from the Mehrten formation. The older, shallower wells typically produce up to 1,000 gpm. Some of the newer wells produce over 2,500 gpm.



BROWN AND CALDWELL	PROJECT	138919	SITE	Urban Water Management Plan Sacramento Suburban Water District Sacramento Suburban Water District and Neighboring Utilities	Figure 2-1
	DATE	6-23-10	TITLE		



BROWN AND CALDWELL	PROJECT 138919	SITE Urban Water Management Plan Sacramento Suburban Water District	Figure 2-2
	DATE 6-22-10	TITLE District Service Areas	



Legend

- ◆ SSWD Well
- ⊕ Booster Pump Stations (BPS)
- ⊕ Elevated Storage Tank
- ⊕ Ground Storage Tank
- Pipes
- Street
- Highways
- PCWA Water Rights of Use
- Area D Boundary
- Capehart
- McClellan
- NSA-1
- NSA-2
- NSA-3
- NSA-4
- SSA-1
- SSA-2
- SSA-3
- SSA-4

BROWN AND CALDWELL	PROJECT 138919	SITE Urban Water Management Plan Sacramento Suburban Water District	Figure 2-3
	DATE 6-23-10	TITLE Water System Facilities	

2.3.2 Surface Water Facilities

The District imports surface water from three supply sources. The District's current surface water agreements are with PCWA, City of Sacramento, and the United States Bureau of Reclamation (USBR) (Section 215 Central Valley Project (CVP) water).

Surface water from PCWA and the USBR is diverted from Folsom Lake and treatment is provided by the Sydney N. Peterson WTP. The Peterson WTP is owned and operated by SJWD. SJWD also supplies treated surface water from Folsom Reservoir for a family of water entities (SJWD Retail Service Area, Orange Vale Water Company, Citrus Heights Water District, City of Folsom-Ashland Area, and Fair Oaks Water District [FOWD]).

The Peterson WTP has a nominal capacity of 120 million gallons per day (MGD). Treated water is pumped to the Hinkle Reservoir, which has 62 million gallons (MG) of storage capacity. From the Hinkle Reservoir, the potable surface water supply for the District is delivered by gravity flow through the San Juan Cooperative Transmission Pipeline (CTP) followed by the Antelope Conveyance Pipeline (ACP) (formerly referred to as the Northridge Conveyance Pipeline).

The 48-inch diameter, gravity flow ACP is constructed from the terminus of the CTP at C-Bar-C Park, which is located on Oak Avenue, east of Sunrise Boulevard within the Citrus Heights Water District service area. The District owns the total pipeline capacity of 59.2 MGD in the ACP and that same quantity of flow in the larger capacity CTP.

The District has a surface water supply from the American River through a contract with the City, dating to 1964. Historically, only a portion of this amount has been diverted through the American River Well Field located in the SSA. The American River Well Field is not currently being used because it does not meet the requirements of the Surface Water Treatment Rule. In 2007, the District began receiving surface water from the City. This water is treated at the City's Fairbairn WTP and delivered to the District via the City's Howe Avenue transmission main to an existing interconnection located near Enterprise Drive and Northrop Avenue in the SSA.

2.4 Distribution System

This section discusses the District's distribution system including pipelines, storage, pump stations, and interconnections.

2.4.1 Pipelines

The distribution system ranges in size from 48-inch mains down to 4-inch laterals. Pipeline material consists predominantly of asbestos cement, polyvinyl chloride, ductile iron, mortar lined and coated steel, and cast iron pipe. The District's standards include the requirement for gridding cross connecting mains at intervals of approximately 1,300 feet with a minimum size of 12-inch. Exceptions have been made where 10-inch mains and larger exist in the grid pattern.

2.4.2 Storage Facilities

The larger NSA has six active storage tanks. A five MG storage tank and booster pumping station, located at the Antelope reservoir site, stores both groundwater from nearby wells and treated water from the Peterson WTP to meet peak hour demands and fire flows. The maximum pumping capacity from the Antelope reservoir is approximately 10,000 gpm. Another five MG capacity groundwater storage reservoir and 10,000 gpm booster pump station is located near the intersection of Watt Avenue and Elkhorn Boulevard in the NSA. There is a 150,000 gallon elevated storage tank located in the Arbors at Antelope area and a 125,000 gallon elevated storage tank located at the District's Walnut Corporation Yard. There are two active elevated storage tanks in the McClellan Business Park service area. The SSA

has one active storage tank which was recently constructed in 2006. It is a five MG storage tank and 10,000 gpm booster pumping station located at Enterprise Drive and Northrop Avenue.

2.4.3 Booster Pump Stations

There are two booster pump stations (BPS) with a pumping capacity of 6,000 gpm that are designed to boost water from the District's NSA into the McClellan Business Park service area. These BPSs were constructed in 1988. Backflow prevention valves are located at both BPSs to prevent flow within the McClellan Business Park service area from re-entering the NSA. As demand increases and the pressure decreases, the booster pumps start and maintain the elevation at the set point. Because the pressure gradient for the McClellan Business Park service area does not differ significantly from the NSA, the booster pump stations rarely are required to operate, and sufficient flow is usually delivered by gravity.

2.4.4 Interties

There are 45 emergency interties with neighboring agencies along the District boundary. The District also has outlets off of the ACP with California American Water Company (Cal Am) and Citrus Heights Water District (CHWD).

2.5 Historical and Projected Population

Historical population for the District's service area is presented in Table 2-6. Year 2000 total population is based on the year 2000 census. Per DWR's Methodology for Calculating Baseline and Compliance Urban Per Capita Water Use (DWR Methodology) (DWR, October 1, 2010), Methodology 2: Service Area Population (Part II, Section M), the District falls into Category 2, a water supplier who has an electronic GIS map of their distribution area, but whose actual distribution area does not overlap substantially ($\geq 95\%$) with city boundaries. The detailed calculations to estimate the historical population is provided in Appendix E of this Plan.

The year 2000 census population estimate is based on the total population by census block group. A census block is the smallest geographical unit used by the Census Bureau. Census blocks are areas bounded on all sides by visible features, such as streets, roads, streams, and railroad tracks, and by invisible boundaries such as city, town, township, county limits, and property lines. Census blocks are grouped into block groups. The District's GIS boundary map of the service area was overlaid on the 2000 census block group map to identify the census block groups located within the District's service area. Figure 2-4 shows the block groups within the District and the corresponding percentage, by land area, of the District within each respective block group.

The population in years backward and forward from 2000 are developed by anchoring their year 2000 connections to the year 2000 census population estimate. In the past many of the District's residential connections for large multi family connections were included in the commercial category of connections. For this reason the District's historical population is estimated using the ratio of total connections to total population, rather than residential connections (single family and multi family) to total population, as the DWR methodology suggests. It should be noted that connection and population data prior to the formation of the District in 2002 is based on the summation of data from the former Northridge Water District and Arcade Water District.

Table 2-2. Historical Population	
Year^(b)	Population ^(a)
1995	160,647
1996	159,087
1997	168,274
1998	167,594
1999	170,382
2000	170,405
2001	176,480
2002	176,124
2003	173,769
2004	167,409
2005	169,197
2006	169,718
2007	169,900
2008	170,255
2009	170,475
2010	170,615

^(a) Source: Year 2000 Census data by census block is correlated to historical District connections. Appendix E contains the detailed information used to calculate the historical population.

^(b) It should be noted that connection and population data prior to the formation of the District in 2002 is based on the summation of data from the former Northridge Water District and Arcade Water District.

Sacramento Area Council of Governments (SACOG) estimates for projected population, housing, and employees extend to the year 2035. The most recent SACOG modeling projections for 2035 are used in this Plan and were approved by the SACOG Board of Directors in February 2008. SACOG's projections are based on current growth data and region-level near-term projections. The SACOG demographic estimate was formerly referred to as the Blueprint Preferred Smart Growth scenario and is based on feedback and discussions with local governments and interested citizens in a series of planning workshops conducted by SACOG throughout the region. The planning theme for this scenario is slightly higher housing densities compared to current development, mix of land uses, and directing population growth to "inner ring" areas.

Projected SACOG demographic data presented by traffic analysis zone (TAZ) are used for this study. The District boundaries do not fall along TAZ boundaries in all cases. As a result, an estimate was made regarding how much land area of a given TAZ is within the District service area. In most cases it is assumed that the population, housing, and employees within a TAZ are distributed uniformly within all parts of that TAZ. Figure 2-5 shows the TAZs within the District and the corresponding percentage, by land area, of the District within each respective TAZ.

The District's population is expected to reach approximately 190,000 in 2035. A summary of the projected housing and employment within the District based on the SACOG data is presented in Table 2-3 and projected population is provided in Table 2-4. The historical and projected populations for the District are illustrated on Figure 2-6. Based on the recently available 2010 census data, the District's population is estimated to be 171,229. This correlates closely with the 2010 population estimate of 170,615 that was estimated based on the DWR Methodology which is tied to the year 2000 census.

Table 2-3. SACOG Housing, and Employment Estimates

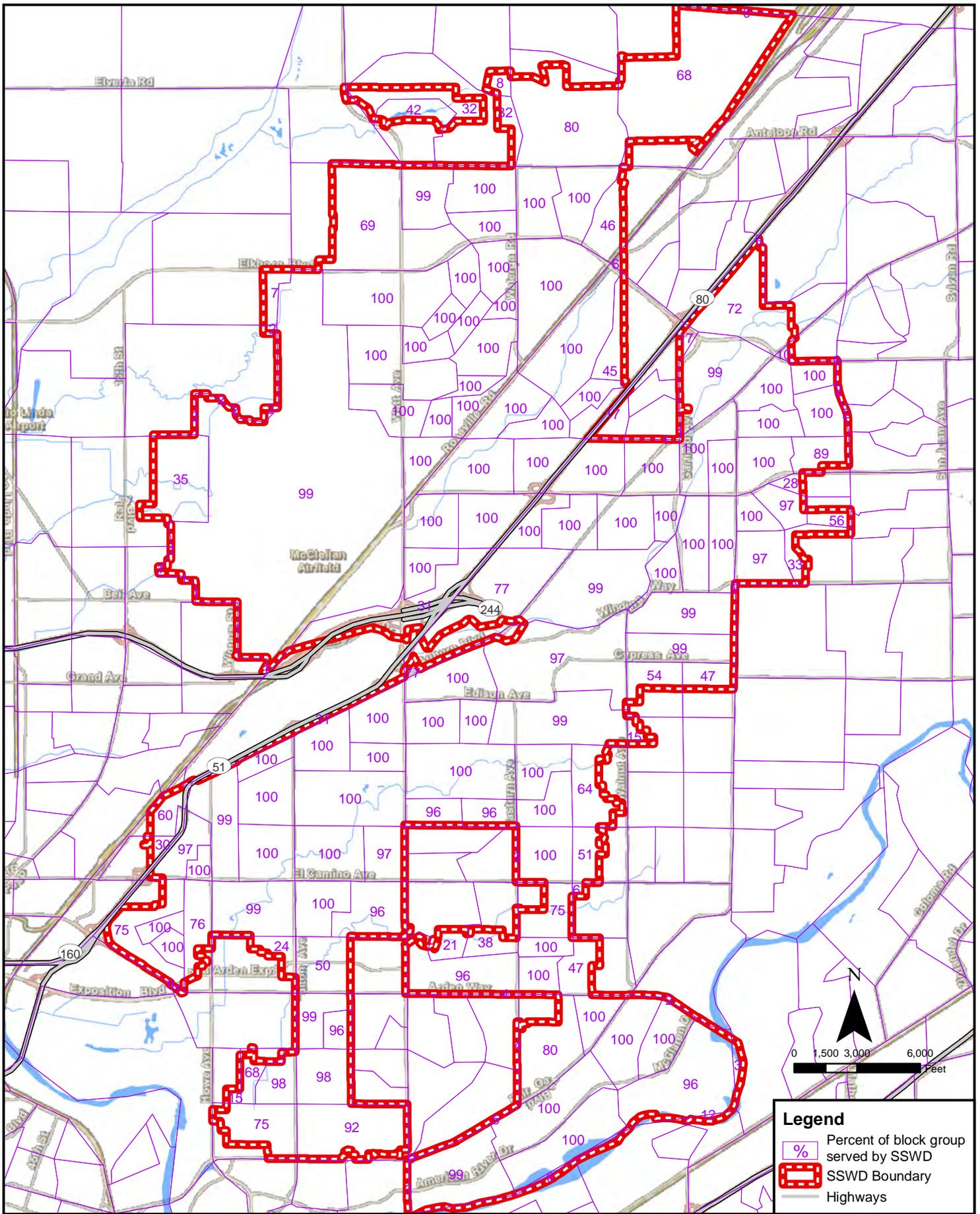
Year	Dwelling units		Employees
	Single-family	Multi-family	
2013	45,142	21,130	75,825
2018	45,612	22,788	77,232
2035	48,530	31,025	91,038

Source: Sacramento Area Council of Governments, February 2008 Projections.

Table 2-4. (DWR Table 2) Projected Population

Year	Population
2010	170,615
2015	174,304
2020	178,073
2025	181,923
2030	185,856
2035	189,874

Source: 2010 population estimate is based on correlating the 2000 Census population data to 2000 District connections ratio to the District's 2010 connections. 2015 through 2035 population projections are based on Sacramento Area Council of Governments 2035 population estimate, February 2008 Projections.

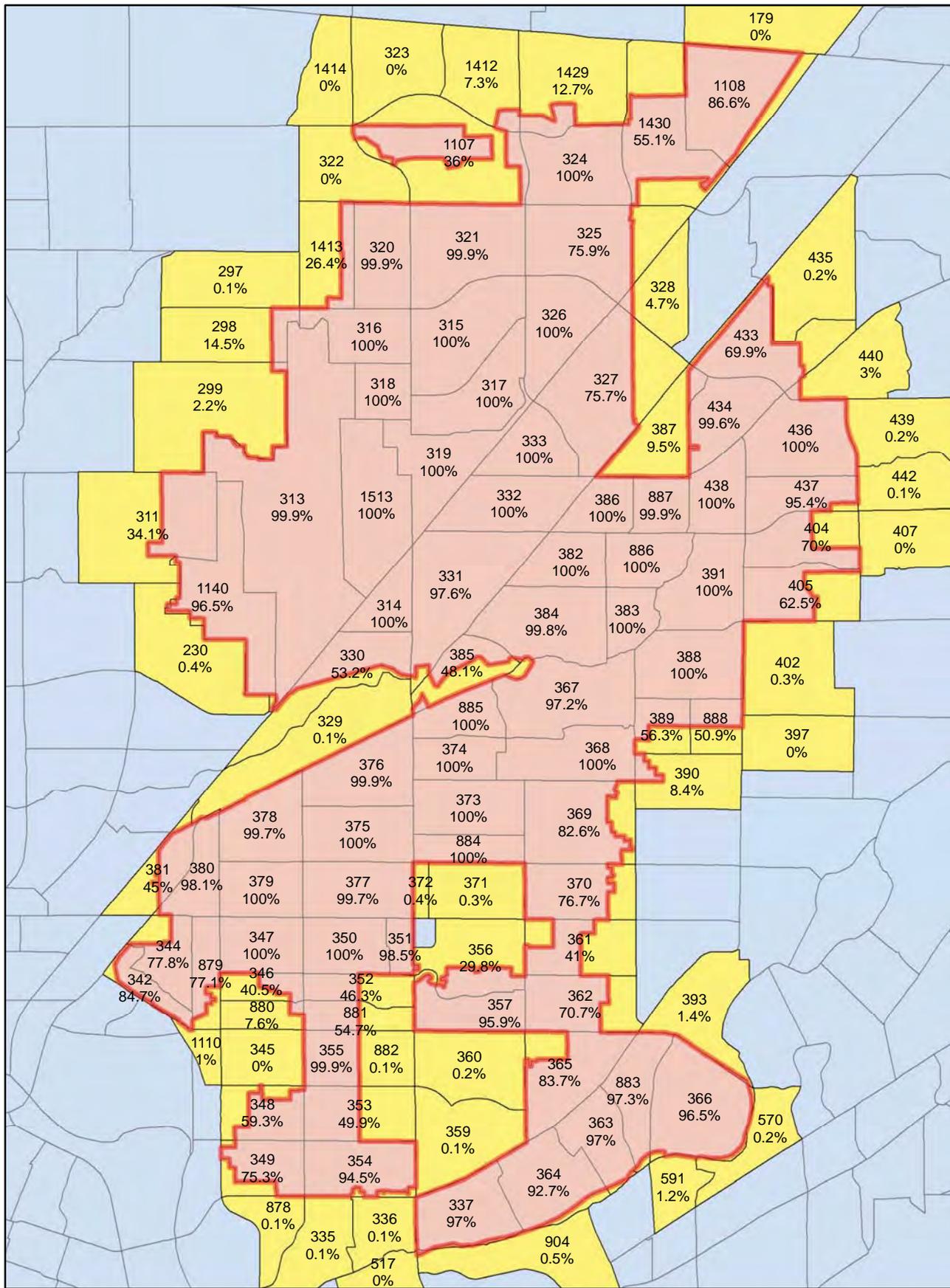


BROWN AND CALDWELL

PROJECT
138919
DATE
1-31-11

SITE
**Urban Water Management Plan
Sacramento Suburban Water District**
TITLE
2000 Census Block Groups Served by SSWD

Figure
2-4



Source: SACOG 2008



PROJECT	138919
DATE	1-27-11

SITE	Urban Water Management Plan Sacramento Suburban Water District
TITLE	Traffic Analysis Zones within the District Service Areas

Figure 2-5

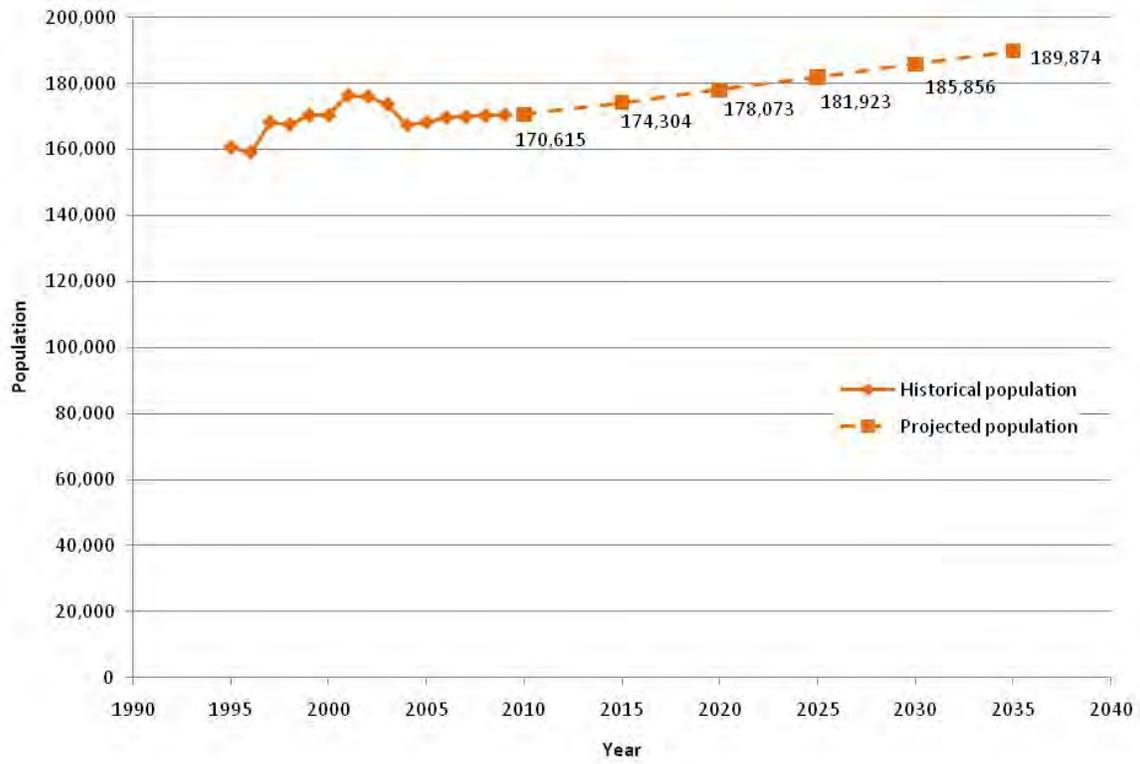


Figure 2-6. Sacramento Suburban Water District Historical and Projected Population

Section 3

Historical and Projected Water Use

This section describes the urban water system demands and historical water use data, historical surface water and groundwater production, GPCD target water use, and the resulting projections for future water supply needs for the District.

3.1 Historical Water Use

Water production is the volume of water measured at the source, which includes all water delivered to residential, commercial, and public authority customers, as well as unaccounted-for water.

3.1.1 Annual Water Production

Historical average annual treated groundwater and surface water production for the retail water system is shown in Table 3-1. Total retail water production in 2010 was 36,386 acre-feet (ac-ft). This is the gross water use by the District. Per DWR's Methodology (DWR, October 1, 2010), gross water use is defined as the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier excluding the following:

1. Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier.
2. The net volume of water that the urban retail water supplier places into long-term storage.
3. The volume of water the urban retail water supplier conveys for use by another urban water supplier.
4. The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24 of the Act.

Table 3-1. (DWR Table 18) Historical Gross Surface Water and Groundwater Production

Year	Surface water ^(a)	Groundwater ^(b)	Surface water/ total supply (%)	Total supply	Water Forum Water Year Type ^(c)
1985	2,084	38,511	5%	40,595	Wet
1986	1,730	38,414	4%	40,144	Drier
1987	2,046	43,075	5%	45,121	Drier
1988	1,790	43,207	4%	44,997	Wet
1989	2,137	40,231	5%	42,368	Drier
1990	1,795	40,892	4%	42,687	Average
1991	1,386	37,019	4%	38,405	Drier
1992	3,068	36,697	8%	39,765	Wet
1993	3,236	36,252	8%	39,488	Drier
1994	1,855	40,837	4%	42,692	Wet
1995	2,455	38,806	6%	41,261	Wet
1996	2,217	40,904	5%	43,121	Average

Table 3-1. (DWR Table 18) Historical Gross Surface Water and Groundwater Production

Year	Surface water ^(a)	Groundwater ^(b)	Surface water/ total supply (%)	Total supply	Water Forum Water Year Type ^(c)
1997	1,425	42,481	3%	43,906	Wet
1998	12,145	28,040	30%	40,185	Wet
1999	8,573	37,252	19%	45,825	Wet
2000	14,988	32,257	32%	47,245	Drier
2001	15,567	33,806	32%	49,373	Average
2002	16,938	32,243	34%	49,181	Wet
2003	15,341	33,981	31%	49,322	Average
2004	14,948	33,651	31%	48,599	Wet
2005	14,364	26,829	35%	41,193	Wet
2006	13,345	26,559	33%	39,904	Drier
2007	7,498	37,084	17%	44,582	Drier
2008	14,982	23,516	39%	38,498	Average
2009	12,084	23,021	34%	35,105	Average
2010	16,208	20,178	45%	36,386	Wet

Note: Groundwater and surface water production data in this table are based on volumetric meter data and does not include water produced for sales to others.

^(a) Surface water source in 1997 through 1999 was USBR 215 water. 2000 through 2010 surface water source was PCWA. City of Sacramento water supply began being used in 2007.

^(b) Groundwater is pumped from the Sacramento Valley Groundwater Basin, North American Subbasin.

^(c) Water Forum water year type is based on the March through November unimpaired inflow into Folsom reservoir (UIFR). Note that the District entered into the Water Forum Agreement (WFA) in the year 2000. Water Forum year types prior to the year 2000 are shown for informational purposes only and did not have an impact on the amount of surface water that the District could divert. The Water Forum water year types are defined as follows:

Wet year – UIFR > 1,600,000 ac-ft

Average year – 1,600,000 ac-ft > UIFR > 950,000 ac-ft

Drier/wedge year – 950,000 ac-ft > UIFR > 400,000 ac-ft

Driest/conference year – UIFR < 400,000 ac-ft

3.2 GPCD Baseline and Targets

Per the law as adopted in SBx7-7, the District must establish per capita water use targets using one of four methods

1. Method 1 - Eighty percent of the urban retail supplier's baseline per capita daily water use.
2. Method 2 - The per capita daily water use that is estimated using the sum of several defined performance standards.
 - a) 55 gallons per day (gpd) for indoor residential water use.
 - b) Water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance for landscape irrigated through dedicated or residential meters or connections.
 - c) A 10 percent reduction in commercial, industrial, and institutional (CII) uses from the baseline CII water use by 2020.

3. Method 3 - Ninety-five percent of the applicable state hydrologic region target, as set forth in the states draft 20x2020 Water Conservation Plan.
4. Method 4 - Calculated water savings based on indoor residential water savings, metering savings, CII savings, and landscape and water loss savings, as set forth in DWR's Final Provisional Method 4 for Calculating Urban Water Use Targets, released February 2011.

The District will select the urban water use target of 193 GPCD by 2020 and urban water use interim target of 218 GPCD by 2015 based on Method 1. The interim 2015 target is calculated as 90 percent of the District's baseline per capita water use. Tables 3-2, 3-3, and 3-4 provide base period ranges and base daily per capita water use for 5-, 10-, and 15-year ranges used to estimate the Method 1 target. Regardless of which of the four methods is adopted by the District, the target may need to be adjusted farther to achieve a minimum reduction in water use. If the five-year baseline water use is more than 100 GPCD, it must compare two values:

1. 95 percent of the five-year baseline daily per capita water use and
2. The target determined by the target method it adopted from the four methods allowed.

The 2020 target will be the lower of the two values.

A detailed analysis of the GPCD target methods is provided in Appendix E.

Table 3-2. (DWR Table 13) Base Period Ranges			
Base	Parameter	Value	Units
10- to 15-year base period	2008 total water deliveries	38,498	ac-ft/yr
	2008 total volume of delivered recycled water	0	ac-ft/yr
	2008 recycled water as a percent of total deliveries	0	percent
	Number of years in base period ^(a)	10	years
	Year beginning base period range	1995	
	Year ending base period range ^(b)	2004	
5-year base period	Number of years in base period	5	years
	Year beginning base period range	2003	
	Year ending base period range ^(c)	2007	

^(a) If the 2008 recycled water percent is less than 10 percent, then the first base period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first base period is a continuous 10- to 15-year period.

^(b) The ending year must be between December 31, 2004 and December 31, 2010.

^(c) The ending year must be between December 31, 2007 and December 31, 2010.

Table 3-3. (DWR Table 14) Base Daily per Capita Water Use - 10- to 15-year range

Base period year		Distribution System Population	Daily system gross water use, ac-ft/yr	Annual daily per capita water use, GPCD	Water Forum Water Year Type ^(b)
Sequence Year	Calendar Year				
Year 1	1995	160,647	41,261	229	Wet
Year 2	1996	159,087	43,121	242	Average
Year 3	1997	168,274	43,906	233	Wet
Year 4	1998	167,594	40,185	214	Wet
Year 5	1999	170,382	45,825	240	Wet
Year 6	2000	170,405	47,245	248	Drier
Year 7	2001	176,480	49,373	250	Average
Year 8	2002	176,124	49,181	249	Wet
Year 9	2003	173,769	49,322	253	Average
Year 10	2004	167,409	48,599	259	Wet
Year 11					
Year 12					
Year 13					
Year 14					
Year 15					
Base Daily Per Capita Water Use ^(a)				242	

^(a) Add the values in the column and divide by the number of rows.

^(b) Water Forum water year type is based on the March through November unimpaired inflow into Folsom reservoir (UIFR). Note that the District entered into the Water Forum Agreement (WFA) in the year 2000. Water Forum year types prior to the year 2000 are shown for informational purposes only and did not have an impact on the amount of surface water that the District could divert. The Water Forum water year types are defined as follows:

Wet year – UIFR > 1,600,000 ac-ft

Average year – 1,600,000 ac-ft > UIFR > 950,000 ac-ft

Drier/wedge year – 950,000 ac-ft > UIFR > 400,000 ac-ft

Driest/conference year – UIFR < 400,000 ac-ft

Table 3-4. (DWR Table 15) Base Daily per Capita Water Use - 5-year range

Base period year		Distribution System Population	Daily system gross water use, ac-ft/yr	Annual daily per capita water use, GPCD
Sequence Year	Calendar Year			
Year 1	2003	173,769	49,322	253
Year 2	2004	167,409	48,599	259
Year 3	2005	169,197	41,193	217
Year 4	2006	169,718	39,904	210
Year 5	2007	169,900	44,582	234
Base Daily Per Capita Water Use ^(a)				235

^(a) Add the values in the column and divide by the number of rows.

3.3 Projected Water Demands

This section presents the projected water demands for three water year scenarios: normal year, single dry year, and multiple dry years. The demands for all water year scenarios are projected through 2035.

3.3.1 Projected Normal-Year Water Demands

Normal-year water demands through the year 2035 are estimated based on the selected GPCD target chosen by the District as described in Section 3.3 and the projected population (see Table 2-8). These water demand projections for the District's retail customers are shown in Table 3-5, 3-6, 3-7, 3-8, and Table 3-9 and are illustrated on Figure 3-1. The projected demand and customer breakdown by customer category is based on the year 2010 demand breakdown by customer category as well as the projected growth in single family dwelling units, multi family dwelling units, and employees within the District's service area as projected by SACOG. In summary, from 2005 to 2010, the District's total water demands fluctuated, with an overall decrease of 9 percent, which is a negative average annual growth rate of 1.8 percent. District demands are expected to increase at an approximate average annual growth rate of 0.5 percent per year from 2010 to 2035.

Table 3-5. (DWR Tables 3) Water System Projected Normal Year Water Demands and Number of Accounts, Actual 2005

Water Use Category	2005				Total volume, ac-ft/yr
	Metered		Not metered		
	# of accounts	Volume, ac-ft/yr	# of accounts	Volume, ac-ft/yr	
Single-family	10,651	6,253	26,265	15,996	22,249
Multi-family	1,697	2,836	2106	3,520	6,356
Commercial	2,230	4,889	0	0	4,889
Industrial	1	27	0	0	27
Institutional	450	2,369	0	0	2,369
Landscape irrigation	168	1,184	0	0	1,184
Total	15,197	17,558	28,371	19,516	37,074

Table 3-6. (DWR Tables 4) Water System Projected Normal Year Water Demands and Number of Accounts, Actual 2010

Water Use Category	2010				Total volume, ac-ft/yr
	Metered		Not metered		
	# of accounts	Volume, ac-ft/yr	# of accounts	Volume, ac-ft/yr	
Single-family	17,582	8,844	19,784	7,133	15,978
Multi-family	2,302	7,053	1,528	3,277	10,330
Commercial	2,099	3,281	27	30	3,311
Industrial	13	10	-	-	10
Institutional	459	2,062	12	38	2,100
Landscape irrigation	377	1,019	-	-	1,019
Total	22,832	22,270	21,351	10,478	32,747

Table 3-7. (DWR Tables 5) Water System Projected Normal Year Water Demands and Number of Accounts, Actual 2015

Water Use Category	2015				Total volume, ac-ft/yr
	Metered		Not metered		
	# of accounts	Volume, ac-ft/yr	# of accounts	Volume, ac-ft/yr	
Single-family	26,096	11,221	11,706	6,830	18,052
Multi-family	3,957	7,122	843	1,929	9,051
Commercial	2,335	3,660	-	-	3,660
Industrial	15	11	-	-	11
Institutional	499	2,221	-	-	2,221
Landscape irrigation	400	1,098	-	-	1,098
Total	33,301	25,334	12,549	8,759	34,093

Table 3-8. (DWR Tables 6) Water System Projected Normal Year Water Demands and Number of Accounts, Actual 2020

Water Use Category	2020				Total volume, ac-ft/yr
	Metered		Not metered		
	# of accounts	Volume, ac-ft/yr	# of accounts	Volume, ac-ft/yr	
Single-family	34,482	17,238	3,627	2,358	19,596
Multi-family	4,293	7,727	158	207	7,934
Commercial	2,406	3,773	-	-	3,773
Industrial	15	11	-	-	11
Institutional	530	2,355	-	-	2,355
Landscape irrigation	424	1,164	-	-	1,164
Total	42,149	32,269	3,786	2,565	34,833

Table 3-9. (DWR Table 7) Water System Projected Normal Year Water Demands and Number of Accounts

Water Use Category	2025		2030		2035	
	Metered		Metered		Metered	
	# of accounts	Volume, ac-ft/yr	# of accounts	Volume, ac-ft/yr	# of accounts	Volume, ac-ft/yr
Single-family	38,809	19,433	39,522	18,990	40,253	18,434
Multi-family	4,697	8,454	5,139	9,250	5,638	10,149
Commercial	2,525	3,959	2,650	4,154	2,782	4,362
Industrial	16	12	17	12	17	13
Institutional	562	2,497	595	2,648	631	2,808
Landscape irrigation	449	1,235	477	1,309	505	1,388
Total	47,058	35,590	48,399	36,363	49,828	37,153

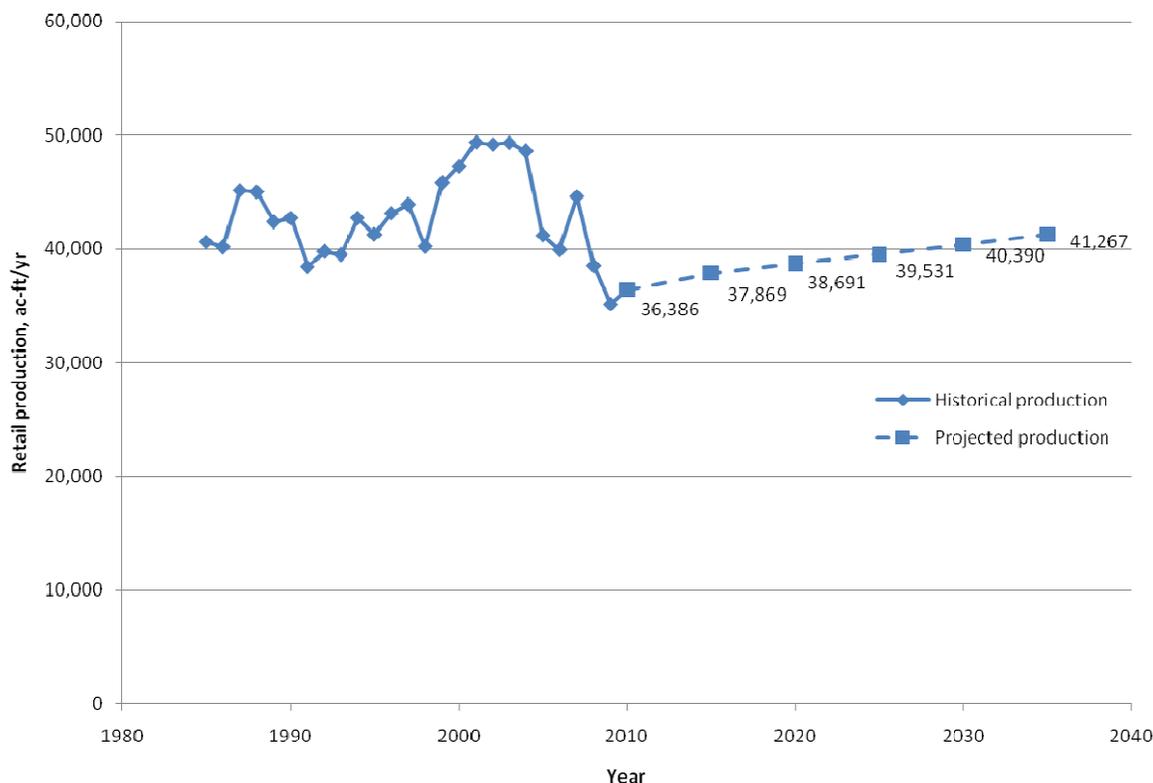


Figure 3 1. Historical and Projected Retail Water Demand

Table 3-10 provides the water amounts sold to other agencies. This includes actual and projected water supply to California American Water Company (Cal-Am) and Rio Linda/Elverta Community Water District (RLECWD).

Table 3-10. (DWR Table 9) Sales to Other Water Agencies, ac-ft/yr							
Water Distributed	2005	2010	2015	2020	2025	2030	2035
Cal-Am	422	1,628	1,700	1,700	1,700	1,700	1,700
RLECWD	0	2	100	100	100	100	100
TOTAL	422	1,629	1,800	1,800	1,800	1,800	1,800

System losses or unaccounted-for water (UAW) use is unmetered and unmetered water use such as for fire protection and training, system and street flushing, sewer cleaning, construction, system leaks, and unauthorized connections. UAW can also result from meter inaccuracies. In addition to being unaccounted for purposes of water supply, it is also water that is not billed and does not add to the revenue stream. According to DWR (DWR, 2009) a detailed water audit and leak detection program of 47 California water utilities found an average loss of 10 percent and a range of 30 percent to less than 5 percent of the total water supplied by the utilities. Since the District is not completely metered, data are unavailable for determining the percent of UAW. Current UAW is assumed for this study to be

approximately 10 percent of total water production. The percentage will possibly be reduced in the future due to District actions to reduce water loss, but is estimated as 10 percent in the future for the purposes of this Plan

The actual and projected water demand for other uses including recycled water and system losses (unaccounted-for water) are shown in Table 3-11.

Table 3-11. (DWR Table 10) Additional Water Uses and Losses, ac-ft/yr							
Water Distributed	2005	2010	2015	2020	2025	2030	2035
Saline barriers	-	-	-	-	-	-	-
Groundwater recharge	-	-	-	-	-	-	-
Conjunctive use	-	-	-	-	-	-	-
Raw water (agricultural)	-	-	-	-	-	-	-
Recycled water	-	-	-	-	-	-	-
System losses (retail water system) ^(a)	4,119	3,639	3,776	3,858	3,941	4,026	4,113
TOTAL	4,119	3,639	3,776	3,858	3,941	4,026	4,113

^(a) Unaccounted-for water assumed to be 10% of total retail treated water production.

Table 3-12 provides a summary of the total water use for the District including retail water deliveries, sales to other water agencies, and additional water uses and losses.

Table 3-12. (DWR Table 11) Total Water Use, ac-ft/yr							
Water Distributed	2005	2010	2015	2020	2025	2030	2035
Total water deliveries (from DWR Tables 3 to 7)	37,074	32,747	34,093	34,833	35,590	36,363	37,153
Sales to other water agencies (from DWR Table 9)	422	1,629	1,800	1,800	1,800	1,800	1,800
Additional water uses and losses (from DWR Table 10)	4,119	3,639	3,776	3,858	3,941	4,026	4,113
Total Water Use	41,615	38,015	39,669	40,491	41,331	42,190	43,067

Table 3-13 provides a summary of the District's demands projections as provided to their wholesaler suppliers.

Table 3-13. (DWR Table 12) Retail Agency Demand Projections Provided to Wholesale Suppliers

Wholesaler	Retail Agency Demand Projections Provided to Wholesale Suppliers (AFY)						
	Contracted Volume	2010	2015	2020	2025	2030	2035
PCWA	12,000 - 29,000	29,000	29,000	29,000	12,000	12,000	12,000
USBR ^(a)	12,000	1,000	1,000	1,000	1,000	1,000	1,000
City of Sacramento	22,404	9,300	9,300	9,300	9,300	9,300	9,300
Total	46,404-63,404	39,300	39,300	39,300	22,300	22,300	22,300

^(a) The District does not use USBR water when it receives PCWA water.

Total projected normal year water demands calculated in this Plan are compared in Table 3-14 with demands projected in the previous urban water management plans, Water Forum EIR, and the Regional Water Master Plan. The demand projections in this Plan are lower than the demand projections in the last plan, the Water Forum EIR, and the Regional Water Master Plan. Differences between demand projections may occur due to differing methodology and assumptions used in the calculation of demand projections. Differences may also occur due to updates in demographic projections based on the year 2000 census as well as the new SBx7-7 GPCD requirements.

Table 3-14. Comparison of Projected District Demands, ac-ft/yr

Year	This Plan	2003 Plan ^(a)	2005 Plan ^(b)	Water System Master Plan ^(c)	Water Forum EIR ^(d)	Regional Water Master Plan ^(e)
2024	--	--	--	--	51,539	--
2025	--	49,165	51,146	--	--	--
2030	--	--	--	--	50,081	42,695-52,180
2035	43,067	--	--	48,021	--	--
2050 (buildout) ^(e)	--	--	--	--	--	--

^(a)Brown and Caldwell, 2003.

^(b)Brown and Caldwell, 2005.

^(c)Based on demand projections in the District's 2009 Master Plan (Brown and Caldwell, 2009).

^(d)Sacramento City-County Office of Metropolitan Water Planning. 1999.

^(e)Montgomery Watson, 1999

3.3.2 Water Demands for Lower Income Households

The 2008-2013 Sacramento County General Plan Housing Element was used to estimate the projected water demands for low income single family and multi-family dwelling units. As part of the Housing Element update, Sacramento County estimates the percent low income households for the various community planning areas within the unincorporated areas of Sacramento County. The percent low income is based on households who earned less than 80 percent of Sacramento County's median household income for a family of four (\$52,900) based on the United States Department of Housing and Urban Development (HUD) 2000 income guidelines. For the District service areas, the percent low

income in the communities of Arden-Arcade (49 percent low income) and North Highlands-Foothills Farms (60 percent low income) were used for this Plan. The average percent low income for the District service area based on these two communities is 55 percent.

The estimate of the projected low income single family and multi-family water demands is provided in Table 3-14. These water demands are estimated by applying the 55 percent of low income units to the projected water use within the District. These low income water demand projections are included in Tables 3-5 through 3-9.

Table 3-15. (DWR Table 8) Low-Income Projected Water Demands					
Low Income Water Demands	2015	2020	2025	2030	2035
Single-family residential	9,838	10,680	10,591	10,350	10,046
Multi-family residential	4,933	4,324	4,608	5,041	5,531
TOTAL	14,771	15,004	15,199	15,391	15,577

Section 4

Water Supplies

The District uses both surface water and groundwater as its supply sources. This section describes the surface and groundwater sources, quantities, supply constraints, and the water quality of the water supply sources. Recycled water is discussed in Section 5 of this Plan.

4.1 Surface Water

This section provides a description of the District's surface water supplies as well as the physical and legal constraints of the supply. Currently, the District receives surface water from Folsom Lake via San Juan Water District in the NSA and from the American River via the City of Sacramento in the SSA.

4.1.1 Description

In 1991, the NSA began using surface water in limited quantities. Surface water use significantly expanded in 1998 with the completion of the San Juan CTP. Surface water use in lieu of groundwater pumping has increased significantly over the last few years to meet approximately 60 to 70 percent of the NSA demand and approximately 20 percent of the SSA demand (30 percent of the District's overall demand). The District continues to use surface water to meet a substantial fraction of its overall water demand. Surface water supplies have included surface water from PCWA, the City, and occasional section 215 CVP water from the USBR.

The NSA began receiving surface water from PCWA via PCWA's Middle Fork Project in 2000. The former Northridge Water District and PCWA entered into a take or pay agreement for delivery of up to 29,000 ac-ft of PCWA's water right, per year. The agreement increases from 7,000 ac-ft per year (ac-ft/yr) starting in the year 2000 up to 12,000 to 29,000 ac-ft/yr in 2009. The 12,000 to 29,000 ac-ft/yr upper limit will be maintained through the twenty-fifth year of the agreement. The District's agreement with PCWA is provided in Appendix F. Starting in 2010, the supply became available only during Water Forum wet years, when the March through November unimpaired inflow into Folsom reservoir (UIFR) is greater than 1,600,000 ac-ft. The terms of the agreement can be extended by mutual consent of both parties. PCWA can take back the water at anytime for their needs. The contract schedule is shown in Table 4-1. PCWA has projected that their supply to the District would be reduced to 12,000 ac-ft/yr in an average year type at buildout of PCWA's service area, which is anticipated to occur after 2024 (Brown and Caldwell, August 2006). In addition, the District has an annual Warren Act contract with ongoing negotiations for a long term contract that allows the use of USBR facilities to "wheel" the PCWA water to the District.

Since 1991, the NSA has received a nominal amount of Section 215 USBR CVP water. Section 215 water is surplus or "spillway" water available typically in winter and spring. This water has been treated at the Peterson WTP and delivered for use within the NSA. The District is eligible to purchase this surplus water in average and wet water years.

Table 4-1. PCWA Contract Schedule

Year	Surface water schedule (ac-ft)
June 1 through December 31, 2000 ^(a)	7,000
2001	11,000
2002	12,000
2003	14,000
2004	16,000
2005	18,000
2006	20,000
2007	22,000
2008	16,000 - 29,000
2009	12,000 - 29,000 ^(b)
2010	12,000 - 29,000 ^(b)
2011	12,000 - 29,000 ^(b)
2012	12,000 - 29,000 ^(b)
2013	12,000 - 29,000 ^(b)
2014 and each year thereafter	12,000 - 29,000 ^(b)

Note: Effective 2008, the District may request that PCWA make a supply up to the larger surface water schedule value.

^(a) Delivery of PCWA water began June 1, 2000 and was pro-rated to 7,000 ac-ft for the year 2000.

^(b) Delivery of PCWA water over 12,000 ac-ft per year requires approval from PCWA.

The District has been receiving treated surface water from the City for use within the SSA since 2007. This American River supply is treated at the City's Fairbairn WTP and delivered to the District via the City's Howe Avenue transmission main to an existing interconnection located near Enterprise Drive and Northrop Avenue in the SSA. In January 2004, the District entered into an agreement with the City for up to 20 mgd of surface water supply plus up to 10 mgd of additional water. The District's agreement with the City is provided in Appendix F. A continuous supply of 20 mgd is equivalent to 22,404 ac-ft/yr.

The District has provided a copy of this plan, including the 25-year demand projections, to the all three of its wholesale suppliers (PCWA, City of Sacramento, and USBR).

4.1.2 Physical Constraints

For surface water supply to the NSA, the Peterson WTP has limited spare capacity for uses outside of SJWD during high demand. The capacities of the Folsom Dam diversion, CTP, Fairbairn WTP, and the backbone transmission main system in the SSA are sufficient to divert, treat, and convey the current surface water entitlements.

4.1.3 Legal Constraints

Legal constraints on the current surface water entitlements include the Water Forum Agreement (WFA) and the Hodge Decision. The WFA was developed in an attempt to preserve the fishery, wildlife, recreational, and aesthetic values of the lower American River and in an effort to provide a safe and reliable water supply for the region. The District is a member of the Water Forum and a signatory of the WFA. The District surface water allocation from PCWA and the City will be reduced to zero in dry years, as defined in the WFA and the District's agreements with these agencies.

The WFA diversion restrictions for the PCWA surface water are dependant upon the March through November projected flow into the Folsom Reservoir. The District will be able to divert up to 29,000 ac-ft/yr of PCWA American River water when the UIFR is greater than 1,600,000 ac-ft through the year 2025. The contract expires in 2025 and it is assumed for this Plan that the contract will be extended at 12,000 ac-ft following 2025. The District supply from the City is constrained by their Water Forum Agreement as well as Hodge Flows in the American River. When American River flows are above Hodge Flows and when the projected March through November UIFR is greater than 950,000 ac-ft the District will be able to divert 22,404 ac-ft/yr of City entitlement American River Water in years when Table 4-2 summarizes the WFA year type and the corresponding March through November UIFR.

Table 4-2. Water Forum Year Types as Defined by the Water Forum Agreement

WFA year type	Unimpaired inflow into Folsom Reservoir, March through November, ac-ft	PCWA contract supply, ac-ft/yr	USBR contract supply, ac-ft/yr
Wet	Greater than 1,600,000	12,000 - 29,000	12,000
Average	Less than 1,600,000 and greater than 950,000	0	0
Drier/wedge	Less than 950,000 and greater than 400,000	0	0
Driest/conference ^(a)	Less than 400,000	0	0

^(a) In driest year types, diverters and others confer on how best to meet demands and protect the American River.

The District's ability to obtain treated surface water from the City of Sacramento is tied to Hodge flow restrictions in the American River which are dependant upon the time of year. Hodge flow restrictions in the American River are as follows:

October 15th through February – 2,000 cubic feet per second (cfs) minimum

March through June – 3,000 cfs minimum

July through October 15th – 1,750 cfs minimum.

The Hodge decision and possible impacts of ongoing efforts such as the Water Forum Flow Management Standard and the Operational Criteria and Plan (OCAP) create uncertainty as to the extent of availability and can legally constrain the surface water used by the District if minimum Hodge flows or other criteria in the Lower American River are not met. Nothing in the WFA is intended to restrict the District's ability to take delivery of Section 215 water from Folsom Reservoir from the USBR whenever it is possible.

4.2 Groundwater

This section provides a description of the District's groundwater supply as well as the physical and legal constraints of this supply.

4.2.1 Description

Groundwater has historically been the primary source of water for both the NSA and SSA. The groundwater use in the NSA has significantly declined since 1998 and has been reduced in the SSA since 2007 due to the availability of surface water as an alternative supply.

The groundwater basin underlying the District is located in the North American Sub-basin which is part of the larger Sacramento Valley Groundwater Basin. According to California's Groundwater Resources Bulletin 118 (DWR, 2006), the North American subbasin number is 5-21.64. The North American

subbasin comprises approximately 350,000 acres. The Sacramento Valley Groundwater Basin is not adjudicated. The basin is not identified by DWR Bulletin 118 as being in overdraft.

The water-bearing deposits underlying the District include the Miocene/Pliocene volcanic Mehrten Formation. Overlying units known collectively as “older-alluvium” include the Pliocene and Pleistocene, Modesto, Riverbank, and Turlock Lake formations, which were previously referred to as the Fair Oaks, Laguna, and local gravels formations (DWR, 1974). The Mehrten Formation is the most productive fresh water-bearing unit in the eastern Sacramento Valley, though some of the permeable layers of the overlying older alluvium produce moderate amounts of water. Groundwater is generally recharged along the east side of the subbasin and through the younger alluvium of streams and rivers, and flows west/southwest through the subbasin.

The Sacramento Groundwater Authority (SGA), formerly the Sacramento North Area Groundwater Management Authority, was formed in 1999 to manage the groundwater basin north of the American River. SGA's goal is to protect the health of the groundwater basin within Sacramento County north of the American River. The JPA has delegated the powers necessary to protect and regulate the local groundwater basin to the overlying water purveyors. One objective of SGA is to maintain the long-term sustainable yield of the groundwater basin north of the American River through conjunctive use practices.

SGA adopted its groundwater management plan (GMP) in December 2003 and adopted a revised GMP in December 2008. The District is a participating agency in SGA. The authority to prepare a GMP is granted to SGA through the Joint Powers Agreement executed between the County of Sacramento and the cities of Citrus Heights, Folsom, and the City of Sacramento. The GMP was prepared in compliance with Water Code Section 10753.7 resulting from the passage of SB 1938 in 2002. A copy of GMP is provided in Appendix G.

The GMP establishes a goal, management objectives, and the primary components needed to manage the basin including a plan to eliminate overdraft. These components include:

- Stakeholder Involvement
- Monitoring Program
- Groundwater Resource Protection
- Groundwater Replenishment
- Planning Integration

The “sustainable yield” of the portion of the North American groundwater subbasin within the Sacramento County was defined as part of the Water Forum process and the formation of the SGA. The estimated “average annual sustainable yield” defined by the Water Forum is 131,000 ac-ft/yr (EDAW/SWRI, 1999). This “sustainable yield” is in the WFA and is an approximate value based on quantitative assessments of the basin’s groundwater resources using the Sacramento County Integrated Groundwater and Surface Water Model (IGSM), which allowed for additional groundwater drawdown to levels of as much as 100 feet below mean sea level (Water Forum, 1997). This yield value is approximately equal to the magnitude of regional groundwater pumping in the basin in 1990 (EDAW/SWRI, 1999). The District's portion of this yield has been defined by the SGA as a sustainable pumping estimate of 35,035 ac-ft/yr.

There are several methods available to allocate the yield, including using the SGA area percentage, historical baseline, and the stabilized groundwater level. For this Plan, it is assumed that the District's available groundwater supply is defined based on the stabilized groundwater approach. Based on hydrographs of individual groundwater level records of District wells, an estimate is made regarding the appropriate level of pumping within the District to maintain stabilized groundwater levels. This approach is defined in detail in the District’s Water System Master Plan (Brown and Caldwell, 2009), which

recommends a District pumping target of 35,000 ac-ft/yr (15,000 ac-ft/yr from the NSA and 20,000 ac-ft/yr from the SSA).

Groundwater elevation levels (levels) have been generally declining in the District's portion of Sacramento County through 1998 and the last 40 years, with many areas declining at a rate of 1.5 to 2.0 feet per year (Montgomery Watson, 1999). A groundwater depression that was evident in 1968 significantly expanded and deepened by 1996, as seen on the hydrologic cross section depicting the change in water levels on Figure 4-1. Groundwater levels under the NSA dropped approximately 40 feet from 1968 to 1996.

Since the 1960's, the District has had an in lieu pumping recharge program in place although the amount of in-lieu recharge was very minor until the 1990's. This program involves the importation of surface water to offset groundwater usage, resulting in the local recovery of groundwater levels in the NSA as shown on Figure 4-1. According to a November, 2005 report prepared by Luhdorff and Scalmanini for the NSA, the District has observed an increase in groundwater elevations of up to 20 feet as a result of its importation of treated surface water.

Groundwater elevation levels plotted for selected District wells for the spring and fall months for the years 1992 through 2008 are shown on Figure 4-2. These hydrographs indicates a fairly stable water table for those sixteen years, due in part to the use of surface water and decreased use of groundwater in the NSA.

A review of groundwater pumping and groundwater levels through 1998 shows that groundwater supplies are sufficient when supplemented with a surface water supply to meet total demands. This is demonstrated by stabilizing groundwater levels due to the reduction in groundwater pumping.

4.2.2 Physical Constraints

The physical constraint on the current groundwater supply is the pumping capacity of existing wells. The pumping capacity of the District wells is sufficient to supply the District's total demand.

4.2.3 Legal Constraints

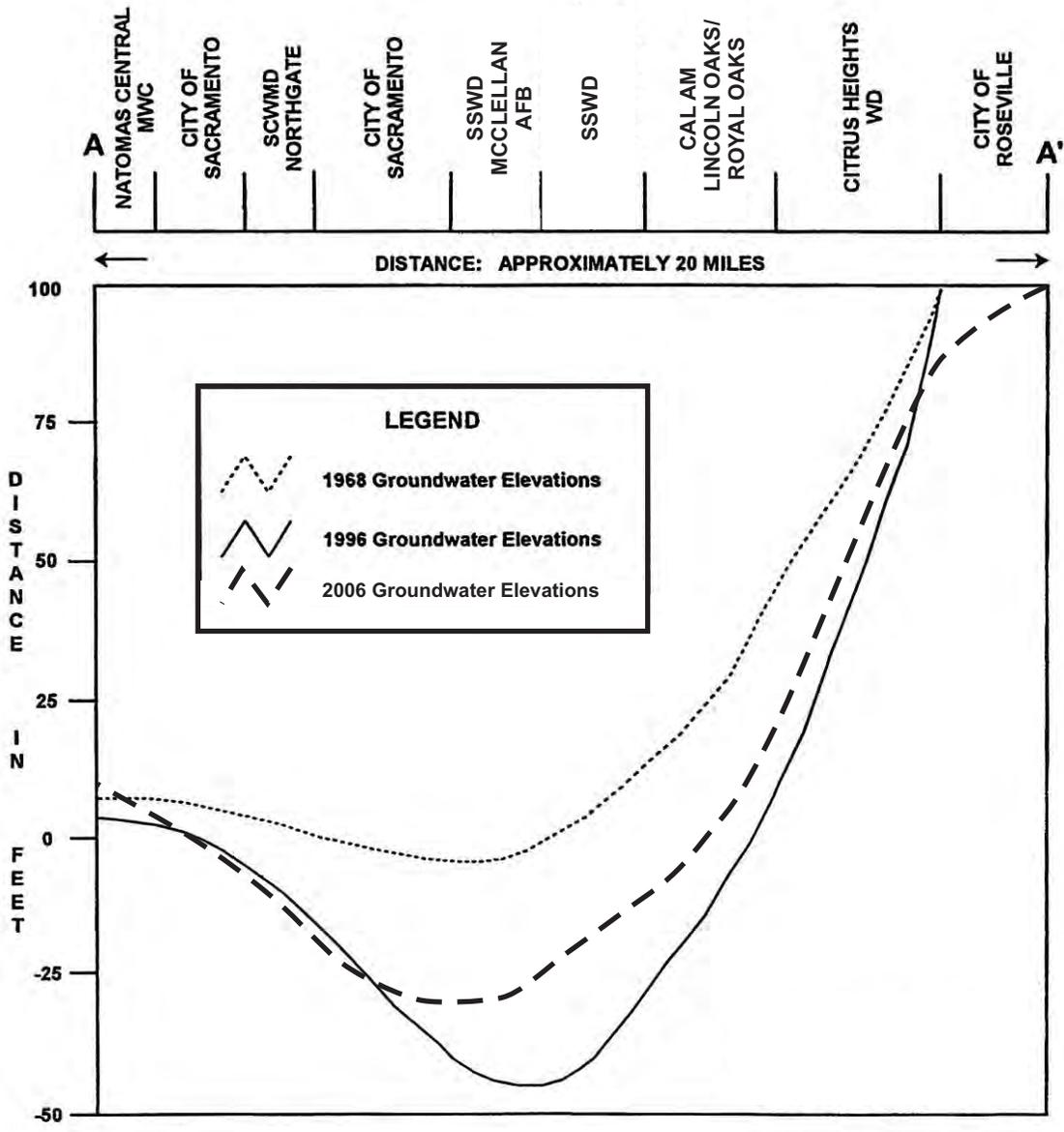
The SGA has established a groundwater accounting framework that defines a sustainable pumping estimate of 35,035 ac-ft/yr for the District.

4.3 Desalination

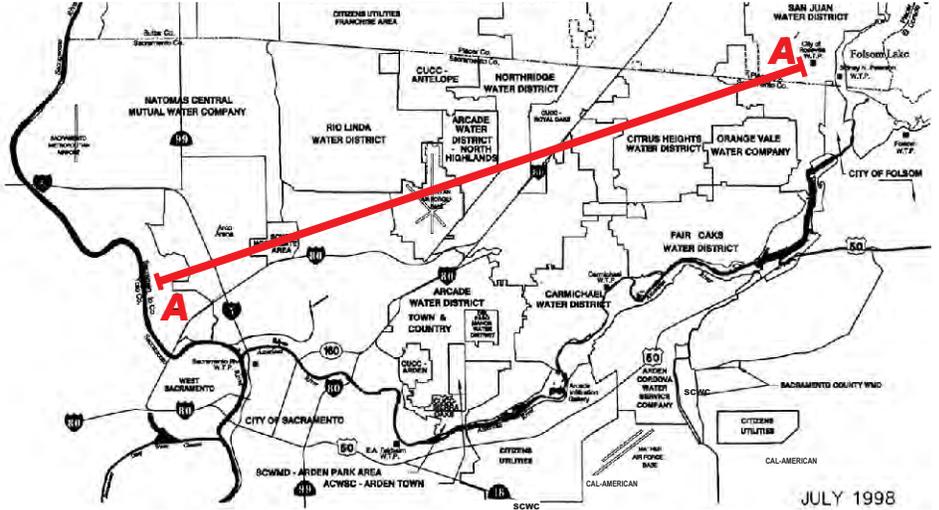
The District has no sources of ocean water, brackish water, or groundwater that provide opportunities for development of desalinated water as a long term supply. There are no opportunities for the development of desalinated water within the District's service area as a future supply source.

4.4 Transfer and Exchange Opportunities

In 2001 the District participated in a pilot groundwater banking and exchange program in conjunction with the RWA. This pilot program transferred water to the DWR environmental water account on a short-term basis. It is anticipated that similar transfer opportunities will occur in the future. The District intends to work with the RWA to identify both short-term and long-term exchange and transfer opportunities with other RWA members.

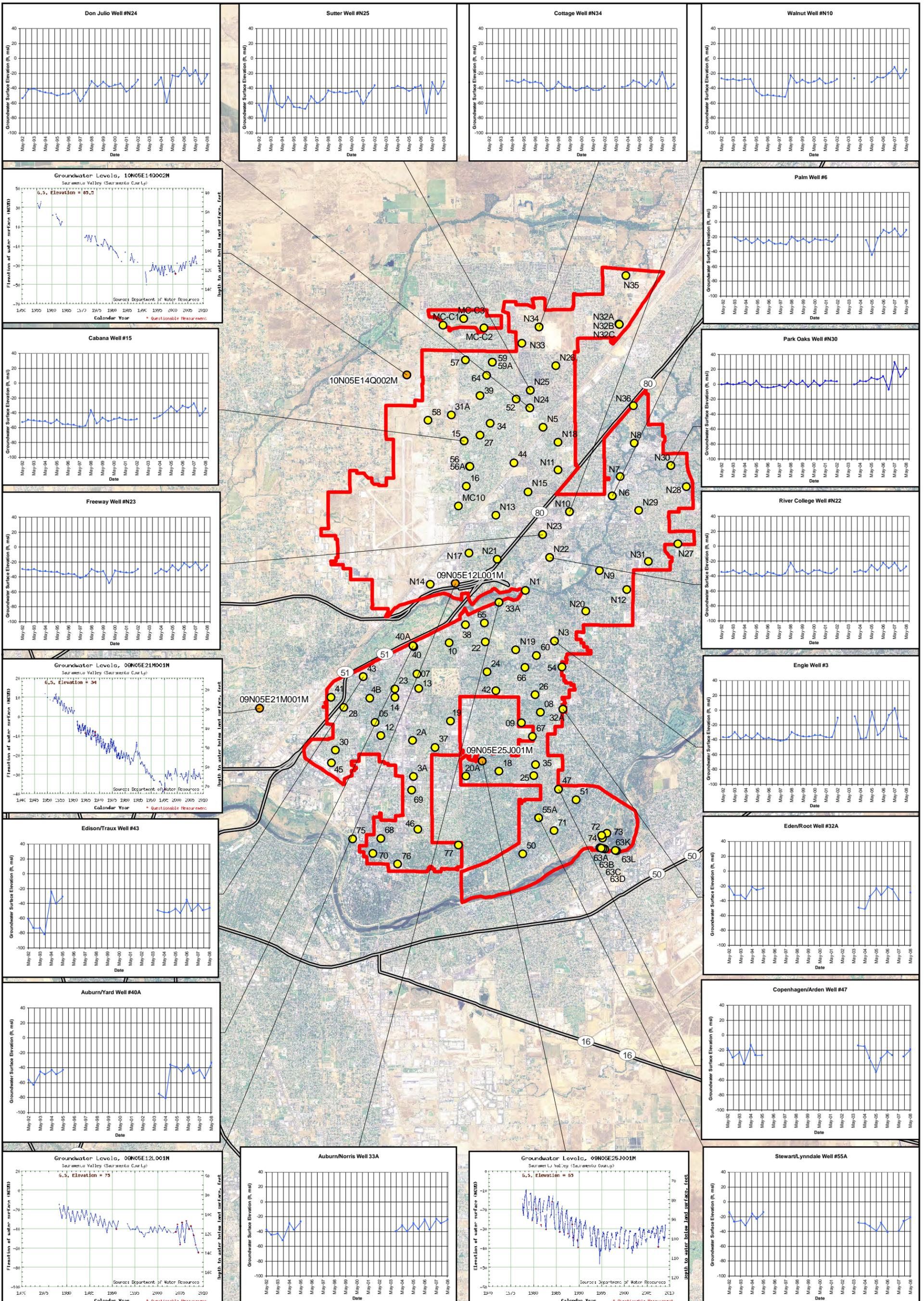


Source: ARBCA TM 1, Phase I Project Management Plan, 2006 groundwater Elevations added by Brown and Caldwell



P:\38000\138919 - Sac Suburban Water District 2010 UWMP\Deliverable\First Draft UWMP\Figures

BROWN AND CALDWELL	PROJECT	138919	SITE	Urban Water Management Plan Sacramento Suburban Water District	Figure 4-1
	DATE	6-23-10	TITLE	Hydrologic Section of Regional Aquifer System	



	PROJECT	138919	TITLE Urban Water Management Plan, Sacramento Suburban Water District Groundwater Well Hydrographs	Figure 4-2
	DATE	6-23-10		

Most recently, the District has participated in groundwater substitution transfers in both 2009 and 2010. In 2009, the District transferred approximately 8,000 AF to the DWR Drought Water Bank, and in 2010 the District transferred about 2,800 AF to the State Water Contractors Association. These transfers occurred with the cooperation of the District's contract partners: the City of Sacramento and PCWA. These transfers were both short term one year agreements.

Currently, the District is participating in the EIR process for both long and short term transfers in cooperation with the USBR and the Delta-Mendota group (representing the State Water Contractors). This EIR will cover the environmental work for up to 10 years of yet to be determined transfer opportunities.

The District has 51 interconnections through which exchanges or transfers of water can occur with neighboring water agencies. The regional water master plan developed by the American River Basin Cooperating Agencies identifies several potential projects for transferring water. The District will consider the construction of larger interconnections, pipelines, and pumping stations.

A summary of the District's water supply transfer and exchange opportunities is provided in Table 4-3. The Water Code definition of short and long-term is that short-term is for a period of one year or less and long-term is for a period of more than one year.

Transfer Agency	Transfer or Exchange	Short Term or Long Term	Proposed Volume
Rio Linda Elverta Community Water District	Transfer	Short term	Less than 1,000 ac-ft/yr
California American Water Company	Transfer	Long term	1,700 ac-ft/yr
Drought Water Bank	Transfer	Short term	Up to 8,000 ac-ft/yr
Central Valley Project	Transfer	Short term	2,000 to 5,000 ac-ft/yr
State Water Contractors	Transfer	Short term	2,000 to 5,000 ac-ft/yr

4.5 Water Quality

This section describes the water quality of the existing water supply sources within the District and the manner in which water quality affects water management strategies. In addition, this section describes the manner in which water quality affects the water supply.

Regulations governing drinking water quality that the District must comply with are established at the federal and state levels, with each setting Maximum Contaminant Levels (MCLs) that must not be exceeded. Regulations at the federal level are promulgated by the United States Environmental Protection Agency (USEPA) which is responsible for setting standards and assuring compliance. Regulations at the state level are maintained by the California Department of Public Health (CDPH) which carries out similar responsibilities.

The American River is an excellent quality source of drinking water. Peaks in turbidity levels, number of microorganisms, and organic carbon concentrations occur during wet weather and storm events. Watershed runoff and discharges contribute to these wet weather peaks. Aerojet groundwater remediation discharges to the American River are regulated under a National Pollutant Discharge Elimination System (NPDES) permit. These discharges have occasionally violated the permit conditions.

The American River raw water can be treated to meet all drinking water standards using conventional and direct filtration processes, as well as membranes.

All groundwater supplies in the District meet or exceed all current drinking water standards, including secondary standards regulated for aesthetic qualities. An exception is iron and manganese, which have secondary drinking water standards. Iron and manganese are two metals that occur naturally within the geological formations from which the groundwater is extracted, and are known to be at elevated levels in some District wells, as well as in the wells of surrounding water systems. Two wells (75 and 32) have wellhead treatment for iron and manganese. Another well (54) has been taken off-line due to elevated iron and manganese levels.

Historically, the water quality of the District's groundwater and surface water supplies has been generally excellent, although there are some issues of potential concern. These issues are:

- **Iron and Manganese** – Two wells currently have wellhead treatment facilities in place for removal of iron and manganese. Iron and manganese are present in the groundwater aquifer in scattered and isolated areas.
- **Methane** – The District has taken steps to mitigate the presence of methane found in some of the deeper system wells (>800 ft) (and some wells shallower than 800 ft as well) through methods such as air strippers or by capping off the lower production zones.
- **Radon** – Though there is no current MCL for Radon, groundwater well samples from both the NSA and SSA exceeded the proposed MCL. Current discussions with the CDPH Indoor Radon Program indicate that a decision on the implementation/adoption of this rule has been postponed indefinitely.
- **Groundwater Contamination Plumes** – There are several groundwater contamination plumes within and close to the District's service area. These plumes contain perchlorate, N-Nitrosodimethylamine (NDMA), and various organic compounds.
- **Disinfection Byproducts (DBPs)** – While DBPs in the imported surface water meets the drinking water standards, the District should continue to monitor its surface water supplies for this constituent given the potential older age of the water during lower demand periods and the need to balance having adequate chlorine residual and low DBPs.

There are known groundwater contamination plumes located in the groundwater basin and close to the District's service area: McClellan Business Park, McDonnell Douglas Inactive Rancho Cordova Test Site (IRCTS), Aerojet, and Mather Field. McClellan Business Park is the only contamination plume known to be located within the District's boundaries. This plume has not impacted any wells outside the McClellan Business Park service area. A portion of the Aerojet contamination plume has moved under the American River in the water district east of the District (Carmichael Water District). The plume is traveling in the general direction of the District, and it may reach the District boundaries in less than 5 years. In addition there is plume of unknown extent at Roseville Union Pacific Railyard. The Roseville Union Pacific Railyard is not actually considered a major plume as yet by the state regulatory agencies. There is also a recently identified contaminant plume (Kennedy Jenks, 2007) located within the Carmichael Water District, to the east of the District. This is located within the Aerojet Western Groundwater Operable Unit 3 EPA Superfund Site. The District has five wells that are closest to these plumes that could be impacted within a few years.

The potential groundwater capture radius of groundwater in the vicinity of four representative water supply wells operated by the District was assessed in the District's 2009 Water System Master Plan (Brown and Caldwell, 2009). The WINFLOWTM analytical element groundwater flow model was used to simulate two-dimensional, steady state groundwater flow for the assessment as well as particle tracking/flow path groundwater capture analysis. The radial extent of groundwater capture for a 10-year timeframe under steady state well pumping conditions was calculated. Based on this analysis the four representative wells could be impacted by groundwater contamination plumes within the next 25 years.

Unless the District provides the necessary treatment to maintain the groundwater supply, a portion of the District's groundwater supply could be lost due to water quality issues in the future. The SGA is also conducting an analysis of impacts of groundwater contamination plumes on the local groundwater supply. The District should routinely investigate and update this estimated projected water supply loss based on the most current data and information available.

Water quality affects the District's water management strategies through the District's efforts to be in compliance with Federal and State regulations. Water management strategies due to water quality effects are necessary to address potential supply impacts due to water quality. The District is proceeding with a variety of strategies including meeting drinking water standards, tracking contamination plumes, providing treatment where necessary, and identifying alternative well sites.

The District's water supply from the City is a fluoridated supply. Because the City surface water entering the District water system is fluoridated, the District began fluoridating their large production wells in the SSA in 2007. The NSA wells are not fluoridated.

A summary of the current and projected water supply changes due to water quality is provided in Table 4-4.

Water Supply Sources	Description of Condition	2010	2015	2020	2025	2030	2035
Surface Water							
Purchase - USBR (215)	Good	0	0	0	0	0	0
Transfer - PCWA	Good	0	0	0	0	0	0
Entitlement - City of Sacramento	Good	0	0	0	0	0	0
Supplier produced groundwater (cumulative impacts)	Good	0	1,100 ^(a,b)	1,100	3,100 ^(c)	3,100	6,100 ^(d)
Recycled water	--	0	0	0	0	0	0
Desalination water	--	0	0	0	0	0	0
Total	--	0	1,100	1,100	3,100	3,100	6,100

^(a)Well N17 capacity=1,100 gpm (assume well operates 30% of the normal year) (500 ac-ft/yr, 1% of total normal year supply)

^(b)Well N27 capacity=1,225 gpm (assume well operates 30% of the normal year) (600 ac-ft yr, 1% of total normal year supply)

^(c)Well 56A capacity=2,400 gpm (main runner well, assume well operates 50% of the normal year) (2,000 ac-ft/yr, 3% of total normal year supply)

^(d)Well 73 capacity=3,500 gpm (main runner well, assume well operates 50% of the normal year) (3,000 ac-ft/yr, 5% of total normal year supply)

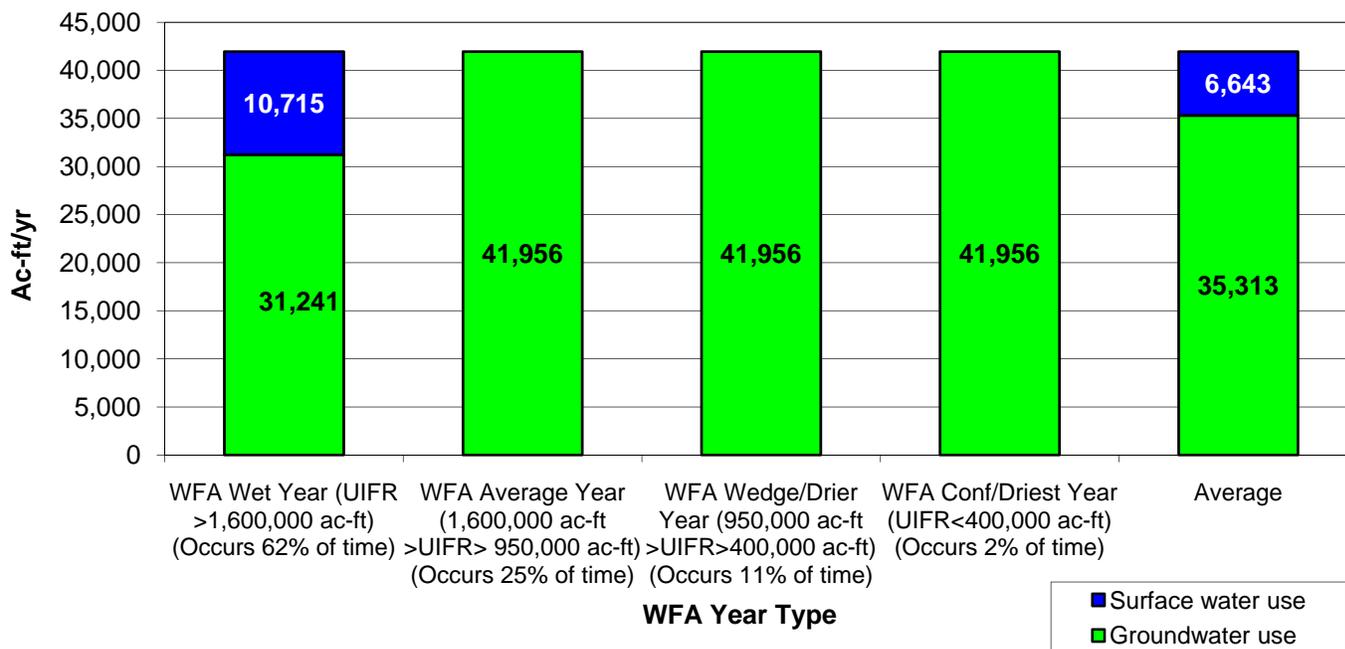
4.6 District Conjunctive Use Strategy

As part of the District's 2009 Water System Master Plan, the District developed a conjunctive use strategy that consists of integrating the buildout water needs, groundwater pumping target, available surface water supplies, groundwater supply capacity, and frequency of occurrence of WFA climate year types to arrive at the optimum mix of water supplies. An objective of the conjunctive use strategy is for the District to not exceed the groundwater pumping target on average and utilize surface water as part of the supply in wet years when supplies are plentiful and less costly.

Table 4-5 and Figure 4-3 shows the groundwater and surface water use for each of the WFA year types for the overall District based on meeting the long-term groundwater pumping target of 35,000 ac-ft/yr.

Table 4-5. Conjunctive Use Strategy, Meet District Needs – Total System, ac-ft/yr					
	Wet	Average	Drier	Driest	Average use
2035 Demand	41,133	41,133	41,133	41,133	41,133
Surface water available					
PCWA	29,000	0	0	0	0
City of Sacramento	9,399	3,500	1,400	0	0
Total surface water available	38,399	3,500	1,400	0	0
Groundwater use	31,241	41,133	41,133	41,133	35,000
Surface water use	9,892	0	0	0	6,133

Note: Water year types in this table refer to water year types as defined in the Water Forum Agreement.



UIFR = unimpaired inflow into Folsom Reservoir

Figure 4-3. Conjunctive Use Strategy to Meet the District Needs

4.7 Current and Projected Normal Year Water Supplies

Based upon the PCWA contract schedule in Table 4-1, USBR 215 water, the City agreement, and groundwater supply, current and projected water supplies during a normal water year are presented in Table 4-6. In normal years, 1,000 annual acre-feet of USBR 215 water is assumed to be available. It should be noted that if USBR 215 water is available, PCWA water may also be available. The District would take advantage of the lower cost PCWA water prior to using USBR 215 Water. The groundwater supply is based on the assumptions described in Section 4.2 and Section 4.5. Desalination and water

supply loss due to water quality are based on assumptions described in Sections 4.3 and 4.4, respectively. The recycled water supply is described in Section 5.

Table 4-6. (DWR Table 16 and 19) Current and Projected Normal Year Water Supplies, ac-ft/yr

Water Supply Sources	Wholesaler Supplied Volume (Yes/No)	2010	2015	2020	2025	2030	2035
Wholesaler - USBR (215) ^(a)	Yes	1,000	1,000	1,000	1,000	1,000	1,000
Wholesaler - PCWA ^(b)	Yes	29,000 ^(c)	29,000 ^(c)	29,000 ^(c)	12,000	12,000	12,000
Wholesaler - City of Sacramento	Yes	9,300	9,300	9,300	9,300	9,300	9,300
Supplier-produced groundwater ^(d,e)	No	31,241	31,241	31,241	31,241	31,241	31,241
Supplier-produced surface water	No	-	-	-	-	-	-
Transfers in	No	-	-	-	-	-	-
Exchanges in	No	-	-	-	-	-	-
Recycled water ^(f)	No	-	-	-	-	-	-
Desalination water	No	-	-	-	-	-	-
Total		70,541	70,541	70,541	53,541	53,541	53,541

Units of Measure: ac-ft/yr

^(a)1,000 ac-ft per year is assumed to be available.

^(b)The contract schedule is shown in Table 4-1. PCWA has projected that their supply to the District would be reduced to 12,000 ac-ft/yr in an average year type at buildout of PCWA's service area, which is anticipated to occur after 2024 (Brown and Caldwell, August 2006).

^(c)PCWA contract is for 12,000 ac-ft/yr minimum, but 29,000 ac-ft/yr is available if needed.

^(d)Normal year groundwater supply is assumed to be the groundwater supply during a Water Forum wet year.

^(e)Groundwater is pumped from the Sacramento Valley Groundwater Basin, North American Subbasin.

^(f)Recycled water is discussed in Section 5 of this Plan.

The District receives normal year wholesale water supply from its contracts with PCWA and the City, as shown in Table 4-7. The District provides wholesale water to the customers listed in Table 4-8.

Table 4-7. (DWR Table 12) District demand projections provide to wholesale suppliers, ac-ft/yr

Wholesaler	Contracted Volume	2015	2020	2025	2030	2035
Wholesaler (USBR 215)	12,000	1,000	1,000	1,000	1,000	1,000
Wholesaler (PCWA) ^(a)	29,000	29,000	29,000	12,000	12,000	12,000
Wholesaler (City of Sacramento)	22,404	9,300	9,300	9,300	9,300	9,300
Total	63,404	39,300	39,300	39,300	22,300	22,300

^(a)Contracted volume through 2024. PCWA has projected that their supply to the District would be reduced to 12,000 ac-ft/yr in an average year type at buildout of PCWA's service area, which is anticipated to occur after 2024 (Brown and Caldwell, August 2006).

Table 4-8. (DWR Table 17) District Supply to Wholesale Customers – Existing and Planned Sources of Water

Wholesale Sources	Contracted Volume	2015	2020	2025	2030	2035
District - supply to Cal-Am	1,700 (per contract)	1,700	1,700	1,700	1,700	1,700
District - supply to RLECWD	100 (assumed)	100	100	100	100	100
Total	--	1,800	1,800	1,800	1,800	1,800

4.8 Resource Maximization and Import Minimization

The District does not import water from other watersheds. All water used in the District is from within the District's watershed.

Water management tools have been used by the District to maximize water resources. Programs in which the District participates to maximize water resources are described as follows.

- Regional Water Authority - As discussed in the previous section, the District is a participant in the RWA IWRMP. The District also participates in the RWA water efficiency program.
- Water Forum Agreement - The District is a member and signatory to the WFA, which was developed in an attempt to preserve the fishery, wildlife, recreational, and aesthetic values of the lower American River and in an effort to provide a reliable and safe water supply for the region. The Water Forum finalized the WFA which contains seven major elements to meet its objectives including purveyor specific conservation agreements. This is discussed in Section 6 of this plan.
- Sacramento Groundwater Authority - The District is a participating agency in the SGA. The SGA has adopted a regional groundwater management plan.

The benefits of the programs described above and the documents developed as a result of these programs are water management tools that the District uses to maximize their water resources and minimize the need to import water.

4.9 Water Supply Reliability

This section describes the reliability of the water supply and vulnerability to seasonal or climatic shortage. A summary of the factors resulting in inconsistency of the surface water supply sources is provided in Table 4-9. The surface water supply to the District is subject to significant reductions during dry years (seasonal and climatic shortages). USBR 215 water and PCWA water are assumed to not be available in dry years. The District has agreed not to divert any water from the Lower American River in "drier" and "conference" years per the WFA (the District could divert this water from other sources in those years). The only other source of water for the District is groundwater.

Groundwater quantity is generally unaffected by short-term drought conditions. It is assumed that the District's available groundwater supply during multiple dry years is greater than the average annual sustainable yield. Based on the District's conjunctive use strategy, during average and dry years the District can pump higher amounts of groundwater because less groundwater is pumped during wet periods. The objective is that the overall average of the pumping during dry, wet, and average periods does not exceed the District's long-term sustainable pumping target. In single and multiple dry year periods the District's groundwater will be able to meet demands when surface water is available at a minimum. Because the District is able to use more surface water and less groundwater during wet and

normal years, they are able to pump more groundwater during dry years and still maintain a groundwater pumping balance within the estimated average annual sustainable target.

Water quality issues are not anticipated to have significant impact on water supply reliability. It is assumed that any chemical contamination from the known contaminant plumes and the lowering of MCLs of naturally occurring constituents such as arsenic and radon can be mitigated by constructing new treatment facilities for treatment prior to the water delivery into the water distribution system. However, these treatment facilities have significant cost.

Table 4-9. (DWR Table 29) Factors Resulting in Inconsistency of Supply

Water Supply Sources	Specific Source Name, if Any	Limitation Quantification	Legal	Environmental	Water Quality	Climatic	Additional Information
Wholesaler - Purchase - USBR (215)	American River	--	X	X	--	X	--
Wholesaler - Transfer - PCWA	American River	--	X	X	--	X	--
Wholesaler - Entitlement - City of Sacramento	American River	--	X	X	--	X	--
Supplier-produced groundwater	--	--	--	--	X	--	--
Supplier-produced surface water	--	--	--	--	--	--	--
Transfers in	--	--	--	--	--	--	--
Exchanges in	--	--	--	--	--	--	--
Recycled water	--	--	--	--	--	--	--
Desalination water	--	--	--	--	--	--	--

The District's only inconsistent source of water is the purchased surface water supply. Most of the contracted surface water supply is not anticipated to be available during dry years. In dry years, when surface water availability is inconsistent, the District's plan is to use its groundwater sources to meet most demands. The District has an adequate groundwater supply to provide water supply during single-dry and multiple-dry water years. Groundwater is depended upon to replace inconsistent sources.

The basis of the water year data to develop the water supply reliability is provided in Table 4-10. The actual watershed runoff for each of the years identified and the percent of average/normal years is shown in Table 4-11. Runoff data from the American River is used to determine the base year data. The definitions of the three water supply scenarios as described by DWR (DWR, 2010) are provided below.

1. Average year is a year in the historical sequence that most closely represents median runoff levels and patterns. Average is defined as the median runoff over the previous 30 years or more.
2. Single-dry year is generally considered to be the lowest annual runoff for a watershed since the water year beginning in 1903.
3. Multiple-dry year period is generally considered to be the lowest average runoff for a consecutive multiple year period (three years or more) for a watershed since 1903.

Table 4-10. (DWR Table 27) Basis of Water Year Data

Water Year Type	Base Year(s)
Average water year	1999
Single-dry water year	1976-1977
Multiple-dry water years	1986-1989

Table 4-11. (DWR Table 28) Supply Reliability – Historic Conditions – Watershed Runoff, ac-ft/yr

Average / Normal Water Year	Single Dry Water Year	Multiple Dry Water Years			
		Year 1	Year 2	Year 3	Year 4
2,481,642	349,060	879,785	853,093	2,247,425	1,117,786
Percent of average/normal year	14%	35%	34%	91%	45%

Because the District's surface water supply reliability is defined by restrictions from the WFA, a correlation of WFA year type and DWR defined water year type is provided in Table 4-12. This correlation is based on monthly American River flow data for 1900 through 2006. Also shown is the availability of each of the District's surface water supplies for the various year types.

Table 4-12. Correlation of DWR Water Year Type with Water Forum Agreement Year Type

DWR Water Year Type	Base Year(s)	American River flow (water year), ac-ft	American River Flow (Mar - Nov), ac-ft	Water Forum Year Type
Normal water year	1999	2,481,642	1,682,749	Wet
Single-dry water year	1976-1977	349,060	289,740	Driest
Multiple-dry water years	1986-1989	1,274,522	1,015,226	Average

A water supply reliability comparison is made in Table 4-13 considering three water supply scenarios: average/normal water year; single dry water year; and multiple dry water years.

Table 4-13. (DWR Table 31) Water Supply Reliability – Current Water Sources, ac-ft/yr

Sources	Normal Water Year	Single Dry Water Year Supply	Multiple Dry Water Year Supply		
			Year 2011	Year 2012	Year 2013
Wholesaler - Purchase - USBR (215)	1,000	0	0	0	0
Wholesaler - Transfer - PCWA	29,000	0	0	0	0
Wholesaler - Entitlement - City of Sacramento	9,399	0	3,500	3,500	3,500
Supplier-produced groundwater	31,241	43,067	43,067	43,067	43,067
Supplier-produced surface water	0	0	0	0	0
Transfers in	0	0	0	0	0
Exchanges in	0	0	0	0	0
Recycled water	0	0	0	0	0
Desalination water	0	0	0	0	0
TOTAL	70,640	43,067	46,567	46,567	46,567
Percent of Normal	100%	61%	66%	66%	66%

4.10 Water Supply Projects

This section provides a description of the District's water supply projects and water supply programs that will and may be undertaken to meet the total projected water use and provide system reliability. There are projects currently in progress or planned for the near future, as described below. Plans to replace inconsistent sources and opportunities for exchanges of water are also presented.

The District will be constructing approximately three additional water supply wells to replace older existing wells and to meet future North service area demands between 2010 and 2024.

Table 4-14 provides a summary and schedule of the future water supply projects. Also shown is a quantification of each project's normal-year yield, single dry-year yield, and multiple dry-year yield.

Table 4-14. (DWR Table 26) Future Water Supply Projects

Project Name	Projected Start Date	Projected Completion Date	Potential Project Constraints	Normal Year Supply, ac-ft/yr	Multiple Dry Year Supply, ac-ft/yr		
					First Year	Second Year	Third Year
New well (NSA)	2010	2012	--	580	580	580	580
New well (NSA)	2011	2013	--	580	580	580	580
New well	2014	2016	--	580	580	580	580
Sacramento River Diversion	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Section 5

Recycled Water

The purpose of this section is to provide information on recycled wastewater and its potential for use as a water resource in the District. The elements of the section are (1) the quantity of wastewater generated in the service area, (2) description of the collection, treatment, and disposal/reuse of that wastewater, (3) the current plans for water recycling, and (4) the potential for water recycling in the service area.

5.1 Recycled Water Plan Coordination

Sacramento Regional County Sanitation District (SRCSD) is the agency responsible for collecting treating, and discharging treated wastewater in the greater Sacramento region. Most of the local water agencies are in coordination with SRCSD regarding various issues such as conservation methodologies and rebates, recycled water use potential, and other issues. The District has no authority or control over municipal wastewater generated in the District's area. The District also currently has no authority for recycled water use in its area, and there is currently no reuse water available in its service area. However, the local water purveyors understand that recycled water use will become an important element of integrated water supply planning, and support the development of a reuse supply component.

The SRCSD completed a Water Recycling Opportunities Study (WROS) (SRCSD, 2007) in 2007 to evaluate the feasibility of implementing a large scale water recycled program. The WROS did the following:

1. Studied areas through the Sacramento region and SRCSD study area to identify potential water recycling opportunities,
2. Engaged potential water recycling partners and stakeholders,
3. Developed, assessed, and prioritized potential water recycling projects, and
4. Provided a strategy to further develop and implement the projects initially selected to move forward in achieving the stated goals of the large-scale water recycling program.

The WROS identified a potential project including a satellite scalping plant in the north Sacramento County area, however, this area does not include the District's service area.

The SRCSD's reuse planning effort involves coordination, updates, and input from individual local water districts, and from the regional water agencies, the RWA, and the SGA.

5.2 Wastewater Quantity, Quality, and Current Uses

The following section describes the estimated wastewater generated in the District's service area. The wastewater is collected and conveyed out of the District's service area to the SRCSD's wastewater treatment plant. This section provides a description of wastewater generation, and collection and treatment within the District's service area.

5.2.1 Wastewater Generation

Municipal wastewater is generated in the District from a combination of residential and commercial sources. The quantities of wastewater generated are proportional to the population and the water use in

the service area. Estimates of the wastewater flows generated within the District for the present and future conditions are presented in Table 5-1. The source of the estimates is the population projection in Section 3 and a per capita unit flow of 133 gallons per day (gpd) including commercial use (Email communication, Jose Ramirez, SRCSD). The per capita wastewater generation unit flow rate was obtained from the final draft of the Sacramento Regional Wastewater Treatment Plant 2020 Master Plan (Carollo Engineers, November 2001).

Table 5-1. (DWR Table 21) Wastewater Collected and Treated, ac-ft/yr

	2005	2010	2015	2020	2025	2030	2035
Wastewater collected and treated in service area ^(a)	25,062	25,416	25,966	26,527	27,101	27,687	28,285
Volume that meets recycled water standard (Title 22)	0	0	0	0	0	0	0

Source: Carollo Engineers, November 2001, Final Draft 2020 Master Plan, SRCSD.

^(a) Wastewater is collected in the District's service area and treated at the Sacramento Regional Wastewater Treatment Plant.

5.2.2 Wastewater Collection and Treatment

The wastewater is collected by gravity in a series of main, trunk, and interceptor sewers owned and operated by SRCSD. Collected wastewater is transported to the Sacramento Regional Wastewater Treatment Plant (SRWTP) in Elk Grove. The SRWTP serves the entire Sacramento metropolitan area. The treatment plant receives and treats approximately 134 (2009) mgd of dry weather flow on average (Email communication, Jose Ramirez, SRCSD). The current capacity of the SRWTP to treat dry weather flows is approximately 181 mgd. The SRWTP produces a disinfected secondary effluent that is discharged into the Sacramento River below Freeport. The principal treatment processes are primary sedimentation, pure-oxygen activated sludge, secondary sedimentation, and chlorination/dechlorination. Planned disposal methods and quantities are presented in Table 5-2.

The reuse volumes are seasonal since recycled water for in-basin reuse is only produced during the dry weather months (April/May to October/November). SRCSD's WROS, which was completed in February 2007, identifies a goal of recycling 30-40 mgd by 2030.

Table 5-2. (DWR Table 22) Disposal of Wastewater, mgd

Method of Disposal	Treatment Level	2010	2015	2020	2025	2030	2035
River discharge ^(a)	Secondary effluent	134	142	151	160	170	180
Reuse ^(b)	Title 22	1.0-1.5	5	10	15	30-40	30-40

Source: Email communication with Jose Ramirez of SRCSD – June 2010.

^(a) SRCSD's WROS, which was completed in February 2007, identifies a goal of recycling 30-40 mgd by 2030. Reuse for years prior to 2030 are estimated for the purposes of this table.

^(b) River discharge volumes are projected based on 134 mgd for 2009. Future projections past what was projected in the SRWTP 2020 Master Plan are not available. For the purposes of this table, future projections are based on DOF population projections for Sacramento County through 2050 that projects an average annual growth rate of 1.2 percent.

5.3 Water Recycling Current Uses

Currently, there are no recycled water uses within the District. A 1994 survey of reuse potential (Nolte and Associates, Inc., Sacramento County Water Reclamation Study, August 1994) evaluated the role of reclaimed water as a long term water resource. The study evaluated and identified reclaimed water markets that would be financially feasible to serve, and established a plan to implement reclaimed water

use. SRCSD constructed a reclaimed water treatment facility at the regional treatment plant. The water reclamation plant is designed to treat a maximum of 5 mgd with coagulation, sand filtration, and disinfection of secondary effluent from the SRWTP. SRCSD is currently serving approximately 2 mgd of reclaimed water in the Laguna Creek area, near the SRWTP. Uses of the recycled water include irrigation of parks, schoolyards, and streetscapes in the Laguna West and Lakeside developments and nonpotable uses at the SRWTP. The reclamation plant is capable of being expanded to 10 mgd to serve additional demand for landscape irrigation for the Elliott Ranch South development and future developments in the area. Areas that are intended for use of recycled water are located near the SRWTP, which is 30 miles from the District.

5.4 Potential and Projected Use of Reclaimed Water

Currently, no recycled water is used in the District's service area. As part of the 1994 Nolte report, the former Arcade and Northridge Water District service areas were investigated for reuse potential along with other urban water districts. The reuse potential in the 2007 WROS was not evaluated for the District service area. The WROS identified potential recycled water demands for landscape irrigation purposes in five different target areas and not by water supplier service area. There may be potential for recycled water use within the McClellan Business Park service area. This section presents the projected potential use of recycled water and methods to optimize reuse in the future. Due to infrastructure limitations it is concluded that the use of recycled water within the District water system will not occur within the planning horizon of this Plan.

5.4.1 Potential Use of Reclaimed Water

The potential for landscape irrigation with recycled water as identified in the 1994 Nolte Report for the former Arcade and Northridge Water Districts was 1,715 and 1,235 ac-ft/yr, respectively, for a total of 2,950 ac-ft/yr. The potential recycled water use included parks and schoolyards for landscape irrigation. This is eight percent of the total year 2009 water demand in the District area. The 1994 Nolte report concluded there is no potential use of recycled water for agricultural irrigation, wildlife habitat enhancement, wetlands, industrial reuse, and groundwater recharge. The WROS did not identify potential recycled water demands within the District service area.

The District has met with officials from the Air Force Real Property Agency (AFRPA) at McClellan. The purpose of the AFRPA is to protect human health and the environment for meeting groundwater cleanup requirements through groundwater extraction and treatment at the former air force base, while facilitating redevelopment and reuse. Groundwater is extracted and treated at the groundwater treatment plant (GWTP) at McClellan. With over 100 groundwater extraction wells, 1,500 to 1,700 gpm of extracted groundwater is treated year round (via air stripping and ion exchange) before being discharged to Magpie Creek. This groundwater cleanup is expected to continue for many decades until the required groundwater clean-up is attained. The Rate, Flow and Transport Model that was developed in 2004 predicted that trichloroethylene (TCE) could be below its maximum contaminant level (MCL, 5 ug/L) in 55 years. There is potential to use this reclaimed water for industrial or landscape uses within the McClellan service area. However, the infrastructure to distribute the recycled water from the GWTP is not currently in place and could be cost prohibitive to install. There is also a need for recycled water customers in this area.

The potential recycled water demand is assumed to be constant in the future assuming that the amount of landscaping area within the District as well as the supply from the McClellan GWTP is constant throughout the planning period. Table 5-3 shows the projected recycled water demand for the planning period. Although there is potential for a recycled water demand within the District, it is anticipated that recycled water supplied to the District will be zero through 2035.

Table 5-3. (DWR Table 23) Potential Recycled Water Uses, ac-ft/yr

Type of Use	Description	Feasibility	2015	2020	2025	2030	2035
Agriculture irrigation	--	--	0	0	0	0	0
Landscape irrigation	Tertiary treatment ^(a)	Cost prohibitive	0	2,950	2,950	2,950	2,950
Commercial irrigation/industrial reuse	McClellan GWTP discharge ^(b)	Potentially cost prohibitive – needs to be further evaluated	0	2,750	2,750	2,750	2,750
Golf course irrigation	--	--	0	0	0	0	0
Wildlife habitat	--	--	0	0	0	0	0
Wetlands	--	--	0	0	0	0	0
Industrial reuse	--	--	0	0	0	0	0
Groundwater recharge	--	--	0	0	0	0	0
Seawater barrier	--	--	0	0	0	0	0
Geothermal/energy	--	--	0	0	0	0	0
Indirect potable reuse	--	--	0	0	0	0	0
Total	--	--	0	5,700	5,700	5,700	5,700

^(a) Nolte, 1994

^(b) Contaminated groundwater treatment volume from McClellan GWTP discharge based on 1,700 gpm (air scrubbers and ion exchange) converted to 2,742 ac-ft/yr.

5.4.2 Projected Future Use of Reclaimed Water

The extent to which recycled water is available in the future is dependant upon the SRCSD water recycling program. Conveying reclaimed water up to the District's service area from the SRWTP is cost prohibitive due to the long distance (30 miles) from the SRWTP to the District's service area. The only feasible way recycled water could be available in the District would be if SRCSD built a satellite water recycling plant north of the American River in northeast Sacramento County. The 2007 WROS did not identify any part of the District's service areas as a target area. Therefore, it is assumed that reuse water from treated wastewater will not be available for the District's service area until more definitive plans are completed by SRCSD.

Future use of reclaimed water from the McClellan GWTP that currently discharges into Magpie Creek will need to be further evaluated by the District to determine the costs to construct a separate distribution system within the McClellan service area as well as identify the most cost effective potential uses. As future development occurs, the potential to use the GWTP reclaimed water could increase because future development would help pay for the necessary infrastructure. Because the District has not yet evaluated the cost effectiveness of this McClellan GWTP reclaimed supply, it is projected that the use of this reclaimed water will not be available in the current planning horizon.

5.5 Optimizing the Use of Reclaimed Water

The District does not have the authority or control to optimize the use of reclaimed water, therefore, the District does not have an optimization Reuse Plan. The SRCSD has taken steps to promote and expand the use of reclaimed water, but these steps are focused on areas adjacent to the SRWTP. The steps

include the construction of a water recycling plant and the requirement for new development in the south county to install dual distribution systems. The majority of this potential reclaimed water use consists of agricultural demands (Nolte, 1994) and does not include any areas in the District service area. As Table 5-4 indicates, the District's 2005 Plan projected no reclaimed water use, and there was no actual use in 2010.

Method of Disposal	2005 Plan Projection for 2010	2010 Actual Use
Agriculture irrigation	0	0
Landscape irrigation	0	0
Commercial irrigation	0	0
Golf course irrigation	0	0
Wildlife habitat	0	0
Wetlands	0	0
Industrial reuse	0	0
Groundwater recharge	0	0
Seawater barrier	0	0
Geothermal/energy	0	0
Indirect potable reuse	0	0
Total	0	0

Without plans by SRCSD to construct satellite reclamation plants, use of reclaimed water to meet water demands in the District does not appear feasible. The District does not maintain incentives to use reclaimed water, as shown in Table 5-5, because there is currently no recycled water supply or demand within the District's service area. The District currently promotes recirculating uses of water within their service area. This is demonstrated in the District's Water Shortage Contingency Plan (Appendix H) which requires commercial car washes to use fully recycled water.

Actions	Ac-ft/yr of use projected to result from this action				
	2015	2020	2025	2030	2035
Financial incentives	0	0	0	0	0
Other	0	0	0	0	0
Total	0	0	0	0	0

Section 6

Water Conservation Best Management Practices

Water conservation is an available method to reduce water demands, thereby reducing water supply needs for the District. This section presents a description of the District's water conservation program. The District has met the Act's demand management measures (DMM) requirements by including their completed California Urban Water Conservation Council (CUWCC) 2010 Best Management Practices (BMPs) report in this Plan.

In 2000, the Water Forum formalized the Water Forum Agreement (Agreement), which is designed to achieve two co-equal objectives: Provide a reliable and safe water supply for the region's economic health and planned development through to the year 2030; and preserve the lower American River. As signatories of the Agreement, the District agrees to carry out the seven elements specified in the Agreement – one of which is Water Conservation. The BMPs that represent the Water Conservation Element were modeled after the CUWCC's BMPs. In consideration of the CUWCC's leadership, resources and state-wide influence, in 2009, the Water Forum modified its Water Conservation Element by urging signatories to adopt the CUWCC's BMPs as the industry standard. In December 2009, the District signed the CUWCC's Memorandum of Understanding (MOU).

The CUWCC's BMPs are a result of a consensus building effort to address the ever increasing demand on California's complex water resources. The BMPs, as defined by the MOU and generally recognized as standard definitions of water conservation measures, are presented in Table 6-1.

Table 6-1. Water Conservation Best Management Practices

	Category	CUWCC MOU BMP number	Former BMP number	BMP name	Plan DMMs
Foundational BMPs	1. Utility Operations Programs	1.11	BMP 12	Conservation Coordinator	L. Water Conservation Coordinator
		1.12	BMP 13	Water Waste Prevention	M. Water Waste Prohibition
		1.13	BMP 10	Wholesale Agency Assistance Programs	J. Wholesale Agency Programs
		1.20	BMP 3	Water Loss Control	C. System Water Audits, Leak Detection, and Repair
		1.30	BMP 4	Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections	D. Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

Table 6-1. Water Conservation Best Management Practices

	Category	CUWCC MOU BMP number	Former BMP number	BMP name	Plan DMMs
		1.40	BMP 11	Retail Conservation Pricing	K. Conservation Pricing
	2. Educational Programs	2.10	BMP 7	Public Information Programs	G. Public Information Programs
		2.20	BMP 8	School Education	H. School Education Programs
Programmatic BMPs	3. Residential	3.1	BMP 1/BMP 2	Residential Assistance Program	A. Indoor Water Survey for Single/Multi-Family Residential Customers
					B. Residential Plumbing Retrofit
		3.20	BMP 1	Landscape water survey	A. Outdoor Water Survey for Single/Multi-Family Residential Customers
		3.30	BMP 6	High-Efficiency Washing Machine Rebate Programs	F. High-Efficiency Washing Machine Rebate Programs
	3.40	BMP 14	WaterSense Specification toilets	N. Residential ULFT Replacement Programs	
	4. Commercial, Industrial, Institutional	4.00	BMP 9	Commercial, Industrial, Institutional	I. Conservation programs for Commercial, Industrial, and Institutional (CII) Accounts
5. Landscape	5.00	BMP 5	Landscape	E. Large Landscape Conservation Programs and Incentives	

The CUWCC defines three optional approaches for meeting water conservation commitments, consisting of:

- **Cost Effective BMPs** – implementation of all cost effective BMPs.
- **Flex Track Method** – select BMPs to implement in order to achieve equal or greater water savings as the cost effective BMPs approach.
- **GPCD Method** – meet a GPCD target by 2018. This is different than the SBx7-7 GPCD target. Foundational BMPs, a requirement of all three approaches, are essential to a utility's overall conservation efforts and are an ongoing practice within the District. However, some Foundational BMPs have no quantifiable water savings such as conservation coordinator, water waste prohibition, and education programs.

6.1 Current Water Conservation Program

The District has selected to follow the CUWCC's GPCD approach. The GPCD approach provides the flexibility to implement the most cost effective water conservation program with less prescriptive requirements than the other approaches. The GPCD target that the District has to meet according to

SBx7-7 is similar but not the same as the CUWCC GPCD target. The District's AB 1420 submittal as provided to DWR is included in Appendix I of this Plan.

The District conducts an ongoing water conservation program. A description of each BMP that is currently being implemented is provided in this section. The District's BMP reports are included in Appendix J.

6.1.1 Foundational BMPs

This section provides a description of the foundational BMP conservation programs being implemented by the District.

Utility Operations Program 1.1.1 Conservation Coordinator (Former BMP 12)

The District employs a full time conservation coordinator. The conservation coordinator is responsible for implementing and monitoring the District's water conservation activities. The conservation coordinator is Stephanie Cray. The District also hires part time staff as needed to aid in water conservation program implementation activities.

Utility Operations Program 1.1.2 Water Waste Prevention (Former BMP 13)

Water waste prevention is an ongoing component of the District's water conservation program. In addition to the full time conservation coordinator, the District employs one full time water conservation technician and two temporary seasonal representatives to assist with water waste prevention. The District has a Water Conservation Regulation (Regulation 15, Appendix H) that enforces water use guidelines and water waste penalties. Section 8 of this Plan provides a description of the prohibited water uses in the District's Water Conservation Regulation.

Utility Operations Program 1.1.3 Wholesale Agency Assistance Programs (Former BMP 10)

The District and its retail agencies are members of the RWA and SGA. The membership organization partner on mutually beneficial programs. The District's participation and financial contributions to these programs benefit the agencies to which the District provides wholesale water.

Utility Operations Program 1.20 Water Loss Control (Former BMP 3)

A system water audit, water loss control program consists of ongoing leak detection and repair within the system, focused on the high probability leak areas. This includes an ongoing meter calibration and replacement program for all production and distribution meters.

Since the system is not completely metered, the District is not able to complete a pre-screening system audit for the reporting year, and cannot calculate verifiable uses as a percent of total production. The District keeps all metered water use data on file. Once the system is completely metered, the District will be able to verify the values used to calculate verifiable uses as a percent of total production. As described in Section 3 of this Plan, it is estimated that the District has 10 percent unaccounted-for water.

Utility Operations Program 1.30 Metering with Commodity Rates for All New/Retrofit of Existing Connections (Former BMP 4)

The District is in the process of metering all residential connections. Most of the non-residential connections are metered. The metering program is scheduled to be completed in 2022. The District requires meters for all new connections and bills by volume of use for residential and non-residential customers.

Utility Operations Program 1.40 Retail Conservation Pricing (Former BMP 11)

The District currently implements conservation pricing for all its metered customers. A uniform quantity charge is considered to meet the definition of conservation pricing. Tiered rates are implemented for residential customers as they become metered.

Education Programs 2.10 Public Information Programs (Former BMP 7)

The District fully participates in the Regional Water Efficiency Program (RWEF) Public Information Campaign. The Regional Water Efficiency Program has a regional outreach program coordinated with support from a Public Outreach and School Education Committee comprised of RWEF member conservation coordinators and Public information officers. The goals for the regional public information campaign are to raise awareness about the need to use water efficiently outdoors and motivate the target audience to undertake key behaviors that are most likely to reduce outdoor water use. The target audience for the regional public information campaign are the residential water customers within the RWEF participant area.

In 2005, the RWEF developed a new logo and theme for the Be Water Smart public information campaign. To kick-off the campaign, RWA undertook a host of outreach activities including a region-wide "Ultimate Garden Makeover Contest" in 2008 and 2009. Overall, goals of the Be Water Smart program are to:

- Increase the number of Water-Wise House Call requests
- Increase visibility for RWA's water conservation messages in the local media
- Drive traffic to the RWA website and Be Water Smart hotline

In 2010, the RWA and 19 local water providers, including the District, announced a new public outreach and advertising campaign called Blue Thumb. The campaign is designed to help residents use less water outdoors. With the Sacramento region's hot, dry climate and long summer season, more than 65 percent of a household's yearly water consumption typically goes toward landscape irrigation. Of that, 30 percent is lost due to overwatering or evaporation, and is the target of the campaign messaging with the call for customer behavioral changes in watering practices.

The ongoing regional campaign shows residents how to use water efficiently outdoors through every-day tasks such as adjusting their irrigation system according to the season or using a shut-off nozzle on their hose. It stars well-known community spokespersons, including Sacramento Mayor Kevin Johnson, Meteorologist Elissa Lynn, and Dinger of the Sacramento River Cats. In addition, six local residents showing off their Blue Thumb and demonstrating how they made a personal commitment to use water wisely. The Blue Thumb campaign has a web site (www.BeWaterSmart.info) where visitors can take the pledge to use water wisely and view video clips from the spokespersons.

Through the District's participation in RWA, the District is provided guidelines and suggestions to carry the Blue Thumb campaign into the District's outreach efforts. Guidelines the District uses include key messages, web site/newsletter text, bill inserts, Blue Thumb pledge, and outreach materials. Outreach avenues include the opportunity to nominate customers to star in the outreach campaign, participation in the Home Depot partnership by featuring their logo on the in-store banners and connecting with customers at events.

The following marketing strategies were used as tactics to meet the goals of the Public Information Campaign. Specifically for the program, tactics used in the period of 2005-2009 included:

- Planned and executed the 2008 and 2009 Ultimate Water Smart Garden Makeover Contest as a regional media event which included a full remake of the winner's front yard landscape with donated time and materials worth \$40,000
- Public service announcements (hundreds of airings on radio and TV)

- Paid advertisements (print ad, television segments)
- Manage Be Water Smart hotline, 1-888-WTR-TIPS
- 5 Be Water Smart e-blasts to 40,000 people
- Participation at public events
- Bill inserts, brochures (e.g. River-Friendly Landscaping and Rules of Thumb for Water Wise Gardening)
- Demonstration garden support to the Fair Oaks Horticulture Center managed by the Sacramento County University of California Cooperative Extension (UCCE), located on Fair Oaks Blvd, in Fair Oaks Park.
- The American River Water Education Center (ARWEC) information is provided on the RWA website. The ARWEC hosts teacher workshops and has a water efficient landscape demonstration garden.
- Develop partnerships for co-promotion of programs including the following agencies:
 - Sacramento Municipal Utility District (SMUD)
 - Sacramento Regional County Sanitation District (SRCSD)
 - Sacramento Area Water Forum
 - Sacramento Bee
 - Sacramento Stormwater Quality Partnership
 - University of California Cooperative Extension

In addition, the tactics to meet the 2011 and future goals of the revised Public Information campaign include:

- Campaign web site where visitors can take the pledge to use water wisely and view video clips from campaign participants explaining how they earned their Blue Thumb.
- A statistically valid telephone survey completed in 2009 of 604 adults to provide insight into attitudes, behaviors, messages and methods of communication. The survey will be repeated in September 2011 to evaluate the campaign.
- A unique and eye-catching campaign graphic identity.
- Media outreach to announce the campaign and promote the opportunity for residents to star in advertising, as well as a campaign launch press event.
- Television and radio advertising (paid) on KOVR (CBS TV), Comcast Cable, Capitol Public Radio, and Clear Channel radio stations.
- Public Service Announcements (no-cost placement) distributed to television and radio stations throughout the Sacramento region.
- Promotional partnership with WaterSense, a label found on water efficiency productions for home. Launched in 2006, WaterSense is an EPA-sponsored partnership program that promotes water efficiency and enhancing the market for water-efficient products, programs, and practices. Promotional partnerships with 16 Home Depots throughout the Sacramento region for Water Awareness Month in May. This included training by RWA on water efficient topics for Home Depot associates, promoting RWA's "Top 10 List" of water efficient products either via end-cap displays or table displays, in-store banners promoting Water Awareness Month, and events where water providers connected with customers at Home Depot stores.
- Partnership with the Sacramento River Cats (Sacramento's minor league baseball team) and Save Our Water that included placing water efficiency advertisements in 110 bathroom stalls at Raley Field, a blast e-mail by the Sacramento River Cats to 1,700 fans promoting the Blue Thumb Web site

pledge, and inclusion of a promotional flyer in 1,000 Save Our Water totes distributed at the California State Fair.

- Collateral materials such as garden gloves, lawn signs, pledge banner, and T-shirts with the Blue Thumb logo as an incentive for taking the Blue Thumb pledge online or at events.

RWA also hosts a Speakers Bureau. 2009-2011, speaking engagements included the following:

- Northern California Ace Hardware stores on regional water efficiency programs, Home Depot associates on water efficient products, rebates, and Water Awareness Month, LOWE's stores throughout the region on water efficient products, rebates, and Water Awareness Month promotion, Rainbird Training Academy on local efforts of AB1881, UC Davis WaterWise Symposium on Blue Thumb campaign and local efforts of AB1881, Association of Professional Landscape Architects on local landscape programs, Association of Professional Landscape Designers on local efforts of AB1881 and River Friendly Turf Management Workshop on local agency landscape efficiency rebate program.
- California Green Summit on future green jobs in the water industry, River Friendly Landscaping Homeowner Workshop Series on irrigation efficiency, irrigation controller scheduling, water efficiency in the landscape, Raley Field Turf Management Workshop on RWA programs.
- Department of Water Resources training on local agency implementation of AB1881, California Association of Public Information Officials state conference about Blue Thumb Neighbors.

In the future, RWA will continue to work with the District on a regional outreach message appropriate for the current year's water outlook. RWA will continue to provide key messages and update water provider tools as necessary, track the number of media stories (or hits), interviews conducted, and number of impressions of audience viewings.

The District augments the regional effort by using RWA-developed and the District developed articles in semiannual newsletters and bill inserts. The District conservation group is enthusiastic about its presence at community events such as the Elk Grove Pumpkin Festival and making face-to-face contacts with the community through homeowner association presentations and customer initiated contacts.

After the first year of the Blue Thumb program, results were tracked for 2010 and include the following outcomes:

- Nearly 30 earned media hits covering topics such as the campaign announcement/search for residents to participate, campaign launch, Home Depot events/Water Awareness Month and Blue Thumb Web site pledge.
- Interviews on multiple public service radio programs, including Clear Channel (where the host even took the Blue Thumb pledge on the air) which broadcast on five local stations and family radio, which aired on two local stations.
- Nearly 3.9 million impressions via paid television advertising and 6.3 million impressions via paid radio advertising.
- More than 1.2 million impressions for the (no-cost) television public service announcement (worth an estimated \$24,500) and over 3 million impressions for the radio public service announcement (worth an estimated \$96,000).

The general schedule for the regional public information campaign follows the annual calendar with the following seasonal activities:

- Ramping up messaging and strong focus in soliciting media coverage and paid advertising in support of May as Water Awareness Month. Messaging surrounds the traditional spring planting season and checking of irrigation systems as they are turned on and taking the "Blue Thumb Pledge" to lower outdoor water use this season.

- Key messaging hits on the issues of efficient irrigation techniques, avoiding water waste, and lowering peak demands on hot summer days.
- Participating in local Harvest day events and providing efficient landscape irrigation trainings for professionals that focus on selecting more water efficient plants and irrigation equipment, and when the weather cools and rains return, then messaging calls for shutting down irrigation systems for the winter months.

The implementation schedule for 2011-2015 includes plans to continue to promote water conservation through the Regional Water Efficiency Program's outreach program supplemented by the District's own outreach efforts. In addition, the District will continue to support community events similar to those conducted in the past as described above.

The total RWEF annual budget for direct expenses to continue with the regional outreach campaign is planned for 2011-2015 to be \$160,000 each fiscal year. The District pays its share of this program cost.

RWA will conduct an evaluation on a minimum of a bi-annual basis to determine the campaign's effectiveness using the following means:

- Statistically valid post-campaign telephone survey (results compared to 2009 pre-campaign survey responses).
- Tracking of pledges secured both online and by individual RWEF member utility efforts.
- Web site analytics analysis.
- Tracking water provider materials that carry Blue Thumb messages.
- Media and online mentions and content analysis of hits.
- Impressions for television and radio advertising and public service announcements
- Impressions for partner activities (such as the Sacramento River Cats).
- For the Community Based Social Marketing (CBSM) program: Internet/written surveys (and potentially informal phone interviews) and water use data tracking.

In the future, RWA will conduct another random survey of Sacramento area residents, which will seek to measure if the following goals for the campaign are being achieved:

- Increase the number of residents willing to utilize various yard design and maintenance practices promoted by the campaign.
- Increase the number of residents who say they have adopted yard design and maintenance practices promoted by the campaign.
- Increase the number of residents that have seen, read or heard news stories, public information, advertisement or other messages regarding water efficiency in the past six months.
- Increase the number of residents naming key messages promoted by the campaign in verbatim responses about the advertising or messages they heard.

Based on the results of the post-campaign survey, RWA is expecting to measure the success of this DMM based on the metrics listed above. If the campaign is not proving effective based on these metrics, then RWA will update or revise the campaign, or if necessary begin a new campaign, to garner more customer participation.

Estimated Water Savings for the Regional Blue Thumb Campaign

There is no current method in the industry to evaluate water savings for this program. The popularity of public programs can be measured through the acceptance of brochures and attendance at various water conservation related events, etc.

Education Programs 2.20 School Education Programs (Former BMP 8)

The District fully participates in the RWEF School Education Program. The RWEF program has focused mainly on K-8 programs. RWEF has continued to use the legacy Sacramento Bee Newspapers in Education (NIE), now called Media in Education (MIE) program that originated back in the mid-1990s as part of the Sacramento Area Water Works Association (SAWWA) program in order to meet the baseline requirements for school education outreach. It includes an annual Water Conservation Pledge and Quiz Contest. It is estimated that a total of 33,932 students have been educated since inception.

Historically between 2004 and 2008, RWEF also sponsored the Great Water Mystery School Assembly program that was co-funded with the Sacramento Stormwater Quality Partnership. Over the years, a total of 60,208 students in Grades 3-6 were educated about benefits of better water management practices at home to save water resources and reduced polluted stormwater runoff.

In FY 2011, RWEF embarked on a new program, in partnership with the Bureau of Reclamations' American River Water Education Center, and the Water Education Foundation to include sponsorship of Project WET (Water Education for Teachers) school teacher workshops. A total of 25 teachers attended the first workshop in April 2011.

The RWEF is in the process of evaluating whether a more effective school program that will reach more students is warranted. Working with the RWEF members and local educators, RWA plans to: (1) evaluate the existing program; (2) evaluate the success of other programs in the region and around the state; (3) develop objectives and a target audience (e.g., grade level); (4) materials; and (5) an implementation strategy for the school education program into the future.

The current marketing strategy for the Sacramento Bee MIE program is both email to teachers that have participated in the past and direct mail campaign to local schools for the whole series of topics throughout the year. Each teacher decides on which week's topics to participate in that cover a wide range of education topics including RWEF's sponsored week of "Be Water Smart News, Water the Never Ending Story."

The Water Education for Teachers Project (Project WET) workshops are marketed to teachers and environmental educators by the local California Regional Environmental Education Community (CREEC) Network representatives, to water educators through Project WET newsletters, and by RWA through direct mail and contacts with local school administrations and teachers.

RWA continues to track by a variety of means participation in the regional school education program. For the Sacramento Bee MIE Program, the metrics tracked annually include:

- Number of teacher guides downloaded
- Number of schools
- Number of classrooms
- Number of students reached
- Number of students participating in the pledge (Grades K-3) or contest (Grades 4-8) entries received by the Sacramento Bee
- Comments back from teachers

For the Project WET teacher training program, the following metrics are also tracked annually:

- Number of teachers attending workshops

- Which school districts
- Number of schools
- Estimated number of students reached
- Teacher workshop evaluations

RWEP plans to continue with regional school education program activities along with distribution of school-age educational materials and Project WET Workshops. The school schedule dictates when participation in the RWEP school education program occurs and follows the months that schools are in session from August to the following May. The annual budgeted direct expenses for the regional school education program have been \$20,000 and will continue at this level for the foreseeable future.

Based on the annual results of the participation levels tracked, RWA is expecting to measure the success of this DMM based on the metrics listed above. As described above, RWA is currently conducting an evaluation process of the existing regional school education program, which includes interviews of local school teachers at a variety of grade levels. The program will continue as currently planned until the evaluation process is complete and the program's content and/or implementation strategy may be revised in the future.

It is unknown what changes in water using behavior may arise from student and educators participation in the regional school education program. The effectiveness of the program can be determined by the amount of voluntary classroom and school participation.

6.1.2 Programmatic BMPs

This section provides a description of the programmatic BMP conservation programs being implemented by the District. Unlike some of the Foundational BMPs, Programmatic BMPs have demonstrated measurable water savings. Because the District has selected the follow the CUWCC GPCD track, implementation of programmatic BMPs is optional.

Residential 3.11 and 3.22 Residential Assistance Program (Former BMPs 1 and 2)

Water survey programs for single-family residential and multifamily residential connections consist of water audits conducted by trained auditors, water use reviews, and surveys of past program participants. Auditors provide customers with information packets that include the evaluation results, low flow showerheads and aerators, and water savings recommendations.

Residential 3.20 Landscape Water Survey (Former BMP 1)

Landscape water audits are performed primarily for single-family residential connections. (Multifamily residential connections are covered under BMP 5.) Audits are performed by certified landscape auditors. Auditors assess irrigation systems – including irrigation timers – to ensure they're functioning properly, and identify water use problems such as leaks. They develop irrigation schedules based on the irrigation system's performance and landscape needs. Auditors recommend repairs, provide instruction in landscape principles, irrigation timer use and, when appropriate, meter reading. Customers are given a copy of the evaluation and water saving devices such as hose timers and shut off hose nozzles. The District provides an \$850 incentive for qualifying customers who update irrigation controllers with weather based controllers.

Residential 3.30 High-efficiency Clothes Washing Machine Financial Incentive Programs (Former BMP 6)

In partnership with the Sacramento Municipal Utility District (SMUD), the District offers a \$75 rebate on high-efficiency machines that meet the Water Sense specifications.

Residential 3.40 WaterSense Specification Toilets (Former BMP 14)

The District is not currently implementing this BMP as it is not cost effective to the District.

Commercial, Industrial, and Institutional 4.00 Commercial, Industrial, and Institutional (Former BMP 9)

The District has developed a conservation program for CII accounts that includes water audits targeted to the top water users. The program does not include surveys of past program participants to determine if audit recommendations were implemented. The program includes incentives related to the use of efficient water-use technologies. The District provides high-velocity, high-performance pre-rinse nozzles free of charge in restaurants, which reduces the amount of hot water used to pre-rinse dishes for the dishwasher. The District has a CII toilet replacement rebate program, and offers rebates on water brooms and air cooled ice machines.

Landscape 5.00 Landscape (Former BMP 5)

The landscape conservation program consists of identifying all CII accounts that have one or more acre of irrigated landscape. Certified landscape auditors assess irrigation systems, including irrigation timers, to ensure they are functioning properly, and identify water use problems such as leaks. They develop irrigation schedules based on the irrigation system's performance and landscape needs. Auditors recommend repairs, provide instruction in landscape principles, irrigation timer use and, when appropriate, meter reading.

The District develops water budgets with financial incentives to encourage customers to irrigate at no more than 70% of reference evapotranspiration. The District provides an \$850 incentive for qualifying customers who update irrigation controllers with weather based controllers.

6.2 Water Use Reduction Plan

The District will have to meet the 2020 GPCD target described in Section 3 of this Plan. A combination of the installation of low flow devices, reduction of distribution system and customer leaks, conversion to metered rates, implementation of outdoor landscaping measures, and price elasticity impacts will maintain or reduce per capita demands. The priority will be focused on measures that reduce long term maximum day and peak hour demands that would benefit cost-effective infrastructure planning efforts. Focusing the District's water conservation program on reducing peak demands would provide the best benefits by reducing summer water supply capacity needs and the use of higher cost peak period energy. A continuation of the District's present conservation measures, programs, and policies will help the District to maintain or reduce current per capita water use.

The District's per capita water use has been declining since the year 2004 to the level where the previous three-year average (2008 through 2010) is approximately at the 2020 GPCD target. The District's past and current water conservation program is in part the reason that the District's GPCD water use has dropped in recent years. It is likely that the District's per capita water use will continue to decline as additional meters are installed, as customers replace old plumbing fixtures, and as the District replaces old water mains. Over time, efficiency standards have increased the required efficiency of indoor appliances and facilities including dishwashers, clothes washers, showerheads, and toilets. Currently there are two chaptered regulations (Assembly Bill (AB) 715(Laird 2007) and Senate Bill (SB) 407 (Padilla 2009)) as well as the CALGreen Building Standards that have impacts on efficiency standards. In addition, retrofit on resale requirements become effective in 2016 and 2017.

Section 7

Water Supply versus Demand Comparison

This section provides a comparison of projected water supplies and demand.

7.1 Current and Projected Water Supplies vs. Demand

This section provides a comparison of normal, single-dry, and multiple dry water year supply and demand for the District. Water demands are addressed in Section 3, water supply is addressed in Section 4, and recycled water supply is addressed in Section 5 of this Plan.

7.1.1 Projected Normal Year Water Supplies vs. Demand

The normal water year projected water supplies are compared to the projected demand for the District in Table 7-1.

Table 7-1. (DWR Table 32) Normal Year Water Supply and Demand Comparison, ac-ft/yr					
	2015	2020	2025	2030	2035
Supply totals ^(a)	70,541	70,541	53,541	53,541	53,541
Demand totals ^(b)	39,669	40,491	41,331	42,190	43,067
Difference (supply minus demand)	30,872	30,050	12,210	11,351	10,474
Difference as a percent of supply	44%	43%	23%	21%	20%
Difference as a percent of demand	78%	74%	30%	27%	24%

^(a)Supply data from Table 4-6.

^(b)Demand data from Table 3-12

7.1.2 Projected Single-Dry Year Water Supplies vs. Demand

The projected water supplies are compared to the demands for a single dry year for the District in Table 7-2.

Table 7-2. (DWR Table 33) Single-Dry Year Water Supply and Demand Comparison, ac-ft/yr					
	2015	2020	2025	2030	2035
Supply totals ^(a)	43,067	43,067	43,067	43,067	43,067
Demand totals ^(b)	39,669	40,491	41,331	42,190	43,067
Difference (supply minus demand)	3,398	2,576	1,736	877	0
Difference as a percent of supply	8%	6%	4%	2%	0%
Difference as a percent of demand	9%	6%	4%	2%	0%

^(a)Supply data from Table 4-13.

^(b)Demand data from Table 3-12

7.1.3 Projected Multiple-Dry Year Water Supplies vs. Demand

The projected water supplies are compared to the demands for multiple dry years for the District in Tables 7-3.

Table 7-3. (DWR Table 34) Multiple-Dry Year Events Water Supply and Demand Comparison, ac-ft/yr						
		2015	2020	2025	2030	2035
Multiple dry year - first year supply	Supply totals^(a)	46,567	46,567	46,567	46,567	46,567
	Demand totals^(b)	39,669	40,491	41,331	42,190	43,067
	Difference	6,898	6,076	5,236	4,377	3,500
	Difference as % of supply	15%	13%	11%	9%	8%
	Difference as % of demand	17%	15%	13%	10%	8%
Multiple dry year - second year supply	Supply totals^(a)	46,567	46,567	46,567	46,567	46,567
	Demand totals^(b)	39,669	40,491	41,331	42,190	43,067
	Difference	6,898	6,076	5,236	4,377	3,500
	Difference as % of supply	15%	13%	11%	9%	8%
	Difference as % of demand	17%	15%	13%	10%	8%
Multiple dry year - third year supply	Supply totals^(a)	46,567	46,567	46,567	46,567	46,567
	Demand totals^(b)	39,669	40,491	41,331	42,190	43,067
	Difference	6,898	6,076	5,236	4,377	3,500
	Difference as % of supply	15%	13%	11%	9%	8%
	Difference as % of demand	17%	15%	13%	10%	8%

^(a)Supply data from Table 4-13.

^(b)Demand data from Table 3-12

7.2 Water Shortage Expectations

Water shortages are not projected because the groundwater supply can meet demands during the dry years when minimal surface water is available. During a dry year, the District would likely receive only minimal surface water supplies. However, groundwater supplies are adequate to meet all demands. Groundwater supply shortages are not expected. With the formation of the Water Forum and SGA, and the implementation of conjunctive use practices, the groundwater supply should be maintained.

Section 8

Water Shortage Contingency Plan

The WFA describes supply scenarios for normal, dry, and conference (drier) years. However, the WFA acknowledges that there may be years where surface water supply is less than even the stipulated decreased diversions from the American River. The District may experience short-term water shortages due to mechanical failures or other circumstances. For these instances, the District has developed a water shortage contingency plan. The District's Water Conservation Regulation No. 15 is included in Appendix H. In addition, the District has an Emergency Response Plan (Sacramento Suburban Water District, 2005) in place to mitigate against the impact of catastrophic emergencies and inconvenience to its customers.

8.1 Stages of Action

The District's water shortage contingency plan is based on five stages as defined in Table 8-1.

Table 8-1. (DWR Table 35) Water Shortage Contingency – Rationing Stages to Address Water Supply Shortages		
Stage	Water Supply Conditions	Percent shortage, %
Normal Water Supply	Supplies available to meet all demands	0
Stage 1 – Water Alert	Probability that supplies will not meet demands	10
Stage 2 – Water Warning	Supplies will not be able to meet expected demands	25
Stage 3 – Water Crisis	Supplies not meeting current demands	50
Stage 4 – Water Emergency	Major failure of a supply, storage, or distribution system	Greater than 50

8.2 Three-Year Minimum Water Supply

The three-year minimum water supply is presented in Section 4 in Table 4-13 (DWR Table 31).

8.3 Catastrophic Supply Interruption Plan

The District has prepared a security vulnerability assessment and maintains an Emergency Response Plan to address responding to catastrophic supply interruptions as well as other emergencies. The District also has standby power available in the form of portable diesel, natural gas and propane generator units. This increases the reliability of supply. The Emergency Response Plan is not included in this document due to security reasons.

The District utilizes an emergency organizational structure and chain of command in response to all emergencies within or affecting its service area. The Emergency Response Plan defines the emergency management positions.

The organizational response is divided into two levels of emergency. The two types of emergencies are categorized as follows:

Site emergency - does not exceed the following criteria:

- Limited to one District facility and
- Incident has no potential for serious impact on the public or
- Incident has no potential for serious impact on water quality/delivery

District emergency - exceeds site emergency criteria:

- Incident affects multiple District facilities or
- Incident has the potential for serious impact on the public or
- Incident has the potential for serious impact on water quality/delivery

The roles and responsibilities of each individual in the emergency organization are defined for both levels of emergency. The following Table 8-2 summarizes the response actions to possible major catastrophes within the District. The Emergency Response Plan provides detailed response actions for each individual possible major catastrophe.

Table 8-2. Preparation Actions for a Catastrophe	
Possible catastrophe	Summary of actions
<ul style="list-style-type: none"> • Earthquake • Fire/explosion • Medical • Flood • Tornado/severe weather • Bomb threat • Hard freeze • Loss of normal water supply • Hazardous material release • Contamination of District water supplies • Terrorist attack 	<p>Command chain is defined that dispatches crews to inspect infrastructure and critical operations. Operations response crews are assigned to monitor system operations and modify as necessary. Communication command chain is defined to coordinate with other local water agencies and emergency response officials as necessary. Criteria and procedures provided in the District's Emergency Response Plan to return system to normal operations including initiating water quality testing when necessary and performing necessary emergency repairs to the system. Plan contains contact information for responsible parties and support services. Water shortage contingency plan stages will be implemented as required by the situation.</p>

8.4 Prohibitions, Consumption Reduction Methods, and Penalties

Mandatory prohibition consumption reduction methods and penalties in the District's water shortage contingency plan are presented in Appendix H and summarized below in Tables 8-3 through 8-5 to conform to the Urban Water Management Plan guidelines.

Table 8-3. (DWR Table 36) Water Shortage Contingency – Mandatory Prohibitions

Prohibitions	Stage When Prohibition is Voluntarily Requested	Stage When Prohibition Becomes Mandatory
Street/sidewalk cleaning	--	Stage normal
Washing cars (residential)	--	Restricted in State normal – Stage 1 (allowed with water saving nozzle) Prohibited starting in Stage 2 (allowed only at commercial establishments with fully recycled water)
Watering lawns/landscapes	--	Restricted in Stage normal – Stage 3(residential) Prohibited (large landscape irrigation/CII customers) Prohibited in Stage 4 (residential)
Irrigation of landscaping during rainfall	--	State normal
Outdoor watering from 12:00 noon to 8:00 pm	Stage normal	Stage 1
Outdoor watering more than 3 days per week and odd/even watering	Stage normal	Stage 1 Stage 2- restricted to no more than two-days/week Stage 3-limited to one day Stage 4-prohibited
Smart irrigation timers set to more than 80% of Sacramento area ET	Stage 1 – 80% Stage 2 – 75% Stage 3 – 70%	
Uncorrected plumbing leaks	--	Stage normal
Gutter flooding	--	Stage normal
No refilling or filling of pools	Stage normal	Restricted in Stage normal - Stage 3 Prohibited in Stage 4
No use of pool/spa cover	Stage normal	
Pools/spas/fountain/ponds/waterways not equipped with recirculation pump and not constructed to be leak proof	--	Stage normal
Conveyer car washes/new commercial laundry systems that do not use recirculation system	--	Stage normal
New or expanded landscaping limited to drought tolerant plantings	Stage 1	Stage 2
Planting of turf or grass	Stage 1	Stage 3
Restaurants serving water to customers	Stage 1 (unless requested)	Stage 2 (unless requested)
No new connections	--	Stage 4

Table 8-4. (DWR Table 37) Water Shortage Contingency – Consumption Reduction Methods

Examples of Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction, Percent
Demand reduction program	Stage 1	10%-50%
Restrict building permits	Stage 4	Not estimated
Restrict for only priority uses	Stage 4	Not estimated
Use prohibitions	Stage normal	Not estimated
Mandatory rationing	Stage 1	10%-50%
Education Program	Stage normal	Not estimated
Irrigation allowed only during off-peak hours	Stage 1	Not estimated

Note: Projected reductions for each consumption reduction method represent the projected total reduction for all actions of the corresponding stage when method takes effect.

Table 8-5. (DWR Table 38) Water Shortage Contingency – Penalties and Charges

Examples of Penalties and Charges	Stage When Penalty Takes Effect
Penalties for not reducing consumption	Stage 2
Termination of service and reconnect fee	Stage 1

8.5 Analysis of Revenue Impacts of Reduced Sales During Shortages

The following Tables 8-6 through 8-7 present the District's analysis of reduced revenues during water shortages. Additional impacts on the District due to reduced revenues may also include impacts to projects such as capital improvement program projects, meters, and main replacement that are dependent on revenues for funding. Tables 8-8 and 8-9 describe the District's proposed measures to overcome revenue and expenditure impacts, respectively.

Table 8-6. Actions and Conditions that Impact Revenues

Type	Anticipated revenue reduction
Reduced sales	55 percent of the District's customers are currently metered. Revenue impacts would occur since the quantity charge portion of the bill to metered customers would experience a reduction. Revenues from metered customers would be reduced. Customers with meters include multi-family, commercial, industrial, irrigation, institutional, and some single family customers.

Table 8-7. Actions and Conditions that Impact Expenditures

Category	Anticipated cost
Increase staff cost	Administration and operations and maintenance expenses for the District would remain the same.
Increased O&M cost	Administration and operations and maintenance expenses for the District would remain the same.
Increased cost of supply	During a water shortage, the District would primarily rely upon its groundwater supply, which is less expensive per acre-ft of supply than the purchase of surface water. This includes the additional cost of electric power to pump groundwater.

Table 8-8. Proposed Measures to Overcome Revenue Impacts

Name of measures	Summary of effects
Rate adjustment	To better address revenue decreases due to demand reductions, the District has developed a new rate structure that includes increased demand charges and pipeline surcharges to cover the fixed costs of operations, capital improvements, and debt service.
Development of reserves	The District has a reserve policy (contingency fund) in place to help offset revenue impacts during times of emergency.

Table 8-9. Proposed Measures to Overcome Expenditure Impacts

Name of measures	Summary of effects
Development of reserves	The District has a reserve policy (contingency fund) in place to help offset expenditure impacts during times of emergency.

8.6 Reduction Measuring Mechanisms

The following Table 8-10 summarizes District's procedures for monitoring its reduction measuring mechanisms for effectiveness.

Table 8-10. Reduction Measuring Mechanisms

Mechanism for determining actual reduction	Type and quality of data expected
Water production meters	Daily production will be monitored with the water production meters on a daily or weekly basis, dependant upon the severity of the water shortage.
Customer records	As customers become metered, their water usage will be monitored when necessary.

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Appendix A: Documentation of City/County Notification

General Manager

Robert S. Roscoe, P. E.



Board of Directors

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Kevin M. Thomas

March 14, 2011

Mr. Mike Finnegan, Area Manager
Bureau of Reclamation
Central California Area Office
7794 Folsom Dam Road
Sacramento, CA 95630-1799

Subject: Notice of Preparation of Urban Water Management Plan

Dear Mr. Finnegan:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

The District will make proposed revisions to the Plan available for public review and will hold a public hearing later this year.

Should you have any questions about the Plan please contact:

Warren Jung
Sacramento Suburban Water District
3701 Marconi Avenue, Suite 100
Sacramento, CA 95821
Tel: 916.679.2896
Fax: 916.332.6215
E-mail: wjung@sswd.org

Very truly yours;
Sacramento Suburban Water District

Warren Jung, PE
Manager Engineering Services

General Manager

Robert S. Roscoe, P. E.



Board of Directors

President - Neil W. Schild
Vice President - Thomas C. Fellenz
Frederick A. Gayle
Todd L. Robison
Kevin M. Thomas

March 14, 2011

Mr. Andy Soule, General Manager
California American Water Company
4701 Beloit Drive
Sacramento, CA 95838

Subject: Notice of Preparation of Urban Water Management Plan

Dear Mr. Soule:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

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Kevin M. Thomas

March 14, 2011

Mr. Robert Churchill, General Manager
Citrus Heights Water District
6230 Sylvan Road
Citrus Heights, CA 95610

Subject: Notice of Preparation of Urban Water Management Plan

Dear Mr. Churchill:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

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March 14, 2011

Mr. Jim Peifer, PE
City of Sacramento, Dept of Utilities
1395 35th Street
Sacramento, CA 95822

Subject: Notice of Preparation of Urban Water Management Plan

Dear Mr. Peifer:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

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Kevin M. Thomas

March 14, 2011

Ms. Judy Robinson
County of Sacramento
Municipal Services District
827 7th Street, Room 230
Sacramento, CA 95814

Subject: Notice of Preparation of Urban Water Management Plan

Dear Ms. Robinson:

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Kevin M. Thomas

March 14, 2011

Mr. Steve Nugent, General Manager
Carmichael Water District
7837 Fair Oaks Boulevard
Carmichael, CA 95608

Subject: Notice of Preparation of Urban Water Management Plan

Dear Mr. Nugent:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

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Kevin M. Thomas

March 14, 2011

Ms. Debra Sedwick, General Manager
Del Paso Manor Water District
4268 Lusk Drive
Sacramento, CA 95864

Subject: Notice of Preparation of Urban Water Management Plan

Dear Ms. Sedwick:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

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Kevin M. Thomas

March 14, 2011

Mr. Walt Sadler
City of Folsom
Department of Utilities
50 Natoma Street
Folsom, CA 95630

Subject: Notice of Preparation of Urban Water Management Plan

Dear Mr. Sadler:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

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Kevin M. Thomas

March 14, 2011

Mr. Tom Gray, General Manager
Fair Oaks Water District
10317 Fair Oaks Boulevard
Fair Oaks, CA 95628

Subject: Notice of Preparation of Urban Water Management Plan

Dear Mr. Gray:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

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Kevin M. Thomas

March 14, 2011

Mr. Paul Schubert, Operations Manager
Golden State Water Company
3035 Prospect Park Drive, #60
Rancho Cordova, CA 95670-6070

Subject: Notice of Preparation of Urban Water Management Plan

Dear Mr. Schubert:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

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Kevin M. Thomas

March 14, 2011

Mr. Alan Hersh
McClellan Business Park
3140 Peacekeeper Way
McClellan, CA 95652

Subject: Notice of Preparation of Urban Water Management Plan

Dear Mr. Hersh:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

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Frederick A. Gayle
Todd L. Robison
Kevin M. Thomas

March 14, 2011

Mr. David Breninger, General Manager
Placer County Water Agency
P. O. Box 6570
Auburn, CA 95604

Subject: Notice of Preparation of Urban Water Management Plan

Dear Mr. Breninger:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

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General Manager

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Kevin M. Thomas

March 14, 2011

General Manager
Rio Linda Elverta Community Water District
1730 L. Street
Rio Linda, CA 95673

Subject: Notice of Preparation of Urban Water Management Plan

Gentlemen:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

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General Manager

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Kevin M. Thomas

March 14, 2011

Mr. Derek Whitehead
City of Roseville
Environmental Utilities
2005 Hilltop Circle
Roseville, CA 95747

Subject: Notice of Preparation of Urban Water Management Plan

Dear Mr. Whitehead:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

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Kevin M. Thomas

March 14, 2011

Mr. Rob Swartz
Regional Water Authority/Sacramento Groundwater Authority
5620 Birdcage Street, Suite 180
Citrus Heights, CA 95610

Subject: Notice of Preparation of Urban Water Management Plan

Dear Mr. Swartz:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

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Kevin M. Thomas

March 14, 2011

Ms. Shauna Lorance, General Manager
San Juan Water District
9935 Auburn Folsom Road
Granite Bay, CA 95746

Subject: Notice of Preparation of Urban Water Management Plan

Dear Ms. Lorance:

The Urban Water Management Plan Act requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and is under review and will be revised as required.

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Kevin M. Thomas

March 14, 2011

Sacramento Regional County Sanitation District
10060 Goethe Road
Sacramento, CA 95827

Subject: Notice of Preparation of Urban Water Management Plan

Gentlemen:

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April 20, 2011

Mr. Andy Soule, General Manager
California American Water Company
4701 Beloit Drive
Sacramento, CA 95838

Subject: Urban Water Management Plan

Dear Mr. Soule:

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Copies of the Plan can be obtained through the District's web site at sswd.org under Plans and Reports. Written comments may be sent to:

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Should you have questions, please call me at 916.679.2896. Thank you.

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Kevin M. Thomas

April 20, 2011

Mr. Tom Gray, General Manager
Fair Oaks Water District
10317 Fair Oaks Boulevard
Fair Oaks, CA 95628

Subject: Urban Water Management Plan

Dear Mr. Gray:

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April 20, 2011

Mr. Walt Sadler
City of Folsom
Department of Utilities
50 Natoma Street
Folsom, CA 95630

Subject: Urban Water Management Plan

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April 20, 2011

Ms. Debra Sedwick, General Manager
Del Paso Manor Water District
4268 Lusk Drive
Sacramento, CA 95864

Subject: Urban Water Management Plan

Dear Ms. Sedwick:

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April 20, 2011

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Carmichael Water District
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Subject: Urban Water Management Plan

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April 20, 2011

Ms. Judy Robinson
County of Sacramento
Municipal Services District
827 7th Street, Room 230
Sacramento, CA 95814

Subject: Urban Water Management Plan

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April 20, 2011

Mr. Jim Peifer, PE
City of Sacramento, Dept of Utilities
1395 35th Street
Sacramento, CA 95822

Subject: Urban Water Management Plan

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Sacramento, CA 95821
E-mail : wjung@sswd.org

Should you have questions, please call me at 916.679.2896. Thank you.

Very truly yours;
Sacramento Suburban Water District

Warren Jung, PE
Manager Engineering Services

General Manager

Robert S. Roscoe, P. E.



Board of Directors

President - Neil W. Schild
Vice President - Thomas C. Fellenz
Frederick A. Gayle
Todd L. Robison
Kevin M. Thomas

April 20, 2011

Mr. Kevin Becker
City of Citrus Heights
6237 Fountain Square
Citrus Heights, CA 95621

Subject: Urban Water Management Plan

Dear Mr. Becker:

The Urban Water Management Plan Act (Act) requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and has been updated per requirements of the Act.

The District has completed preparation of a DRAFT Plan. The Plan is now being presented for public review and comment. The District has scheduled a May 16, 2011 public hearing to receive comments on the Plan. The meeting is at the District's Administrative Offices, 3701 Marconi Avenue, Suite 100, Sacramento, California. The meeting will start at 6:30PM. The District will receive written comments up to the end of the public hearing on May 16th.

Copies of the Plan can be obtained through the District's web site at sswd.org under Plans and Reports. Written comments may be sent to:

Warren Jung, PE
Sacramento Suburban Water District
3701 Marconi Avenue, Suite 100
Sacramento, CA 95821
E-mail : wjung@sswd.org

Should you have questions, please call me at 916.679.2896. Thank you.

Very truly yours;
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Board of Directors

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Frederick A. Gayle
Todd L. Robison
Kevin M. Thomas

April 20, 2011

Mr. Robert Churchill, General Manager
Citrus Heights Water District
6230 Sylvan Road
Citrus Heights, CA 95610

Subject: Urban Water Management Plan

Dear Mr. Churchill:

The Urban Water Management Plan Act (Act) requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and has been updated per requirements of the Act.

The District has completed preparation of a DRAFT Plan. The Plan is now being presented for public review and comment. The District has scheduled a May 16, 2011 public hearing to receive comments on the Plan. The meeting is at the District's Administrative Offices, 3701 Marconi Avenue, Suite 100, Sacramento, California. The meeting will start at 6:30PM. The District will receive written comments up to the end of the public hearing on May 16th.

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Warren Jung, PE
Sacramento Suburban Water District
3701 Marconi Avenue, Suite 100
Sacramento, CA 95821
E-mail : wjung@sswd.org

Should you have questions, please call me at 916.679.2896. Thank you.

Very truly yours;
Sacramento Suburban Water District

Warren Jung, PE
Manager Engineering Services

General Manager

Robert S. Roscoe, P. E.



Board of Directors

President - Neil W. Schild
Vice President - Thomas C. Fellenz
Frederick A. Gayle
Todd L. Robison
Kevin M. Thomas

April 20, 2011

Mr. Paul Schubert, Operations Manager
Golden State Water Company
3035 Prospect Park Drive, #60
Rancho Cordova, CA 95670-6070

Subject: Urban Water Management Plan

Dear Mr. Schubert:

The Urban Water Management Plan Act (Act) requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and has been updated per requirements of the Act.

The District has completed preparation of a DRAFT Plan. The Plan is now being presented for public review and comment. The District has scheduled a May 16, 2011 public hearing to receive comments on the Plan. The meeting is at the District's Administrative Offices, 3701 Marconi Avenue, Suite 100, Sacramento, California. The meeting will start at 6:30PM. The District will receive written comments up to the end of the public hearing on May 16th.

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Warren Jung, PE
Sacramento Suburban Water District
3701 Marconi Avenue, Suite 100
Sacramento, CA 95821
E-mail : wjung@sswd.org

Should you have questions, please call me at 916.679.2896. Thank you.

Very truly yours;
Sacramento Suburban Water District

Warren Jung, PE
Manager Engineering Services

General Manager

Robert S. Roscoe, P. E.



Board of Directors

President - Neil W. Schild
Vice President - Thomas C. Fellenz
Frederick A. Gayle
Todd L. Robison
Kevin M. Thomas

April 20, 2011

Sacramento Regional County Sanitation District
10060 Goethe Road
Sacramento, CA 95827

Subject: Urban Water Management Plan

Gentlemen:

The Urban Water Management Plan Act (Act) requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and has been updated per requirements of the Act.

The District has completed preparation of a DRAFT Plan. The Plan is now being presented for public review and comment. The District has scheduled a May 16, 2011 public hearing to receive comments on the Plan. The meeting is at the District's Administrative Offices, 3701 Marconi Avenue, Suite 100, Sacramento, California. The meeting will start at 6:30PM. The District will receive written comments up to the end of the public hearing on May 16th.

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Warren Jung, PE
Sacramento Suburban Water District
3701 Marconi Avenue, Suite 100
Sacramento, CA 95821
E-mail : wjung@sswd.org

Should you have questions, please call me at 916.679.2896. Thank you.

Very truly yours;
Sacramento Suburban Water District

Warren Jung, PE
Manager Engineering Services

General Manager

Robert S. Roscoe, P. E.



Board of Directors

President - Neil W. Schild
Vice President - Thomas C. Fellenz
Frederick A. Gayle
Todd L. Robison
Kevin M. Thomas

April 20, 2011

Ms. Shauna Lorance, General Manager
San Juan Water District
9935 Auburn Folsom Road
Granite Bay, CA 95746

Subject: Urban Water Management Plan

Dear Ms. Lorance:

The Urban Water Management Plan Act (Act) requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and has been updated per requirements of the Act.

The District has completed preparation of a DRAFT Plan. The Plan is now being presented for public review and comment. The District has scheduled a May 16, 2011 public hearing to receive comments on the Plan. The meeting is at the District's Administrative Offices, 3701 Marconi Avenue, Suite 100, Sacramento, California. The meeting will start at 6:30PM. The District will receive written comments up to the end of the public hearing on May 16th.

Copies of the Plan can be obtained through the District's web site at sswd.org under Plans and Reports. Written comments may be sent to:

Warren Jung, PE
Sacramento Suburban Water District
3701 Marconi Avenue, Suite 100
Sacramento, CA 95821
E-mail : wjung@sswd.org

Should you have questions, please call me at 916.679.2896. Thank you.

Very truly yours;
Sacramento Suburban Water District

Warren Jung, PE
Manager Engineering Services

General Manager

Robert S. Roscoe, P. E.



Board of Directors

President - Neil W. Schild
Vice President - Thomas C. Fellenz
Frederick A. Gayle
Todd L. Robison
Kevin M. Thomas

April 20, 2011

Mr. Rob Swartz
Regional Water Authority/Sacramento Groundwater Authority
5620 Birdcage Street, Suite 180
Citrus Heights, CA 95610

Subject: Urban Water Management Plan

Dear Mr. Swartz:

The Urban Water Management Plan Act (Act) requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and has been updated per requirements of the Act.

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Warren Jung, PE
Sacramento Suburban Water District
3701 Marconi Avenue, Suite 100
Sacramento, CA 95821
E-mail : wjung@sswd.org

Should you have questions, please call me at 916.679.2896. Thank you.

Very truly yours;
Sacramento Suburban Water District

Warren Jung, PE
Manager Engineering Services

General Manager

Robert S. Roscoe, P. E.



Board of Directors

President - Neil W. Schild
Vice President - Thomas C. Fellenz
Frederick A. Gayle
Todd L. Robison
Kevin M. Thomas

April 20, 2011

Mr. Derek Whitehead
City of Roseville
Environmental Utilities
2005 Hilltop Circle
Roseville, CA 95747

Subject: Urban Water Management Plan

Dear Mr. Whitehead:

The Urban Water Management Plan Act (Act) requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and has been updated per requirements of the Act.

The District has completed preparation of a DRAFT Plan. The Plan is now being presented for public review and comment. The District has scheduled a May 16, 2011 public hearing to receive comments on the Plan. The meeting is at the District's Administrative Offices, 3701 Marconi Avenue, Suite 100, Sacramento, California. The meeting will start at 6:30PM. The District will receive written comments up to the end of the public hearing on May 16th.

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Warren Jung, PE
Sacramento Suburban Water District
3701 Marconi Avenue, Suite 100
Sacramento, CA 95821
E-mail : wjung@sswd.org

Should you have questions, please call me at 916.679.2896. Thank you.

Very truly yours;
Sacramento Suburban Water District

Warren Jung, PE
Manager Engineering Services

General Manager

Robert S. Roscoe, P. E.



Board of Directors

President - Neil W. Schild
Vice President - Thomas C. Fellenz
Frederick A. Gayle
Todd L. Robison
Kevin M. Thomas

April 20, 2011

General Manager
Rio Linda Elverta Community Water District
1730 L. Street
Rio Linda, CA 95673

Subject: Urban Water Management Plan

Gentlemen:

The Urban Water Management Plan Act (Act) requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and has been updated per requirements of the Act.

The District has completed preparation of a DRAFT Plan. The Plan is now being presented for public review and comment. The District has scheduled a May 16, 2011 public hearing to receive comments on the Plan. The meeting is at the District's Administrative Offices, 3701 Marconi Avenue, Suite 100, Sacramento, California. The meeting will start at 6:30PM. The District will receive written comments up to the end of the public hearing on May 16th.

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Warren Jung, PE
Sacramento Suburban Water District
3701 Marconi Avenue, Suite 100
Sacramento, CA 95821
E-mail : wjung@sswd.org

Should you have questions, please call me at 916.679.2896. Thank you.

Very truly yours;
Sacramento Suburban Water District

Warren Jung, PE
Manager Engineering Services

General Manager

Robert S. Roscoe, P. E.



Board of Directors

President - Neil W. Schild
Vice President - Thomas C. Fellenz
Frederick A. Gayle
Todd L. Robison
Kevin M. Thomas

April 20, 2011

Mr. David Breninger, General Manager
Placer County Water Agency
P. O. Box 6570
Auburn, CA 95604

Subject: Urban Water Management Plan

Dear Mr. Breninger:

The Urban Water Management Plan Act (Act) requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and has been updated per requirements of the Act.

The District has completed preparation of a DRAFT Plan. The Plan is now being presented for public review and comment. The District has scheduled a May 16, 2011 public hearing to receive comments on the Plan. The meeting is at the District's Administrative Offices, 3701 Marconi Avenue, Suite 100, Sacramento, California. The meeting will start at 6:30PM. The District will receive written comments up to the end of the public hearing on May 16th.

Copies of the Plan can be obtained through the District's web site at sswd.org under Plans and Reports. Written comments may be sent to:

Warren Jung, PE
Sacramento Suburban Water District
3701 Marconi Avenue, Suite 100
Sacramento, CA 95821
E-mail : wjung@sswd.org

Should you have questions, please call me at 916.679.2896. Thank you.

Very truly yours;
Sacramento Suburban Water District

Warren Jung, PE
Manager Engineering Services

General Manager

Robert S. Roscoe, P. E.



Board of Directors

President - Neil W. Schild
Vice President - Thomas C. Fellenz
Frederick A. Gayle
Todd L. Robison
Kevin M. Thomas

April 20, 2011

Ms. Sharon Wilcox, General Manager
Orange Vale Water Company
9031 Central Avenue
Orange Vale, CA 95662-4196

Subject: Urban Water Management Plan

Dear Ms. Wilcox:

The Urban Water Management Plan Act (Act) requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and has been updated per requirements of the Act.

The District has completed preparation of a DRAFT Plan. The Plan is now being presented for public review and comment. The District has scheduled a May 16, 2011 public hearing to receive comments on the Plan. The meeting is at the District's Administrative Offices, 3701 Marconi Avenue, Suite 100, Sacramento, California. The meeting will start at 6:30PM. The District will receive written comments up to the end of the public hearing on May 16th.

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Warren Jung, PE
Sacramento Suburban Water District
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Sacramento, CA 95821
E-mail : wjung@sswd.org

Should you have questions, please call me at 916.679.2896. Thank you.

Very truly yours;
Sacramento Suburban Water District

Warren Jung, PE
Manager Engineering Services

General Manager

Robert S. Roscoe, P. E.



Board of Directors

President - Neil W. Schild
Vice President - Thomas C. Fellenz
Frederick A. Gayle
Todd L. Robison
Kevin M. Thomas

April 20, 2011

Mr. Alan Hersh
McClellan Business Park
3140 Peacekeeper Way
McClellan, CA 95652

Subject: Urban Water Management Plan

Dear Mr. Hersh:

The Urban Water Management Plan Act (Act) requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and has been updated per requirements of the Act.

The District has completed preparation of a DRAFT Plan. The Plan is now being presented for public review and comment. The District has scheduled a May 16, 2011 public hearing to receive comments on the Plan. The meeting is at the District's Administrative Offices, 3701 Marconi Avenue, Suite 100, Sacramento, California. The meeting will start at 6:30PM. The District will receive written comments up to the end of the public hearing on May 16th.

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3701 Marconi Avenue, Suite 100
Sacramento, CA 95821
E-mail : wjung@sswd.org

Should you have questions, please call me at 916.679.2896. Thank you.

Very truly yours;
Sacramento Suburban Water District

Warren Jung, PE
Manager Engineering Services

General Manager

Robert S. Roscoe, P. E.



Board of Directors

President - Neil W. Schild
Vice President - Thomas C. Fellenz
Frederick A. Gayle
Todd L. Robison
Kevin M. Thomas

April 20, 2011

Mr. Mike Finnegan, Area Manager
Bureau of Reclamation
Central California Area Office
7794 Folsom Dam Road
Sacramento, CA 95630-1799

Subject: Urban Water Management Plan

Dear Mr. Finnegan:

The Urban Water Management Plan Act (Act) requires the Sacramento Suburban Water District (District) to update its Urban Water Management Plan (Plan) by July 1, 2011. The District's current plan was last updated in 2005 and has been updated per requirements of the Act.

The District has completed preparation of a DRAFT Plan. The Plan is now being presented for public review and comment. The District has scheduled a May 16, 2011 public hearing to receive comments on the Plan. The meeting is at the District's Administrative Offices, 3701 Marconi Avenue, Suite 100, Sacramento, California. The meeting will start at 6:30PM. The District will receive written comments up to the end of the public hearing on May 16th.

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Sacramento, CA 95821
E-mail : wjung@sswd.org

Should you have questions, please call me at 916.679.2896. Thank you.

Very truly yours;
Sacramento Suburban Water District

Warren Jung, PE
Manager Engineering Services

Appendix B: Notice of Public Hearing

CERTIFICATION

I, Warren Jung, Manager Engineering Services of Sacramento Suburban Water District, hereby certify that on the date and at the places hereafter designated, I had posted the attached **Sacramento Suburban Water District Notice of Public Hearing on Urban Water Management Plan (Plan) Update** and placed copies of the Plan for review and comment.

- 1. PLACE: Arcade Community Library, 2443 Marconi Avenue
DATE: April 21, 2011
- 2. PLACE: Arden Community Library, 891 Watt Avenue
DATE: April 21, 2011
- 3. PLACE: North Highlands/Antelope Library, 4235 Antelope Road
DATE: April 21, 2011
- 4. PLACE: Sacramento Suburban Water District, 3701 Marconi Avenue
DATE: April 19, 2011

I certify under penalty of perjury that the foregoing is true and correct.

DATE: April 21, 2011



WARREN JUNG
Manager Engineering Services

The Sacramento Bee

P.O. Box 15779 • 2100 Q Street • Sacramento, CA 95852

**SACRAMENTO SUBURBAN WATER
3701 MARCONI AVE
SACRAMENTO, CA 95821**

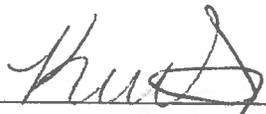
DECLARATION OF PUBLICATION
(C.C.P. 2015.5)

COUNTY OF SACRAMENTO
STATE OF CALIFORNIA

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 printer and principal clerk of the publisher of The Sacramento Bee, printed and published in the City of Sacramento, County of Sacramento, State of California, daily, for which said newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Sacramento, State of California, under the date of September 26, 1994, Action No. 379071; that the notice of which the annexed is a printed copy, has been published in each issue thereof and not in any supplement thereof on the following dates, to wit:

April 21, 28, 2011

I certify (or declare) under penalty of perjury that the foregoing is true and correct and that this declaration was executed at Sacramento, California, on **April 28, 2011**



(Signature)

NO 431 PUBLIC NOTICE

**SACRAMENTO SUBURBAN WATER DISTRICT
NOTICE OF PUBLIC HEARING ON
URBAN WATER MANAGEMENT PLAN UPDATE**

NOTICE IS HERBY GIVEN THAT PURSUANT TO THE PROVISIONS OF Section 10621 of the Water Code, Sacramento Suburban Water District (SSWD) has prepared an Urban Water Management Plan (UWMP) and that the District intends to adopt said Plan as a result of said preparation.

The UWMP brings together important information on water supply and usage, recycled water and conservation programs at SSWD. SSWD is updating its 2005 UWMP to reflect current conditions and legislation including requirements established in SBx7-7, Water Conservation Act of 2009. The UWMP presents SSWD's efforts to promote efficient water use consistent with the California Urban Water Management Planning Act as part of the California Water Code.

The Plan and the proposed changes and amendments are available for public inspection at the District Administrative Office located at 3701 Marconi Avenue, Suite 100, Sacramento, California. Copies of the Plan can be downloaded from sswd.org or copies may be requested by contacting Warren Jung by email at wjung.wjung@sswd.org or by mail at Sacramento Suburban Water District, 3701 Marconi Avenue, Suite 100; Sacramento California 95821. In addition, copies of the Plan are available for public inspection at the following public libraries: Arcade Library located at 2443 Marconi Avenue, Sacramento, California, Arden Community Library located at 891 Watt Avenue, Sacramento, California, North Highlands/Antelope Library at 4235 Antelope Road, Antelope, CA.

NOTICE IS FURTHER GIVEN that a public hearing will be held on the proposed Plan at a meeting of the Board of Directors to be held on the 16th day of May 2011 at the hour of 6:30PM at the District Administrative Office.

Upon completion of said public hearing, the Plan will be modified as required and a final draft prepared for adoption at the June 20, 2011 regular scheduled Board Meeting.

This notice shall be published once a week for two successive weeks in the Sacramento Bee.

Date: April 18, 2011

Sacramento Suburban Water District by/ Warren Jung, Manager Engineering Services

Appendix C: Adoption Resolution

RESOLUTION NO. 11-11

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE SACRAMENTO SUBURBAN WATER DISTRICT ADOPTING AN URBAN WATER MANAGEMENT PLAN

WHEREAS, the Urban Water Management Planning Act, Water Code sections 16010 through 10657 (the "Act"), mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet of water annually is an urban water supplier obligated to prepare an Urban Water Management Plan ("Plan"), the primary objectives of which are to plan for the conservation and efficient use of water;

WHEREAS, the District is an urban water supplier under Water Code section 10617 because it provides approximately 42,2500 acre-feet of water (five-year average) to approximately 171,000 people through approximately 44,200 connections;

WHEREAS, the District is required by the Act to adopt a final updated Plan by no later than July 1, 2011, after staff and consultants have reviewed and amended the previous Plan and after the Board holds a public review and hearing on the draft updated Plan;

WHEREAS, as shown in Table 1-1, pages 1-2 and 1-3 and Appendices A and B of the Plan, the District has prepared and circulated a draft Plan for public review and review by the County of Sacramento and other interested agencies, and properly noticed a public hearing concerning the Plan, including publication of notice two times in The Sacramento Bee as required by Government Code section 6066;

WHEREAS, the Board of Directors held the required public hearing on the plan during its regular Board meeting on May 16, 2011, and no written or oral comments concerning the Plan were received from the public or any interested agency;

WHEREAS, in accordance with Water Code section 10652 the preparation of the Plan is deemed not to be a project for purposes of the California Environmental Quality Act ("CEQA") and therefore, no CEQA review of the Plan was required or conducted; and

WHEREAS, after the public review period, District staff and consultants have prepared a final Plan in accordance with comments and direction received from the Board of Directors at the May 16, 2011 public hearing, and with any additional comments and direction from the Board of Directors and any public comments on the final draft Plan at a properly noticed public meeting held on June 20, 2011.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of Sacramento Suburban Water District as follows:

1. The Board finds that the District's updated Urban Water Management Plan, dated June 9, 2011, contains all elements required by the Act and hereby adopts the

Plan. The General Manager is authorized and directed to file the District's 2010 Urban Water Management Plan with the California Department of Water Resources, the California State Library, and the County of Sacramento by no later than August 1, 2011, and to file any plan amendments with those agencies within 30 days of adoption of any such amendment.

2. The General Manager is authorized and directed to implement the water conservation programs and other actions described in the Plan, which includes the water shortage contingency analysis and recommendations to the Board of Directors regarding necessary procedures, rules and regulations to carry out effective and equitable water conservation and water recycling programs.
3. The General Manager and staff are authorized to update elements of the Plan as necessary, and to file all such updates in the manner provided in Section 1 of this Resolution.
4. The General Manager shall recommend to the Board of Directors additional regulations to carry out the effective and equitable allocation of water resources.
5. The General Manager or his designee will make a copy of the District's adopted 2010 Urban Water Management Plan available for public review during normal business hours within 30 days of its adoption.

PASSED AND ADOPTED by the Board of Directors of Sacramento Suburban Water District at its regular meeting on June 20, 2011 by the following vote:

AYES: Fellenz, Robison, Schild and Thomas.
NOES: None.
ABSENT: Gayle.

By: 
Neil W. Schild
President, Board of Directors
Sacramento Suburban Water District

I hereby certify that the foregoing resolution was duly and regularly adopted and passed by the Board of Directors of Sacramento Suburban Water District at a regular meeting hereof held on June 20, 2011.

(SEAL)

By: 
Robert S. Roscoe
Secretary, Board of Directors
Sacramento Suburban Water District

Appendix D: DWR UWMP Checklist

Table I-1 Urban Water Management Plan checklist, organized by legislation number

No.	UWMP requirement ^a	Calif. Water Code reference	Subject ^b	Additional clarification	UWMP location
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)	System Demands		Section 3.2 Appendix E
2	<i>Wholesalers:</i> Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. <i>Retailers:</i> Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	System Demands	10608.36	Section 1.2 Section 6.2
3	Report progress in meeting urban water use targets using the standardized form.	10608.40	Not applicable	Standardized form not yet available	Not applicable
4	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.	10620(d)(2)	Plan Preparation		Section 1.3
5	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.	10620(f)	Water Supply Reliability . . .		Section 4.8`
6	Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, 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.	10621(b)	Plan Preparation		Section 1.2
7	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).	10621(c)	Plan Preparation		Not applicable

No.	UWMP requirement ^a	Calif. Water Code reference	Subject ^b	Additional clarification	UWMP location
8	Describe the service area of the supplier	10631(a)	System Description		Section 2.1
9	(Describe the service area) climate	10631(a)	System Description		Section 2.2
10	(Describe the service area) current and projected population . . . 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 . . .	10631(a)	System Description		Section 2.5
11	. . . (population projections) shall be in five-year increments to 20 years or as far as data is available.	10631(a)	System Description		Section 2.5
12	Describe . . . other demographic factors affecting the supplier's water management planning	10631(a)	System Description		Table 2-3
13	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).	10631(b)	System Supplies		Section 4.1 – surface water Section 4.2 – groundwater Section 5 – recycled water
14	(Is) groundwater . . . identified as an existing or planned source of water available to the supplier . . . ?	10631(b)	System Supplies	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Section 4.2
15	(Provide 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. Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)	System Supplies		Appendix G Section 4.2

No.	UWMP requirement ^a	Calif. Water Code reference	Subject ^b	Additional clarification	UWMP location
16	(Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater.	10631(b)(2)	System Supplies		Section 4.2
17	For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board	10631(b)(2)	System Supplies		Section 4.2 (not adjudicated)
18	(Provide) a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.	10631(b)(2)	System Supplies		Section 4.2.3
19	For basins that have not been adjudicated, (provide) 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.	10631(b)(2)	System Supplies		Section 4.2.1
20	(Provide 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.	10631(b)(3)	System Supplies		Section 4.2
21	(Provide 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.	10631(b)(4)	System Supplies	Provide projections for 2015, 2020, 2025, and 2030.	Table 4-6
22	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: (A) An average water year, (B) A single dry water year, (C) Multiple dry water years.	10631(c)(1)	Water Supply Reliability . . .		Section 4.9
23	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.	10631(c)(2)	Water Supply Reliability . . .		Section 4.9

No.	UWMP requirement ^a	Calif. Water Code reference	Subject ^b	Additional clarification	UWMP location
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)	System Supplies		Section 4.4
25	Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), 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.	10631(e)(1)	System Demands	Provide numbers for each category.	Section 3.3
26	(Describe and provide a schedule of implementation for) 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.	10631(f)(1)	DMMs	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Section 6.1 Appendix J (CUWCC BMP reports)
27	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.	10631(f)(3)	DMMs		Appendix J (CUWCC BMP reports)

No.	UWMP requirement ^a	Calif. Water Code reference	Subject ^b	Additional clarification	UWMP location
28	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.	10631(f)(4)	DMMs		Appendix J (CUWCC BMP reports) Per item no. 32 in this table, since SSWD is a signer of the MOU and submits the annual reports, they are deemed with no. 28 and 29 in this table.
29	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.	10631(g)	DMMs	See 10631(g) for additional wording.	Appendix J (CUWCC BMP reports) Per item no. 32 in this table, since SCWA is a signer of the MOU and submits the annual reports, they are deemed compliant with no. 28 and 29 in this table.

No.	UWMP requirement ^a	Calif. Water Code reference	Subject ^b	Additional clarification	UWMP location
30	(Describe) 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.	10631(h)	System Supplies		Section 4.10
31	Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.	10631(i)	System Supplies		Section 4.3
32	Include the annual reports submitted to meet the Section 6.2 requirement (of the MOU), if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	DMMs	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	Appendix J (CUWCC BMP reports)

No.	UWMP requirement ^a	Calif. Water Code reference	Subject ^b	Additional clarification	UWMP location
33	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(k)	System Demands		Section 3.3
34	The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)	System Demands		Section 3.3.2
35	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.	10632(a)	Water Supply Reliability . . .		Section 8.1
36	Provide 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.	10632(b)	Water Supply Reliability . . .		Section 8.2
37	(Identify) 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.	10632(c)	Water Supply Reliability . . .		Section 8.3
38	(Identify) 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.	10632(d)	Water Supply Reliability . . .		Section 8.4

No.	UWMP requirement ^a	Calif. Water Code reference	Subject ^b	Additional clarification	UWMP location
39	(Specify) 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.	10632(e)	Water Supply Reliability . . .		Section 8.4
40	(Indicated) penalties or charges for excessive use, where applicable.	10632(f)	Water Supply Reliability . . .		Section 8.4
41	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.	10632(g)	Water Supply Reliability . . .		Section 8.5
42	(Provide) a draft water shortage contingency resolution or ordinance.	10632(h)	Water Supply Reliability . . .		Appendix H
43	(Indicate) a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)	Water Supply Reliability . . .		Section 8.6
44	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	10633	System Supplies		Section 5
45	(Describe) 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.	10633(a)	System Supplies		Section 5.2
46	(Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)	System Supplies		Section 5.2
47	(Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)	System Supplies		Section 5.3

No.	UWMP requirement ^a	Calif. Water Code reference	Subject ^b	Additional clarification	UWMP location
48	(Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)	System Supplies		Section 5.4.1
49	(Describe) 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.	10633(e)	System Supplies		Section 5.4.2
50	(Describe the) 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.	10633(f)	System Supplies		Section 5.5
51	(Provide 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.	10633(g)	System Supplies		Section 5.5
52	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.	10634	Water Supply Reliability . . .	For years 2010, 2015, 2020, 2025, 2030, and 2035	Section 4.5

No.	UWMP requirement ^a	Calif. Water Code reference	Subject ^b	Additional clarification	UWMP location
53	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.	10635(a)	Water Supply Reliability . . .	Years 2010 - 2035	Section 7
54	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.	10635(b)	Plan Preparation		Section 1.2
55	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.	10642	Plan Preparation		Section 1.2
56	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.	10642	Plan Preparation		Section 1.2
57	After the hearing, the plan shall be adopted as prepared or as modified after the hearing.	10642	Plan Preparation		Section 1.2
58	An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.	10643	Plan Preparation		Section 1.4

No.	UWMP requirement ^a	Calif. Water Code reference	Subject ^b	Additional clarification	UWMP location
59	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.	10644(a)	Plan Preparation		Section 1.2
60	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.	10645	Plan Preparation		Section 1.2

a The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.

b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.

Appendix E: SBX7-7 GPCD Target Analysis

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Prepared for: Sacramento Suburban Water District
Project Title: Urban Water Management Plan
Project No: 138919

Technical Memorandum

Subject: SBX7-7 GPCD Target Analysis
Date: April 6, 2011
To: Warren Jung
From: Melanie Holton, PE



Prepared by: _____

Melanie Elise Holton

Melanie Holton P.E., (#C64983), Project Manager

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Paul Selsky

Paul Selsky P.E., (#C43544), QA/QC

Report Purpose:

Develop preliminary estimates of the gallons per capita per day (GPCD) targets defined by SBX7-7.

Attachments:

Attachment A: Figures
Attachment B: Tables

Limitations:

This document was prepared solely for Sacramento Suburban Water District in accordance with professional standards at the time the services were performed and in accordance with the contract between Sacramento Suburban Water District and Brown and Caldwell dated February 22, 2010. This document is governed by the specific scope of work authorized by Sacramento Suburban Water District; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by Sacramento Suburban Water District and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

1. Introduction

The efficient and economic use of water has been an objective of the Sacramento Suburban Water District (District) for many years. Water conservation is also a state-wide priority in meeting the future water needs of the state and region as outlined in the 2009 California Water Plan.

This analysis describes the District's water use characteristics and develops an estimate of the gallons per capita per day (GPCD) target options for the District. This analysis presents the key results of this evaluation, which are the four GPCD targets. All of the figures and tables for this analysis are included as attachments at the end of this document.

2. Baseline Water Use

The District must define a 10-year baseline period for daily per capita water use. The determination of the baseline water use involves the following steps:

1. Estimate the service area population for each year in the base period which is from 1995 through 2010,
2. Calculate gross water use for each year in the base period,
3. Calculate daily per capita water use for each year in the base period by dividing the gross water use by the service area population,
4. Calculate the average per capita water use by annual GPCD values for the 10-year periods occurring between 1995 and 2010, and
5. Select the 10-year baseline period.

2.1 Historical Population

Figure 1 presents the historical population and number of connections or customers that are served by the District's retail water system. Year 2000 total population is based on the year 2000 census. Per the DWR Methodology, Methodology 2: Service Area Population, the District falls into Category 2, a water supplier who has an electronic GIS map of their distribution area, but whose actual distribution area does not overlap substantially ($\geq 95\%$) with city boundaries. The alternative methodology for service area population described in Appendix A of the DWR Methodology was followed for estimating the District's service area population from 1995 through 2010.

The year 2000 census population estimate is based on the total population by census block group. A census block is the smallest geographical unit used by the Census Bureau. Census blocks are areas bounded on all sides by visible features, such as streets, roads, streams, and railroad tracks, and by invisible boundaries such as city, town, township, county limits, and property lines. Census blocks are grouped into block groups. The District's GIS boundary map of the distribution area was overlaid on the 2000 census block group map to identify the census block groups located within the District's service area. Each block's total population and population by structure type in 2000 was obtained from the Census Bureau's website. The population in single family and multi family residences combined with total District connections, for the census year 2000, was used to develop a ratio of persons per connection for the year 2000. These ratios were applied to active connections data for non-census years to estimate non-census-year population. Table 1 provides the resulting historical population estimate of retail water system customers within the District.

2.2 Historical Water Use

This section describes the District's historical water use characteristics and trends over time. Also discussed is the District's gross water use, calculated as defined by DWR.

As depicted on Figure 2, the District's total annual retail water system water use grew steadily until 2002. Total water use is measured based on the total water produced from the sources of supply, and includes water use that is not metered, such as water used for pipe flushing and fire hydrant flow testing, and system leaks.

Figure 3 depicts the total annual water use per connection. Figure 4 depicts the District's total annual water use per person expressed as GPCD. The highest 10-year average is the 1995 to 2004 period.

Gross water use is a measure of water supplied to the distribution system over 12 months and adjusted for changes in distribution system storage and deliveries to other water suppliers that pass through the distribution system. Water wholesaled to other agencies as well as any recycled water deliveries within the retail service area are subtracted from the District's total water production in order to determine the annual gross water use.

2.3 Baseline Per Capita Water Use

The daily per capita water use for each year from 1995 through 2010 is calculated by dividing the gross water use for each year by the service area population for each year, respectively. If the District's 2008 recycled water percent is less than 10 percent of the total 2008 deliveries, then the first base period is a continuous 10-year period. Because the District has not used recycled water historically, the District's base period will be a 10-year period, as shown in Table 2. In order to calculate the baseline per capita water use, the annual daily per capita water use is averaged for 10-year periods ending no earlier than December 31, 2004 and no later than December 31, 2010. The District's baseline daily per capita water use of 242 GPCD is based on a base period starting in 1995 and ending in 2004. The annual daily per capita water use and 10-year average per capita water use for the District is shown in Tables 1 and 3.

A second baseline period that must be calculated is a 5-year range. This is utilized as a check against the District's selected GPCD target method. If the District's selected GPCD target method results in a GPCD target that is greater than 95 percent of the 5-year base daily per capita range, then the District's target shall be 95 percent of their 5-year base daily per capita range. As shown in Table 4, the District's 5-year base daily per capita range is 235 GPCD. 95 percent of this value is 223 GPCD. This value will be used later in this analysis as a check against the recommended method GPCD value. If the selected GPCD target method results in a GPCD target greater than 95 percent of the 5-year baseline GPCD, the District will be required to adjust their target to meet a target equal to 95 percent of the 5-year baseline GPCD (223 GPCD).

3. GPCD Targets

New requirements regarding water use targets are in the SBX 7-7 bill passed in early November 2009 by the state legislature. There are four methods that the legislation defines for establishing a GPCD target. The District will have to select one of the methods to establish their 2020 water use target, as well as the interim 2015 target. The District will have to select the GPCD method it will use for the 2010 urban water management plan, to be adopted by July 1, 2011. The four methods available to establish the District's GPCD target are described below.

1. Eighty percent of the District's baseline per capita daily water use using a 10-year average, starting no earlier than 1995. Method 1 is relatively straightforward in that it involves computing the population divided by the total water production by year.
2. The per capita daily water use that is estimated using the sum of several defined performance standards for water use for indoor residential, outdoor landscape, and commercial, industrial, and institutional (CII) purposes. This method requires quantifying the landscaped area and the baseline CII GPCD. Outdoor water use would be limited to the amount of landscape water use defined for the 1992 and 2010 Model Landscape Ordinance.
3. Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's 20x2020 Water Conservation Plan (dated February, 2010). Method 3 is the simplest of the methods as it involves looking up a table value for the applicable hydrologic region.
4. Calculated water savings based on indoor residential water savings, metering savings, CII savings, and landscape and water loss savings, as set forth in DWR's Provisional Method 4 for Calculating Urban Water Use Targets, released February 2011.

The "Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use" (DWR Methodology) was issued by the DWR on October 1, 2010. The methodologies document presents standardized approaches to calculate the GPCD targets for Methods 1 and 2. Figure 5 presents the results of the analysis for Methods 1, 2, 3, and 4 in comparison to the District's most recent 3-year average GPCD and 95 percent of the District's 5-year baseline. Table 1 contains all of the detailed input and calculations for this evaluation. Table 5 provides a summary of the GPCD targets by method. The District will be able to reevaluate their targets and selected target method when completing the 2015 UWMP. Following the 2015 UWMP, the District will not be able to change the method it selects for the 2020 target.

3.1 Method 1

The Method 1 GPCD goal is 193 GPCD which is 80% of the 10-year baseline.

3.2 Method 2

The Method 2 GPCD goal has three components consisting of indoor residential, outdoor landscaping, and CII water use. A preliminary estimate of the District's GPCD target using this method results in a 2020 GPCD target of 159 GPCD. This is a preliminary estimate because it is based on estimated landscape area and estimated CII baseline GPCD. Table 6 provides detail calculations for this method. Per DWR's technical methodology for baseline commercial, industrial, and institutional water use (Methodology 7) "a retail water supplier must have CII water use data for the entire baseline period used in the water supplier's calculation of base daily per capita water use. If the CII data do not exist, the retail water supplier should use another method." Because the District does

not have accurate historical water use and customer data for the CII customer sectors, it is recommended that the District does not pursue this methodology at this time.

The landscaped area water use through dedicated or residential meters or connections shall also be determined for this method. Because the District's historical CII data does not exist in the format necessary for this method, it is recommended that the District not further pursue determination of the landscaped area within the retail service area.

3.3 Method 3

The Method 3 GPCD target is based on 95% of the Hydrologic Region No. 5 GPCD target of 176 GPCD as set forth in the state's 20x2020 Water Conservation Plan (dated February, 2010). The resulting target is 167 GPCD by 2020.

3.4 Method 4

Method 4 is based on calculating the water savings based on indoor residential water savings, metering savings, CII savings, and landscape and water loss savings, as set forth in DWR's Provisional Method 4 for Calculating Urban Water Use Targets, released February, 2011. A preliminary estimate of the District's GPCD target using this method results in a 2020 GPCD target of 179 GPCD. This is a preliminary estimate because it is based on an estimated CII baseline GPCD. DWR provides key equations and the related assumptions to estimate the water savings from three general water use sectors: residential indoor, CII, and landscape and water loss. Table 7 provides detailed calculations for this method.

3.5 2015 Interim Target

The target method selected by the District will define a 2020 target GPCD. The District will also be required to meet an interim target in 2015. The interim target is determined as the GPCD that is halfway between the baseline daily per capita water use and the 2020 GPCD target.

4. Conclusions and Recommendations

Below is a summary of the conclusions of this analysis:

1. The District's 10-year baseline is 242 GPCD. This baseline is used for the determination of the Method 1 GPCD.
2. The District's 5-year baseline is 235 GPCD. 95 percent of this 5-year baseline is 223 GPCD. If the method selected by the District results in a GPCD target greater than 95 percent of the 5-year baseline, than the District's target shall be adjusted to equal 95 percent of the 5-year baseline (223 GPCD).
3. The District's 2020 GPCD target utilizing Method 1 is 193 GPCD (2015 interim target is 218 GPCD).
4. The District's 2020 GPCD target utilizing Method 2 is estimated to be approximately 159 GPCD (2015 interim target is 200 GPCD). Because the District does not have accurate historical water use data broken down for CII customers, the District should not consider the GPCD Method 2 as an option.
5. The District's 2020 GPCD target utilizing Method 3 is 167 GPCD (2015 interim target is 204 GPCD).
6. The District's 2020 GPCD target utilizing provisional Method 4 is 175 GPCD (2015 interim target is 208 GPCD). Because the District does not have accurate historical water use data broken down for CII customers, the District should not consider the GPCD Method 4 as an option.
7. The District's 2008 through 2010 average GPCD was 193 GPCD.
8. The District's 2010 per capita water use was 194 GPCD

It is recommended that the District select Method 1, requiring a retail water system use of no greater than 193 GPCD by 2020 with a 2015 interim target of 218 GPCD. The District is currently meeting both the 2020 and the 2015 interim target.

Attachment A: Figures

Figure 1. Historical Population and Total Connections

Figure 2. Historical Water Production for District Retail

Figure 3. Historical Water Production per Connection

Figure 4. Historical Gallons per Capita per Day

Figure 5. GPCD Target Options

Figure 1. Historical Population and Total Connections

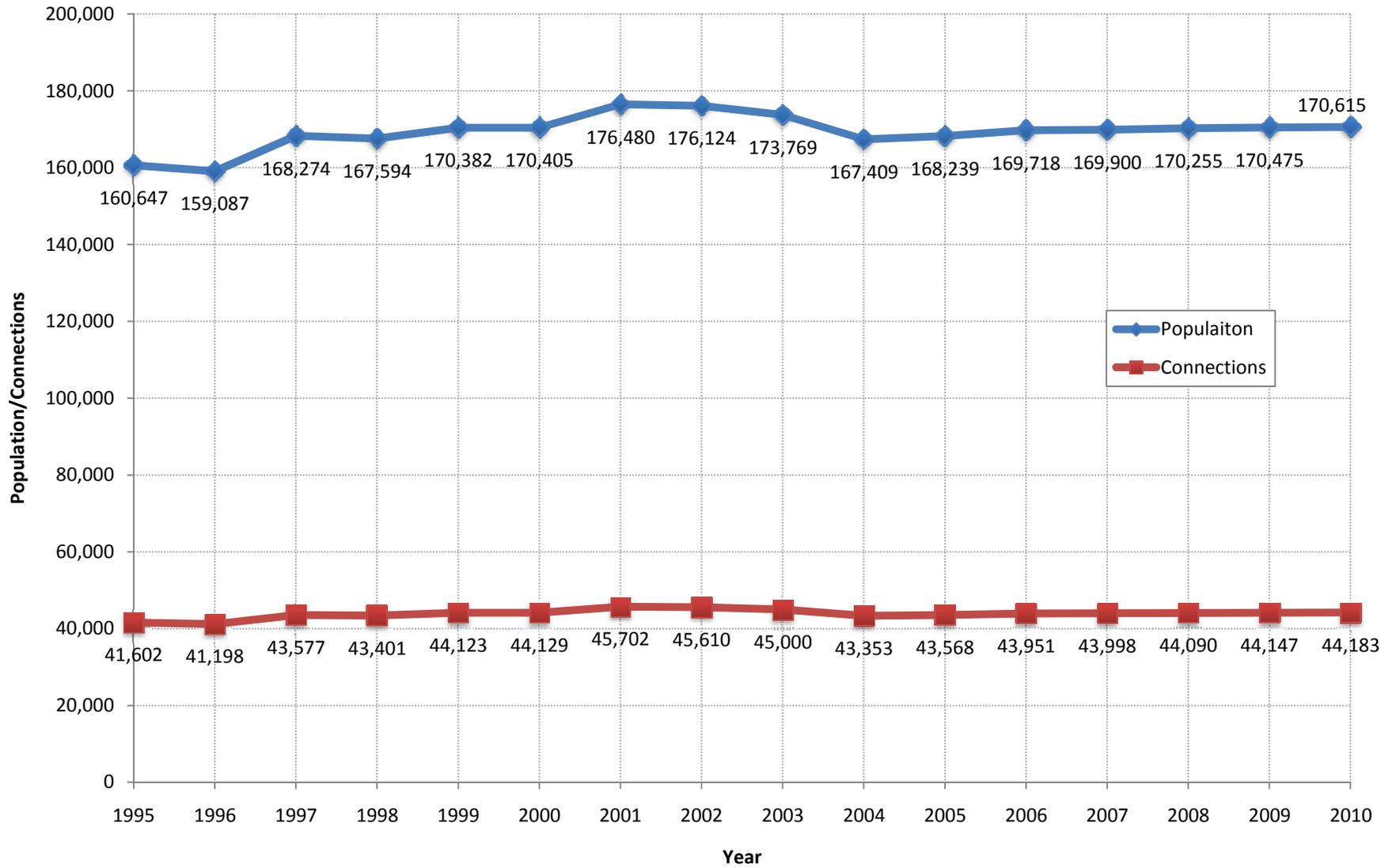


Figure 2. Historical Water Production for District Retail

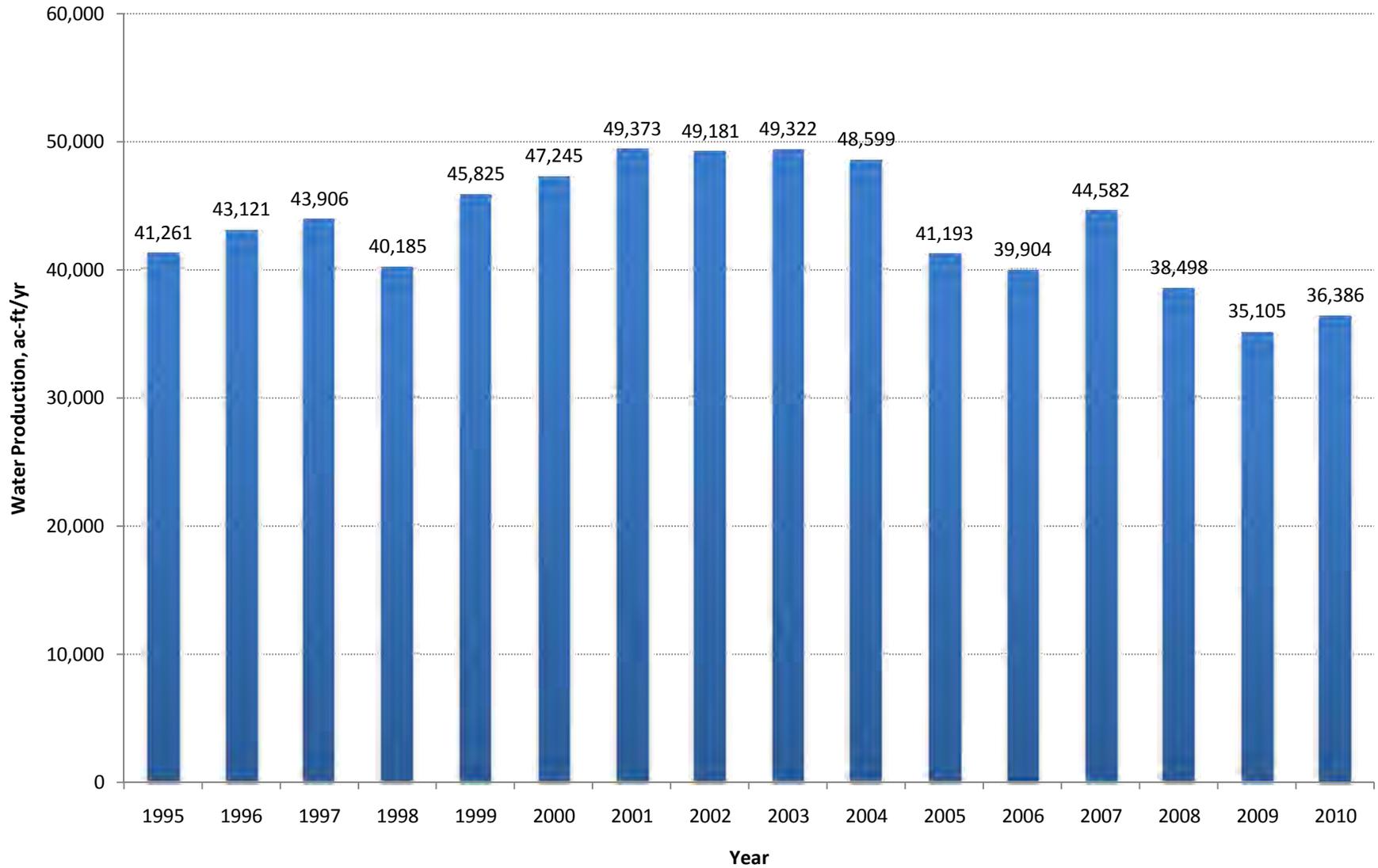


Figure 3. Historical Water Production per Connection

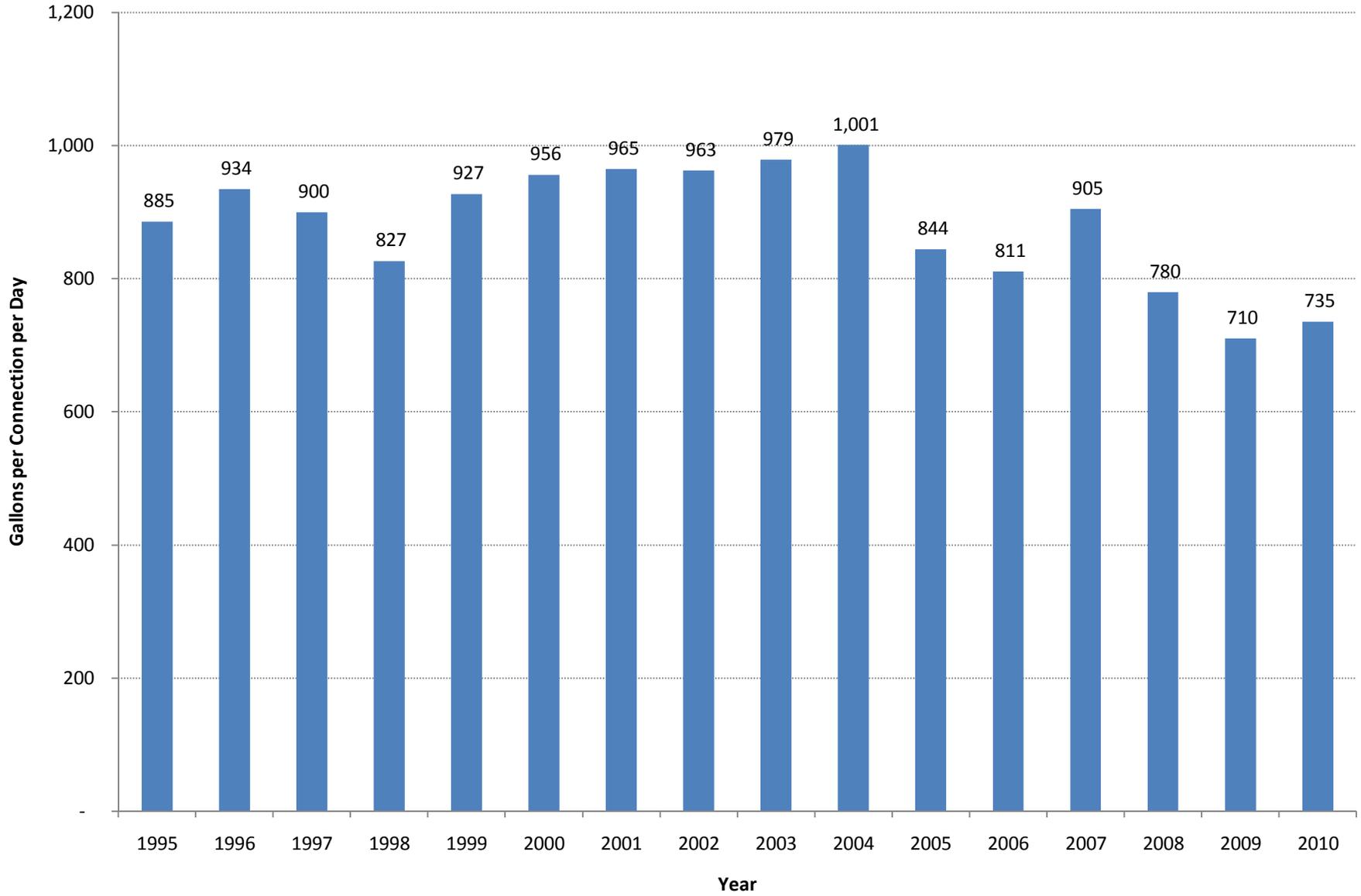


Figure 4. Historical Gallons per Capita per Day

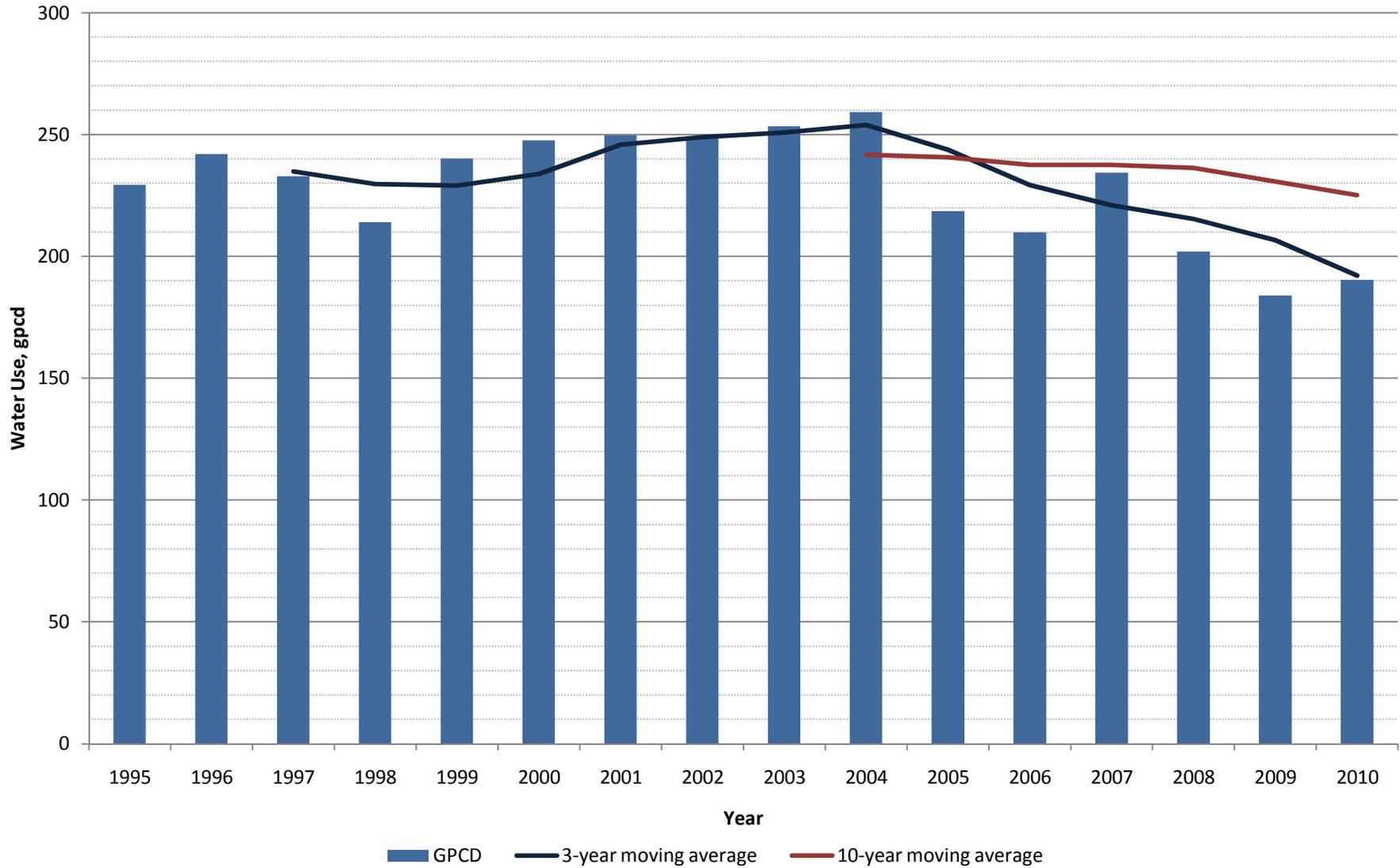
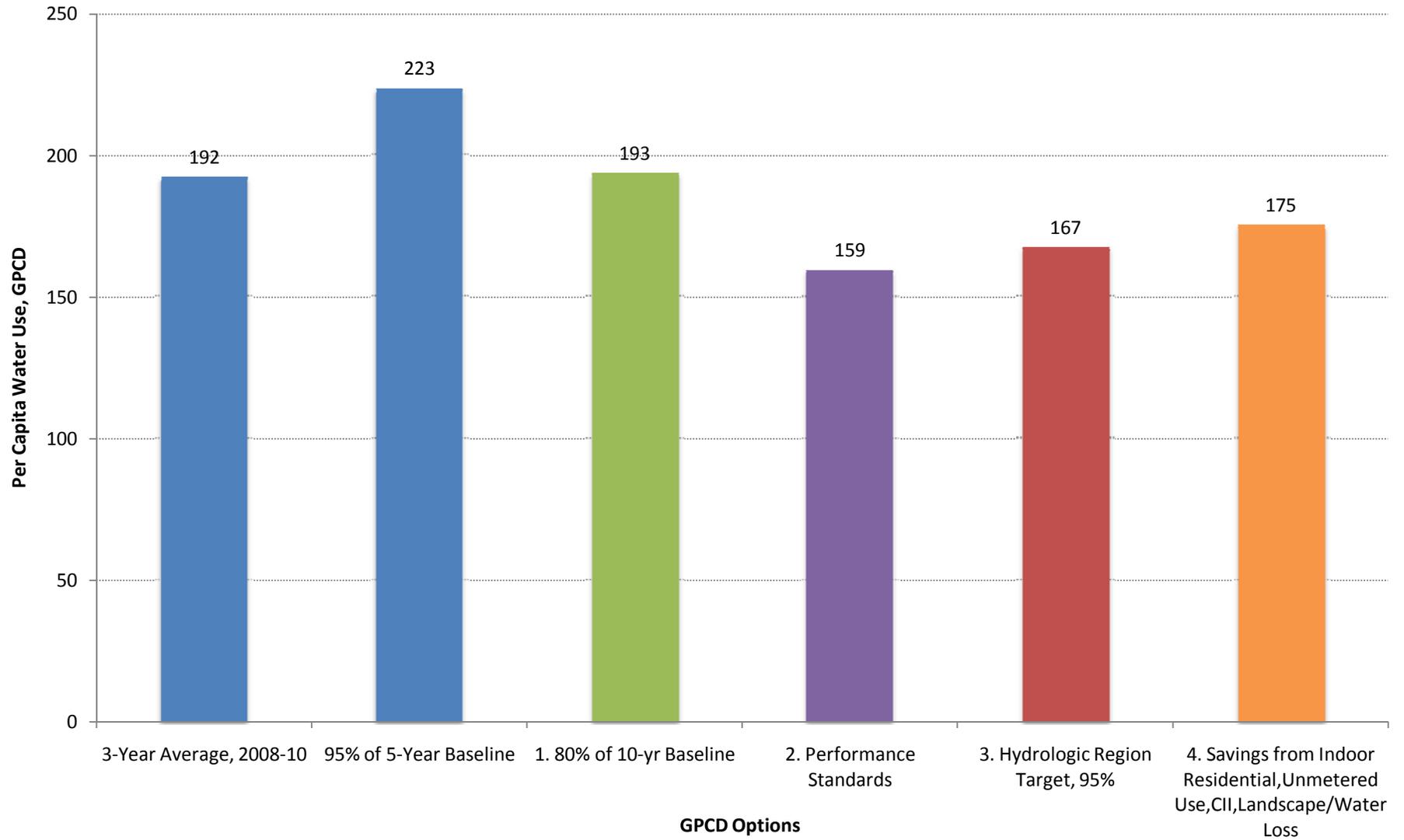


Figure 5. GPCD Target Options



Attachment B: Tables

Table 1. Water Use Analysis

Table 2. (DWR Table 13) Base Period Ranges

Table 3. (DWR Table 14) Base Daily Per Capita Water Use – 10-to 15-year range

Table 4. (DWR Table 15) Base Daily Per Capita Water Use –5-year range

Table 5. GPCD Target Calculations Summary

Table 6. Method 2 Supporting Data and Calculations

Table 7. Method 4 Supporting Data and Calculations

Table 1. Water Use Analysis

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Gross Production, AF	41,261	43,121	43,906	40,185	45,825	47,245	49,373	49,181	49,322	48,599	41,193	39,904	44,582	38,498	35,105	36,386
Estimated CII sales, AF	8,385	8,763	8,923	8,167	9,313	9,602	10,034	9,995	10,024	12,940	7,284	8,110	7,084	7,824	7,800	5,420
Population																
Population	160,647	159,087	168,274	167,594	170,382	170,405	176,480	176,124	173,769	167,409	168,239	169,718	169,900	170,255	170,475	167,489
Connections																
Single family-unmetered	37,521	36,558	37,965	37,353	36,583	36,530	31,560	31,609	32,285	25,231	26,265	26,275	22,351	20,665	19,388	19,784
Single family - metered	711	1,717	1,959	2,236	3,179	1,505	9,494	9,994	8,005	10,358	10,651	10,846	14,925	16,430	17,943	17,582
Total single family	38,232	38,275	39,924	39,589	39,762	38,035	41,054	41,603	40,290	35,589	36,916	37,121	37,276	37,095	37,331	37,331
MF - unmetered	0	0	0	0	0	0	0	0	0	0	2,106	1,990	1,875	1,759	1,644	1,528
MF - metered	0	0	0	0	0	0	0	0	0	0	1,697	1,811	1,937	2,279	2,191	2,302
Total multi-family	571	433	443	445	2,318	3,075	1,143	2,000	190	3,268	3,803	3,801	3,812	4,038	3,835	3,830
Commercial	2,790	2,416	3,101	3,259	1,705	2,843	3,424	1,830	4,139	4,099	2,230	2,275	2,129	2,132	2,138	2,126
Industrial	1	1	1	1	1	94	57	57	290	242	1	1	14	14	13	13
Institutional	0	0	0	0	176	0	0	77	0	59	450	539	461	468	472	471
Landscape Irrigation	8	73	108	107	161	82	24	43	91	96	168	214	306	343	358	377
Total	41,602	41,198	43,577	43,401	44,123	44,129	45,702	45,610	45,000	43,353	43,568	43,951	43,998	44,090	44,147	44,183
GPCD																
GPCD-Total (population based on 2000 census population ratio of 2000 total connections)	229	242	233	214	240	248	250	249	253	259	219	210	234	202	184	194
GPCD-CII only	47	49	49	44	49	51	54	55	56	73	42	46	40	44	44	30
Baseline GPCD																
GPCD Total - 10 year average										242	241	237	238	236	231	225
GPCD Total - 5 year average													235	225	210	204
CII GPCD Total - 10 year average										53	52	52	51	51	50	48

Table 2. (DWR Table 13) Base Period Ranges

Base	Parameter	Value	Units
10- to 15-year base period	2008 total water deliveries	38,498	ac-ft/yr
	2008 total volume of delivered recycled water	0	ac-ft/yr
	2008 recycled water as a percent of total deliveries	0	percent
	Number of years in base period ¹	10	years
	Year beginning base period range	1995	
5-year base period	Year ending base period range ²	2004	
	Number of years in base period	5	years
	Year beginning base period range	2003	
	Year ending base period range ³	2007	

¹ If the 2008 recycled water percent is less than 10 percent, then the first base period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first base period is a continuous 10- to 15-year period.

² The ending year must be between December 31, 2004 and December 31, 2010.

³ The ending year must be between December 31, 2007 and December 31, 2010.

Note - Recycled water is used for agricultural uses and is not included in the water used within the distribution system service area.

Table 3. (DWR Table 14) Base Daily per Capita Water Use - 10- to 15-year range

Base period year		Distribution System Population	Daily system gross water use, ac-ft/yr	Annual daily per capita water use, GPCD
Sequence Year	Calendar Year			
Year 1	1995	160,647	41,261	229
Year 2	1996	159,087	43,121	242
Year 3	1997	168,274	43,906	233
Year 4	1998	167,594	40,185	214
Year 5	1999	170,382	45,825	240
Year 6	2000	170,405	47,245	248
Year 7	2001	176,480	49,373	250
Year 8	2002	176,124	49,181	249
Year 9	2003	173,769	49,322	253
Year 10	2004	167,409	48,599	259
Year 11				
Year 12				
Year 13				
Year 14				
Year 15				
Base Daily Per Capita Water Use¹				242

¹ Add the values in the column and divide by the number of rows.

Table 4. (DWR Table 15) Base Daily per Capita Water Use - 5-year range

Base period year		Distribution System Population	Daily system gross water use, ac-ft/yr	Annual daily per capita water use,
Sequence Year	Calendar Year			
Year 1	2003	173,769	49,322	253
Year 2	2004	167,409	48,599	259
Year 3	2005	168,239	41,193	219
Year 4	2006	169,718	39,904	210
Year 5	2007	169,900	44,582	234
Base Daily Per Capita Water Use¹				235

¹ Add the values in the column and divide by the number of rows.

Table 5. GPCD Target Calculations Summary

Method	Factor	Units	Comments
Method 1. 80% of Baseline			
Baseline per capita daily water use	242	GPCD	10-year average gpcd from 1995 through 2004
Method 1 2015 interim target:	218	GPCD	90% of the urban retail water supplier's baseline per capita daily water use
Method 1 2020 target:	193	GPCD	80% of the urban retail water supplier's baseline per capita daily water use
Method 2. Performance Standards			
Method 2 2015 interim target:	200	GPCD	Halfway between Baseline per capita daily water use and 2020 target.
Method 2 total:	159	GPCD	Target indoor use+Target outdoor use+Target CII use
Method 3. 95% of Draft 20x2020 Plan			
Applicable target for SSWD:	176	GPCD	Hydrologic Region #5 (2015 interim target 215 GPCD)
Method 3 2015 interim target:	204	GPCD	95% of Hydraulic Region #5 interim target
Method 3 2020 target:	167	GPCD	95% of Hydraulic Region #5 target
Method 4. Savings from Indoor Residential, Unmetered Use, CII, Landscape/Water Loss			
Method 4 2015 interim target:	208	GPCD	See Table 7 for supporting calculations Halfway between Baseline per capita daily water use and 2020 target.
Method 4 gpcd 2020 target	175	GPCD	Base daily per capita use minus sum of savings for indoor residential, 10% of CII, 20% of unmetered use, and 21.6% of other uses (landscape and water loss).

**Table 6. Method 2 Supporting Data and Calculation
Indoor Use plus Irrigation Landscapes plus Commercial, Industrial, and Institutional Use**

Part A: Indoor Residential Water Use

Indoor Residential Water Use Standard per Section 10608.20 (b)(2)(A)

GPCD

55

Part B: Irrigated Landscapes

Year landscaped area installed	Accounts			Avg Irrigated area per account ^a , sq ft			Total LA, sq ft	SLA	Reference ETO ^b , in/yr	MWEL0	MAWA Equation	MAWA, gal/yr	2020 population	Landscape Water Use Target, gpcd
	SF	MF	Dedicated irrigation	SF	MF	Dedicated irrigation								
Pre 2010	37,331	3,835	358	2,723	4,356	43,560	133,933,388	--	50.5	1992	=(ETO)(0.62)[(0.8xLA)	3,354,763,490		
2010 through 2020	743	463	47	1,307	3,267	32,670	4,014,969		50.5	2010	=(ETO)(0.62)[(0.7xLA)+(0.3xSLA)]	100,566,951		
Total	--	--	--	--	--	--	--	--	--	--	--	3,455,330,441	166,611	57

^a Average irrigated area per account is based on the following assumptions per account type:

SF pre 2010 - Average lot size is 0.25 acres with 25% irrigated landscape.

SF post 2010 - Average lot size is 0.15 acres with 20% irrigated landscape.

MF - Average lot size is 0.5 acres with 20% irrigated landscape.

Dedicated irrigation - Average irrigated area of one acre pre 2010 and 3/4 acre post 2010.

^bFair Oaks, from Model Landscape Ordinance Appendix A

MWEL0 = Model Water Efficient Landscape Ordinance

MAWA = Maximum Applied Water Allowance

LA = landscaped area

SLA = special landscaped area

Part C: Commercial, Industrial, and Institutional (CII) Water Use

CII Baseline = Maximum 10-year rolling average=

53

<--CII use is estimate, complete records not available to determine CII baseline

10% Reduction in CII Baseline

5.3

CII 2020 Target, gpcd

47

Total Method 2 Target Sum of Parts A, B, and C:

159

Table 7. Method 4 Supporting Data and Calculation
Base Daily Per Capita Water Use Minus Savings from Indoor Residential, Unmetered Use, CII, and Landscape and Water Loss

Equation 1

$$\boxed{\text{Urban Water Use Target}} = \boxed{\text{Base Daily per Capita Water Use}} - \boxed{\text{Total Savings}}$$

Note: Equations 1, 2, and 3 from DWR "Draft Provisional Method 4 for Calculating Urban Water Use Targets", released January 24,

Equation 2

$$\boxed{\text{Landscape and Water Loss per Capita Use}} = \boxed{\text{Base Daily per Capita Water Use}} - \boxed{\text{Standard Indoor Residential 70 gpcd}} - \boxed{\text{CII Water Use}}$$

Equation 3

$$\boxed{\text{Total Savings}} = \boxed{\text{Indoor Residential Savings}} + \boxed{\text{Metering Savings}} + \boxed{\text{CII Savings}} + \boxed{\text{Landscape and Water Loss Savings}}$$

Equation 2 - Landscape and Water Loss

Base Daily per Capita Water Use	242 GPCD
Standard Indoor Residential	70 GPCD
CII Water Use	53 GPCD
Landscape and Water Loss per Capita Use	119 GPCD

Equation 3 - Total Savings

Indoor Residential Savings		
BMP calculator or <u>15 GPCD</u>	15 GPCD	
Metering Savings		
Unmetered deliveries	104 GPCD	Based on 2005 unmetered deliveries (since water use data by customer category not available for all years)
20 percent of unmetered deliveries	21 GPCD	
CII Savings		
10% of CII baseline water use	5 GPCD	
Landscape and Water Loss Savings		
21.6% of Landscape and Water Loss per capita use	26 GPCD	
Total Savings	67 GPCD	

Equation 1 - Urban Water Use Target

Urban Water Use Target	175 GPCD	Base Daily per Capita Water Use minus Total Savings
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Appendix F: Wholesale Water Supply Agreements

FILE
9-23

**AMENDMENT NO. 1
TO THE AGREEMENT BETWEEN PLACER COUNTY WATER AGENCY AND
SACRAMENTO SUBURBAN WATER DISTRICT FOR A WATER SUPPLY
FOR GROUNDWATER STABILIZATION**

This Amendment No. 1 ("Amendment") is entered into as of Oct 2, 2008, and amends the water supply agreement entered into on June 1, 2000 ("2000 Water Supply Agreement"), by and between Placer County Water Agency, a public agency (the "Agency"), and Sacramento Suburban Water District, a public agency ("Sacramento Suburban"), in the County of Sacramento, California. The Agency and Sacramento Suburban are collectively referred to as the "Parties." Terms defined in the 2000 Water Supply Agreement will have the same meaning in this Amendment.

Recitals

A. The Agency and Northridge Water District entered into the 2000 Water Supply Agreement, which provided for up to 29,000 acre-feet per year of water that would be made available by the Agency for use by Northridge Water District.

B. Sacramento Suburban is the successor entity to Northridge Water District following the consolidation of Northridge Water District and Arcade Water District, and Sacramento Suburban has succeeded to all the rights and obligations of Northridge Water District under the 2000 Water Supply Agreement.

C. The Parties desire to amend the 2000 Water Supply Agreement as set forth in this Amendment.

In consideration of the mutual covenants contained, herein, the Parties agree as follows:

1. **Recitals Incorporated.** The foregoing recitals are incorporated by reference.

2. **Amendment of Section 4.** Section 4 of the 2000 Water Supply Agreement is amended to read as follows:

4. Water to be Furnished to Sacramento Suburban.

(a) Each year during the term of this Agreement the Agency will make available to Sacramento Suburban, subject to the water shortage provisions set forth in this Agreement, and the operating criteria set forth in Exhibit A to this Agreement: (1) effective September 1, 2008, 16,000 acre-feet of untreated water; and (2) effective January 1, 2009, 12,000 acre-feet of untreated water, ("Sacramento Suburban Annual Entitlement").

(b) Each year Sacramento Suburban will be required to pay for the Sacramento

Suburban Annual Entitlement or surrender its right to some of it so that the Agency will be free to put the water to use elsewhere. In order to do this, if Sacramento Suburban does not take or pay for the Sacramento Suburban Annual Entitlement for any year, the Sacramento Suburban Annual Entitlement for each year thereafter will be reduced by an amount equal to 50% of the amount which Sacramento Suburban did not take or pay for during that year.

(c) In any year during the term of this Agreement, Sacramento Suburban may request that the Agency make available a water supply in addition to the Sacramento Suburban Annual Entitlement up to a total water supply of 29,000 acre-feet in any year, which if approved by the Agency would be made available to Sacramento Suburban under the applicable provisions of this Agreement. Such an approval would not change the amount of the Sacramento Suburban Annual Entitlement (unless the Parties agreed otherwise). Such an approval in one year would not obligate the Agency to approve a request in a subsequent year, and approval in one year would not require Sacramento Suburban to request an increased water supply in a subsequent year.

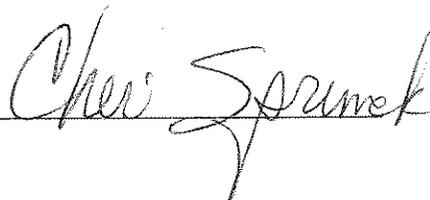
3. Other Provisions Unaffected. Except as provided in this Amendment, the remaining provisions of the 2000 Water Supply Agreement are unchanged and remain in full force and effect.

The foregoing is hereby agreed to by the Parties.

PLACER COUNTY WATER AGENCY SACRAMENTO SUBURBAN WATER DISTRICT

By: 

By: 

Attest: 

Attest: 

**AGREEMENT BETWEEN PLACER COUNTY WATER AGENCY
AND NORTHRIDGE WATER DISTRICT FOR A WATER SUPPLY
FOR GROUNDWATER STABILIZATION**

This Agreement is entered into as of the 1st day of June, 2000, and amends and supersedes in its entirety the agreement (as amended) entered into on August 21, 1995, by and between Placer County Water Agency, a public agency (the "Agency"), and Northridge Water District, a public agency ("Northridge") in the County of Sacramento, California.

Recitals

A. The Agency is a public agency created and existing under the Placer County Water Agency Act (Statutes 1957, Chapter 1234, as amended), and is authorized to conserve and utilize, within and outside of the Agency, water for any purpose useful to the Agency.

B. The Agency owns and operates the Middle Fork American River Project pursuant to water right permits 13855 through 13858 issued by the State of California ("Agency Water Rights").

C. Northridge is a public agency located in northern Sacramento County, created and existing under the County Water District Law (Division 12 of the Water Code, commencing with section 30,000), and is authorized to acquire water rights and entitlements to provide water service within its service area.

D. Northridge currently provides water for potable use within its service area primarily from groundwater. The groundwater aquifer utilized by Northridge (and other water purveyors) is located in both Placer and Sacramento Counties. This aquifer has experienced a steady decline for many years, and is expected to continue to decline in the future unless surface water is made

available as a supplemental water source to enable implementation of a conjunctive use program to stabilize the aquifer in Placer and Sacramento Counties.

E. San Juan Water District ("San Juan") diverts water from Folsom Reservoir (including water purchased from the Agency) for treatment and distribution within its service area, which is in both Placer and Sacramento Counties. San Juan has completed a project to increase the capacity of its water conveyance system from its treatment plant ("San Juan Pipeline"), and Northridge has purchased the right to use a portion of the capacity in the San Juan Pipeline for use within Northridge's service area. San Juan has also agreed to give Northridge first priority to use of surplus capacity in San Juan's water treatment facility. Northridge has installed a pipeline to convey treated surface water from the San Juan Pipeline to Northridge's service area to enable Northridge to better conserve and utilize its groundwater resources.

F. The Agency has determined that, subject to the terms and conditions set forth in this Agreement, there will be water available under the Agency's water rights for delivery to Northridge for the purpose of stabilizing the groundwater basin in Placer and Sacramento Counties as provided for in this Agreement.

G. The Agency is willing to deliver to, and Northridge is willing to pay for, water delivered by the Agency under the terms and conditions set forth in this Agreement.

H. The Agency (as lead agency) and Northridge (as a responsible agency) have prepared and approved a final environmental impact report ("EIR") under the California Environmental Quality Act for the sale of water under this agreement.

I. The State Water Resources Control Board ("SWRCB") issued orders on May 24,

2000 ("SWRCB Orders") that approve a change in the place of use of the Agency Water Rights to include the area served by Northridge, which is described in Article 19 of this Agreement.

J. The Agency and Northridge are signatories to the Water Forum Agreement, which sets forth provisions that are related to the diversion and use of water under this Agreement that are implemented by the EIR and SWRCB Orders.

K. Northridge and the U.S. Bureau of Reclamation ("Reclamation") have entered into an agreement that authorizes Northridge to use Reclamation facilities at Folsom Reservoir to convey water delivered by the Agency under this Agreement (the "Warren Act Contract", including any renewal, extensions or subsequent agreement for that purpose).

Now, therefore, in consideration of the mutual covenants contained, herein, the parties agree as follows:

1. **Recitals Incorporated.** The foregoing recitals are incorporated by reference.
2. **Term of Agreement.** This Agreement shall be effective as of June 1, 2000, and shall remain in effect through December 31, 2025, unless terminated earlier under the provisions of this Agreement.
3. **Renewals of Term.** Renewals of this Agreement may be made for successive periods not to exceed twenty-five years each. The terms and conditions of each renewal shall be agreed upon by the parties not later than one year before the expiration of the then current term of the Agreement.
4. **Water to be Furnished to Northridge.** Each year during the term of this Agreement the Agency

shall make available to Northridge, subject to the water shortage provisions set forth in this Agreement, and the operating criteria set forth in Exhibit A to this Agreement, the following amounts of untreated water ("Northridge Annual Entitlement"):

<u>YEAR</u>	<u>NORTHRIDGE ANNUAL ENTITLEMENT</u>
June 1 through December 31, 2000	7,000 acre-feet
2001	11,000 acre-feet
2002	12,000 acre-feet
2003	14,000 acre-feet
2004	16,000 acre-feet
2005	18,000 acre-feet
2006	20,000 acre-feet
2007	22,000 acre-feet
2008	23,000 acre-feet
2009	24,000 acre-feet
2010	25,000 acre-feet
2011	26,000 acre-feet
2012	27,000 acre-feet
2013	28,000 acre-feet
2014 and each year thereafter	29,000 acre-feet

Each year Northridge shall be required to pay for its Annual Entitlement or surrender its right to some of it so that the Agency will be free to put the water to use elsewhere. In order to do this, if Northridge does not take or pay for the Northridge Annual Entitlement for any year, the Northridge Annual Entitlement for each year thereafter shall be reduced by an amount equal to 50% of the amount which Northridge did not take or pay for during that year.

5. Water Shortage Provisions.

(a) The Northridge Annual Entitlement shall be subject to temporary or permanent reduction or elimination whenever the Agency notifies Northridge that the Agency has determined that it will not have sufficient water (1) to meet the needs of the Agency's then current customers within Placer County, (2) to meet the contractual entitlement of San Juan under its water supply contract with the Agency, or (3) to meet the Agency's obligations under its April 30, 1963 Middle Fork Project Power Purchase Contract with Pacific Gas and Electric Company ("the Power Purchase Contract"). Such notification shall be provided at the earliest date feasible. The Northridge Annual Entitlement shall not be subject to reduction or elimination because the Agency has insufficient water to meet the needs of other Agency contractors or users whose service areas are outside of Placer County, except for San Juan.

(b) The Agency may temporarily discontinue or reduce the amount of the Northridge Annual Entitlement for the purpose of maintaining, repairing, replacing, investigating or inspecting any of the facilities necessary for the storage or furnishing of water to Northridge. In so far as it is feasible, the Agency will give Northridge due notice in advance of such temporary discontinuances or reductions except in cases of emergency, in which case notice will be provided at the earliest date feasible. In the event of any such discontinuance or reduction, the Agency will, upon the resumption of service, attempt to approximate delivery of the quantity of Northridge Annual Entitlement that would have been furnished to Northridge in the absence of such event.

(c) The Northridge Annual Entitlement shall be subject to reduction in accordance with the provisions of Exhibit A.

(d) In the event of a water shortage as described in subparagraphs (a), (b) or (c) of this

article, Northridge shall be solely responsible for obtaining alternative supplies of water to meet its customers' needs, and no liability shall accrue against the Agency or any of its directors, officers, agents or employees for any damage, direct or indirect, arising from such shortages. In any year in which less than the Northridge Annual Entitlement from the schedule set forth in Article 4 is available to Northridge, a proportionate adjustment shall be made to the amounts to be paid by Northridge provided for in Article 12. To the extent that there is a deficiency in the availability of the Northridge Annual Entitlement not caused by wrongful conduct of the Agency, such adjustment shall constitute the sole remedy of Northridge or anyone having or claiming to have by, through or under Northridge the right to the use of any of the water supply provided for herein.

6. Delivery of Water. The Agency shall deliver the Northridge Annual Entitlement into Folsom Reservoir, and Northridge shall be responsible for diversion, treatment and conveyance of such water, including without limitation the payment of any charges to Reclamation concerning the diversion of such water from Folsom Reservoir and the cost of any facilities necessary to divert such water from Folsom Reservoir.

7. Commencement of Water Service. Water service to Northridge under this Agreement shall commence on June 1, 2000.

8. Delivery Schedule. Prior to commencement of water service, Northridge shall submit a written schedule to the Agency indicating the time and quantities of the Northridge Annual Entitlement to be diverted from Folsom Reservoir for delivery to Northridge pursuant to this Agreement during the remainder of the year. Thereafter, on or before December 1 of each year, Northridge shall submit a written schedule to the Agency indicating the times and quantities of the Northridge Annual Entitlement to be diverted from Folsom Reservoir for delivery to Northridge pursuant to this Agreement during the following year. The Agency shall, consistent with the Agency Water Rights,

the Power Purchase Contract and the provisions hereof, furnish the Northridge Annual Entitlement to the maximum extent feasible in accordance with the schedules submitted by Northridge or any revisions thereof that are satisfactory to the Agency. The Agency shall cooperate with Northridge in any revisions to the schedule for water deliveries as necessary to accommodate limitations in the available capacity of water diversion, treatment and conveyance facilities to be utilized by Northridge.

9. Measurement. Northridge shall measure or cause to be measured all water furnished pursuant to this Agreement at the point of diversion at Folsom Reservoir. Such measurement shall be with equipment satisfactory to the Agency and to Northridge, and Northridge shall furnish the Agency written reports quarterly showing the weekly diversions to Northridge. The Agency may inspect such measuring equipment for the purpose of determining the accuracy thereof at any time, and any errors therein will be adjusted.

10. Water Quality. The Agency assumes no responsibility with respect to the quality of the water to be furnished pursuant to this Agreement and does not warrant the quality of any such water.

11. Responsibilities for Delivery and Distribution of Water. Neither the Agency nor its directors, officers, agents or employees shall be liable for the control, carriage, handling, use, disposal or distribution of water furnished to Northridge hereunder outside of facilities then being operated or maintained by the Agency, nor for claims of damages of any nature whatsoever, including but not limited to property damage, personal injury or death, arising out of or connected with the control, carriage, handling, use, disposal or distribution of such water beyond such facilities, and Northridge shall indemnify and hold harmless the Agency and its directors, officers, agents and employees from any such damages or claims of damages.

12. Rate and Method of Payment for Water.

(a) Rate of Payment for Water. Each year Northridge shall pay the Agency for each acre-foot of Northridge Annual Entitlement made available for use in Northridge's service area the highest of the following three rates: (1) Thirty-five dollars (\$35); (2) One hundred seventy-five percent (175%) of the acre-foot price the Agency charges the City of Roseville and San Juan that year for water made available to them in Folsom Reservoir for use within Placer County; or (3) One hundred fifty percent (150%) of the total amount, per acre-foot, including any restoration and other fees and charges, which the Agency is required to pay that year to Reclamation for water to be used within the Agency pursuant to the Agency's September 18, 1970 contract with Reclamation as amended and supplemented or pursuant to any renewals of that contract.

Each year, Northridge shall pay the Agency for each acre-foot of Northridge Annual Entitlement which is sold, leased, transferred or disposed of by Northridge for use outside the authorized service area for Agency water as described in Article 19, either: (1) the price provided for in the previous sentence; or (2) an amount equal to 95% of the value received by Northridge for such water, whichever is higher, and the first water sold, leased, transferred or disposed of by Northridge each year for use outside the authorized service area for Agency water shall be deemed to be the water made available to Northridge by the Agency pursuant to this Agreement. Prior to December 31 each year, the Agency shall confirm and document in writing to Northridge the applicable water rate for the next year.

(b) Time and Method of Payment. Payment shall be made quarterly in advance on or before January 1, April 1, July 1 and October 1 of each year. The amount of the payment shall be based upon the amount of water in the delivery schedule or amendments thereof furnished pursuant to Article 8. At the close of each year, the Agency shall recalculate the amount owing to it for the

previous year based upon the actual deliveries and amounts of water made available to Northridge, and shall thereupon bill Northridge for any underpayments or refund any overpayments. Any amounts due and owing from one party to the other as a result of such recalculation shall be paid within thirty days after the Agency renders a statement to Northridge for such payment.

13. Interest on Overdue Payments. Northridge shall pay the Agency interest at the legal rate for interest on State of California judgments on any charges that remain unpaid after they become due and payable.

14. Obligation of Northridge to Make Payments.

(a) Character of obligation.

The obligations of Northridge arising out of or pursuant or incidental to this Agreement shall constitute general obligations of Northridge, and Northridge shall use all the powers and resources available to it under the law to collect the funds necessary for and to pay its obligations to the Agency under this Agreement. Northridge as a whole is obligated to pay to the Agency the payments coming due under this Agreement, notwithstanding any individual default by its water users, constituents or others in the payment to Northridge of assessments, taxes, tolls or other charges levied by Northridge.

(b) Refusal of Water Does Not Affect Obligation.

Northridge's failure or refusal to accept delivery of any of the Northridge Annual Entitlement in any year shall in no way relieve it of its obligation to make payments to the Agency for that year's Annual Entitlement as provided for herein to the extent the Agency was ready, willing

and able to supply the Northridge Annual Entitlement that year.

15. Compliance with Provisions of EIR, SWRCB Orders and Warren Act Contract.

(a) The Agency shall not petition the SWRCB for a change in the place of use under the Agency Water Rights to eliminate any of Northridge's service area as of the date of this Agreement, or for any other change to the Agency Water Rights that would adversely affect Northridge's rights under this Agreement.

(b) The Agency and Northridge shall fully comply with (1) the provisions of the EIR that limit the diversion and use of water under this Agreement and (2) the provisions of the SWRCB Orders that limit the diversion and use of water under this Agreement, by complying with the operating criteria set forth in Exhibit A.

16. Remedies Not Exclusive. The use by either party of any remedy specified for the enforcement of this Agreement is not exclusive and shall not deprive the party using such remedy of, or limit the application of, any other remedy provided by law.

17. Waiver of Rights. Any waiver at any time by either party of its rights with respect to a breach or default, or any other matter arising in connection with this Agreement, shall not be deemed to be a waiver with respect to any other breach, default or matter.

18. Assignment. The provisions of this Agreement shall apply to and bind the successors and assigns of the respective parties, but no assignment or transfer of this Agreement, or any part hereof or interest herein, shall be valid until and unless approved by the Agency.

19. Areas Served by Northridge. Water delivered to Northridge pursuant to this Agreement shall not be sold or otherwise disposed of by Northridge for use outside of the service area shown on the map marked Exhibit B, without the prior written consent of the Agency, which consent shall not unreasonably be withheld; provided, however, in no event shall any such water be used outside the place of use described in the Agency's water right permits.

20. Opinions and Determinations. Where the terms of this Agreement provide for action to be based upon judgment, approval, review or determination of either party, such terms are not intended to be and shall never be construed as permitting such opinion, judgment, approval, review or determination to be arbitrary, capricious or unreasonable.

21. Notices. All notices that are required either expressly or by implication to be given by any party to the other under this Agreement shall be signed for the Agency and for Northridge by such officers as they may from time to time authorize to so act. Any notices to parties required by this Agreement shall be delivered or mailed, U.S. first-class postage prepaid, addressed as follows:

To Agency:

General Manager
Placer County Water Agency
P.O. Box 6570
Auburn, California 95604

To Northridge:

General Manager
Northridge Water District
P.O. Box 41258
5331 Walnut Avenue
Sacramento, California 95841

Either party may change its address for notice by sending notice of such change to the other party.

22. Inspection of Books and Records. The proper officers or agents of Northridge shall have full and free access at all reasonable times to the account books and official records of the Agency in so

far as the same pertain to the matters and things provided for in this Agreement, with the right at any time during office hours to make copies thereof at Northridge's expense, and the proper representative of the Agency shall have similar rights with respect to the account books and records of Northridge.

23. Integration. This is an integrated agreement and contains all of the terms, considerations, understanding and promises of the parties. It shall be read as a whole.

24. Construction and Interpretation. It is agreed and acknowledged by the parties that this Agreement has been arrived at through negotiation, and that each party has had a full and fair opportunity to revise the terms of this Agreement. Consequently, the normal rule of construction that any ambiguities are to be resolved against the drafting party shall not apply in construing or interpreting this Agreement.

25. Amendment. This Agreement may be modified or amended only by a subsequent written agreement approved by both parties.

26. Attorney's Fees. In any action brought by either party to enforce or construe this Agreement, the prevailing parties shall be entitled to an award of reasonable attorney's fees, expert witness and consulting fees, litigation costs and costs of suit.

27. Counterparts. This Agreement may be executed in counterparts. Northridge shall deliver its counterpart to the Agency, which shall deliver a fully-conformed counterpart to Northridge.

28. Obligations Prior to Termination. The obligations of the parties incurred pursuant to this

Agreement prior to the termination of this Agreement shall survive the termination.

29. Supporting Resolutions. Each party represents that it has legal authority to enter into this Agreement and to perform its obligations hereunder, and shall submit to the other party concurrent with execution of this Agreement a duly-authorized resolution or other document evidencing the authority and authorizing the person executing this Agreement to do so.

30. General Indemnity. Each party agrees to protect, defend, indemnify and hold harmless the other party, its directors, officers, agents, employees and consultants from and against any and all losses, claims, liens, demands and causes of action of every kind and character, without limitation by enumeration, occurring or in any wise incident to, connected with, or arising directly or indirectly out of the negligence or willful misconduct of the indemnifying party hereunder.

31. Severability. The invalidity, illegality or unenforceability of any provision of this Agreement shall not render the other provisions unenforceable, invalid or illegal.

32. No Third Party Beneficiaries. This Agreement shall not be construed to create any third party beneficiaries. This Agreement is for the sole benefit of the parties, their respective successors and permitted transferees and assigns, and no other person or entity shall be entitled to rely upon or receive any benefit from this Agreement or any of its terms.

33. Relationship of Parties. Nothing in this Agreement shall be construed to create an association, joint venture, trust or partnership, or to impose a trust or partnership covenant, obligation or liability on or with regard to anyone or more of the parties.

34. Additional Documents. Each party agrees to make, execute, acknowledge and deliver any and all documents reasonably required to implement this Agreement.

35. Supersedes prior Agreement. This Agreement supersedes in its entirety the "Agreement between Placer County Water Agency and Northridge Water District for a water supply for groundwater stabilization", as amended, which was entered into as of August 21, 1995.

The foregoing is hereby agreed to by the parties.

PLACER COUNTY WATER AGENCY

By: _____

Attest:

NORTHRIDGE WATER DISTRICT

By: _____

Attest:

Exhibit A

Operating Criteria

The diversion and use of water under this Agreement shall be subject to the following operating criteria, in addition to the terms and conditions set forth in the Agreement:

1. The Northridge Annual Entitlement shall not exceed the annual amount of water that is available for diversion by Northridge in accordance with the terms and conditions of the SWRCB Orders, which are attached hereto. Northridge's obligation in Article 4 of the Agreement to take or pay for the Northridge Annual Entitlement shall be based on the Northridge Annual Entitlement as adjusted in this exhibit.

2. Northridge shall compensate the Agency at the rates provided for in Article 12 for water that the Agency would have appropriated to storage but could not (and which results in a net decrease in the amount of water in storage) as a result of application of Article 2.b. of the September 30, 1999 agreement between the Agency and the Department of Water Resources that is referred to in the SWRCB Orders and attached hereto.

3. To account for the conveyance losses provided for in Article 3(b) of the Warren Act Contract, the Agency shall release five percent more than the quantity of water requested for delivery by Northridge.

**STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS**

ORDER

Application 18085 Permit 13856

**ORDER APPROVING CHANGE IN THE PLACE OF USE,
AND AMENDING THE PERMIT**

WHEREAS:

1. Permit 13856 was issued to Placer County Water Agency on January 10, 1963, pursuant to Application 18085.
2. A petition to change the place of use of Permit 13856 was filed with the State Water Resources Control Board (SWRCB) on July 31, 1996 and the SWRCB has determined that good cause for such change has been shown. Public notice of the change was issued on October 18, 1996 and protest issues have been resolved. Resultant protest resolution agreements have been incorporated into this order.
3. The SWRCB has determined that the petition to change the place of use does not constitute the initiation of a new right nor operate to the injury of any other lawful user of water.
4. Fish, wildlife, and plant species have been or may be listed under the federal Endangered Species Act and/or the California Endangered Species Act. A paragraph should be placed in the permit making the permittee aware of possible obligations resulting from these acts.
5. The paragraph relating to the continuing authority of the SWRCB should be updated to conform to section 780(a), title 23 of the California Code of Regulations.

NOW, THEREFORE, IT IS ORDERED THAT:

1. The place of use under Permit 13856 shall be amended as follows:

The place of use is situated in portions of Placer and Sacramento counties as shown on the Placer County Water Agency map set dated July 31, 1996, on file with the SWRCB.

Application 18085

Permit 13856

2. Paragraph 8, the continuing authority condition, shall be updated to read as follows:

Pursuant to California Water Code sections 100 and 275 and the common law public trust doctrine, all rights and privileges under this permit, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the SWRCB in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the SWRCB may be exercised by imposing specific requirements over and above those contained in this permit with a view to eliminating waste of water and to meeting the reasonable water requirements of licensee without unreasonable draft on the source. Permittee may be required to implement a water conservation plan, features of which may include but not necessarily be limited to: (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this permit and to determine accurately water use as against reasonable water requirement for the authorized project. No action will be taken pursuant to this paragraph unless the SWRCB determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the SWRCB also may be exercised by imposing further limitations on the diversion and use of water by the permittee in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the SWRCB determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution article X, section 2; is consistent with the public interest and is necessary to preserve or restore the uses protected by the public trust.

(0000012)

3. An Endangered Species term shall be added to Permit 13856 to read as follows:

This permit does not authorize any act which results in the taking of a threatened or endangered species or any act which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). If a "take" will result from any act authorized under this water right, the permittee shall obtain authorization for an incidental take prior to construction or operation of the project. Permittee shall be responsible for meeting all requirements of the applicable Endangered Species Act for the project authorized under this permit.

(0000014)

Application 18085

Permit 13856

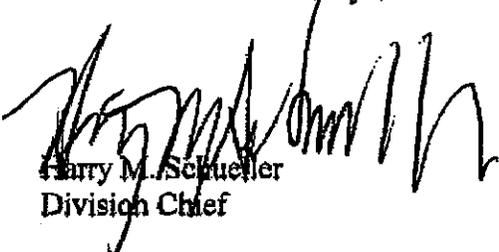
3. The following term shall be added to Permit 13856 to read as follows:

Permittee shall comply with provisions of the following settlement agreements on file with the SWRCB:

- (a) *Agreement for Dismissal of Protest by California Department of Water Resources to Placer County Water Agency's Petition before State Water Resources Control SWRCB for Change in Place of Use under Permits Nos. 13856 (App. No. 18085) and 13858 (App. No. 18087) executed on September 30, 1999;*
- (b) *Stipulated Agreement for Dismissal of Bureau of Reclamation's Protest to Placer County Water Agency's Petition to Expand the Place of Use Under Application 18085 (Permit 13856) and Application 18087 (Permit 13858) executed on September 8, 1998;*
- (c) **SETTLEMENT AGREEMENT CONCERNING PLACER COUNTY WATER AGENCY'S PETITION TO EXPAND ITS PLACE OF USE UNDER WATER RIGHT PERMITS 13856 AND 13858** executed between Placer County Water Agency and the County of Sacramento (on March 23, 1999); as well as the City of Sacramento (on April 13, 1999); and
- (d) *Stipulated Agreement for Dismissal of Protest to Placer County Water Agency's Petition to Expand the Place of Use Under Application 18085 (Permit 13856) and Application 18087 (Permit 13858) executed between the Placer County Water Agency and the Friends of the River, Save the American River Association, and the Sierra Club, Mother Lode Chapter (on September 16, 1999); as well as Mr. William Berry (on November 20, 1999).*

Inclusion in this permit of provisions of the referenced agreements shall not be construed as affecting the enforceability, as between the parties, of such provisions insofar as they are not inconsistent with the terms of this permit.

(0000024)



Harry M. Schueler
Division Chief

Dated: MAY 24 2000

**STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD**

DIVISION OF WATER RIGHTS

ORDER

Application 18087 Permit 13858

**ORDER APPROVING CHANGE IN THE PLACE OF USE,
AND AMENDING THE PERMIT**

WHEREAS:

1. Permit 13858 was issued to Placer County Water Agency on January 10, 1963, pursuant to Application 18087.
2. A petition to change the place of use of Permit 13858 was filed with the State Water Resources Control Board (SWRCB) on July 31, 1996 and the SWRCB has determined that good cause for such change has been shown. Public notice of the change was issued on October 18, 1996 and protest issues have been resolved. Resultant protest resolution agreements have been incorporated into this order.
3. The SWRCB has determined that the petition to change the place of use does not constitute the initiation of a new right nor operate to the injury of any other lawful user of water.
4. Fish, wildlife, and plant species have been or may be listed under the federal Endangered Species Act and/or the California Endangered Species Act. A paragraph should be placed in the permit making the permittee aware of possible obligations resulting from these acts.
5. The paragraph relating to the continuing authority of the SWRCB should be updated to conform to section 780(a), title 23 of the California Code of Regulations.

NOW, THEREFORE, IT IS ORDERED THAT:

1. The place of use under Permit 13858 shall be amended as follows:

The place of use is situated in portions of Placer and Sacramento counties as shown on the Placer County Water Agency map set dated July 31, 1996, on file with the SWRCB.

Application 18087

Permit 13858

2. Paragraph 8, the continuing authority condition, shall be updated to read as follows:

Pursuant to California Water Code sections 100 and 275 and the common law public trust doctrine, all rights and privileges under this permit, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the SWRCB in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the SWRCB may be exercised by imposing specific requirements over and above those contained in this permit with a view to eliminating waste of water and to meeting the reasonable water requirements of licensee without unreasonable draft on the source. Permittee may be required to implement a water conservation plan, features of which may include but not necessarily be limited to: (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this permit and to determine accurately water use as against reasonable water requirement for the authorized project. No action will be taken pursuant to this paragraph unless the SWRCB determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the SWRCB also may be exercised by imposing further limitations on the diversion and use of water by the permittee in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the SWRCB determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution article X, section 2; is consistent with the public interest and is necessary to preserve or restore the uses protected by the public trust.

(0000012)

3. An Endangered Species term shall be added to Permit 13858 to read as follows:

This permit does not authorize any act which results in the taking of a threatened or endangered species or any act which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). If a "take" will result from any act authorized under this water right, the permittee shall obtain authorization for an incidental take prior to construction or operation of the project. Permittee shall be responsible for meeting all requirements of the applicable Endangered Species Act for the project authorized under this permit.

(0000014)

Application 18087

Permit 13858

3. The following term shall be added to Permit 13858 to read as follows:

Permittee shall comply with provisions of the following settlement agreements on file with the SWRCB:

- (a) *Agreement for Dismissal of Protest by California Department of Water Resources to Placer County Water Agency's Petition before State Water Resources Control SWRCB for Change in Place of Use under Permits Nos. 13856 (App. No. 18085) and 13858 (App. No. 18087) executed on September 30, 1999;*
- (b) *Stipulated Agreement for Dismissal of Bureau of Reclamation's Protest to Placer County Water Agency's Petition to Expand the Place of Use Under Application 18085 (Permit 13856) and Application 18087 (Permit 13858) executed on September 8, 1998;*
- (c) **SETTLEMENT AGREEMENT CONCERNING PLACER COUNTY WATER AGENCY'S PETITION TO EXPAND ITS PLACE OF USE UNDER WATER RIGHT PERMITS 13856 AND 13858** executed between Placer County Water Agency and the County of Sacramento (on March 23, 1999); as well as the City of Sacramento (on April 13, 1999); and
- (d) *Stipulated Agreement for Dismissal of Protest to Placer County Water Agency's Petition to Expand the Place of Use Under Application 18085 (Permit 13856) and Application 18087 (Permit 13858) executed between the Placer County Water Agency and the Friends of the River, Save the American River Association, and the Sierra Club, Mother Lode Chapter (on September 16, 1999); as well as Mr. William Berry (on November 20, 1999).*

Inclusion in this permit of provisions of the referenced agreements shall not be construed as affecting the enforceability, as between the parties, of such provisions insofar as they are not inconsistent with the terms of this permit.

(0000024)



Harry M. Scheller
Division Chief

Dated: MAY 24 2000

**Agreement for Dismissal of Protest
by California Department of Water Resources
to Placer County Water Agency's Petition before
State Water Resources Control Board
for Change in Place of Use
under Permits Nos. 13856 (App. No. 18085)
and 13858 (App. No. 18087)**

This Agreement is entered into this 30th day of September, 1999, by and between the California Department of Water Resources, an agency of the State of California, and Placer County Water Agency, a public entity formed under the Placer County Water Agency Act, in the County of Placer, State of California.

Whereas:

1. Placer County Water Agency (Agency) has petitioned the State Water Resources Control Board (State Board) for a change in the place of use specified in water rights permits it holds to appropriate water from the Middle Fork of the American River to add and include areas in Sacramento County; and
2. The State of California Department of Water Resources (DWR) has protested that petition because of potential impacts to water rights it holds for the operation of the State Water Project (SWP); and
3. DWR and Agency desire to resolve DWR's protest through settlement.
4. A portion of the expanded place of use includes the service area of the San Juan Water District (District). The change in place of use will not change the total quantity of water that the District diverts from Folsom Lake because its service area is already substantially developed, because the District would be replacing a portion of its existing Central Valley Project water supply with the Agency water, and because the District has agreed to restrict its diversions in dry years under its Water Forum Agreement. The expansion of the Agency's place of use to cover all of the District's service area will not increase the District's diversions from Folsom Lake and will not affect the water supply available to the SWP. Therefore, the Term 91 diversion constraints established by this agreement shall not apply to the District's diversions from Folsom Lake. The exclusion of the District's service area from this agreement is intended to create no precedent in other proceedings as to the applicability of Term 91 to Agency water supplies diverted by the District.

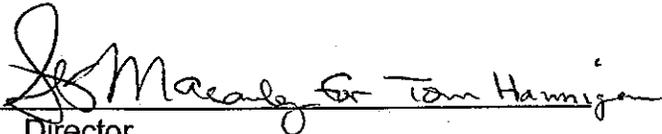
Therefore, the Parties Agree as Follows;

1. "Term 91 is in effect" means State Board Standard Permit Term 91 as described in State Board Decision 1594 is in effect as to those water right holders whose permits or licenses contain Term 91.
2. If the State Board grants Agency's petition to expand its place of use,
 - a. When Term 91 is in effect, Agency shall deliver to the Northridge Water District service area only water previously appropriated to storage; and
 - b. When Term 91 is in effect, Agency shall not appropriate water to storage to refill any storage in its Middle Fork reservoirs vacated on account of a previous use of stored water in the Northridge Water District service area.
 - c. DWR agrees that, upon request by the Agency, it will consider in good faith an appropriate modification to subsection (b) to provide protection for the SWP alone. The parties understand that, because of the obligations under the Coordinated Operating Agreement (COA) between DWR and USBR to provide storage releases for in-basin uses, DWR will need to first secure the agreement of USBR to keep DWR whole under the COA on account of the modification.
3. Upon DWR's request, Agency shall provide DWR all information relevant to the operation of its Middle Fork reservoirs or to any other aspect of its operations as necessary for DWR to monitor Agency's compliance with the provisions of this Agreement.
4. Upon execution of this agreement, DWR shall withdraw its protest to Agency's petition for change in place of use pending with the State Board.
5. In the event that the State Board shall, in the course of the current Bay-Delta water rights proceedings, enter a final order which expressly addresses and determines Agency's obligations to implement the provisions of the 1995 Water Quality Control Plan for the Bay-Delta Estuary, and for so long as that order is in effect, that order shall supersede the provisions of Section 2 of this agreement.
6. Neither party shall use or submit this agreement for any purpose in any proceeding before the State Water Resources Control Board, the Federal Energy Regulatory Commission, or any other regulatory or adjudicatory body, except in

an action to defend its validity or to enforce its terms.

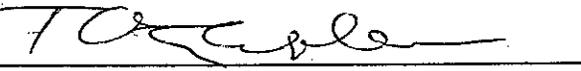
In Witness Whereof, the parties hereto have executed this Agreement for Dismissal of Protest as of the day and year first above written.

CALIFORNIA DEPARTMENT OF WATER RESOURCES

By: 
Director

(SEAL)

PLACER COUNTY WATER AGENCY

By: 
Chair

Attest:

Secretary 

Stipulated Agreement for Dismissal of Bureau of Reclamation's Protest to Placer County Water Agency's Petition to Expand the Place of Use Under Application 18085 (Permit 13856) and Application 18087 (Permit 13858)

The United States Bureau of Reclamation (Reclamation) agrees that its protest to Placer County Water Agency's (PCWA) petition for change in place of use may be dismissed if the conditions set forth in paragraph 1 are included in the Board's Order approving the change. These conditions reflect a compromise among the parties to the Water Forum¹ in order to settle disputes among them concerning use of American River water and are not to be construed as evidence that the change in place of use under Permittee's permit will impact prior rights or the environment.

1. Permittee's deliveries of water from the American River to Northridge Water District (Northridge) under the August 21, 1995, PCWA-Northridge Agreement, and any amendments thereto, will be subject to the following restrictions:

a. Permittee shall not deliver any water within the expanded place of use in Sacramento County until the recipient of such water has entered into such contracts with Reclamation as may be necessary for access to and use of Federal facilities needed for rediversion of such water.

b. During the 10-year period following the date when water is first available to Northridge under the Northridge Agreement (the 10-year period):

(1) Water shall be delivered to Northridge only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 950,000 acre-feet.

(2) Notwithstanding subparagraph (1) above, in December, January, and February following a March through November period when the unimpaired inflow into Folsom Reservoir was less than 950,000 acre-feet, water may be delivered to Northridge when and after water is being released from Folsom Reservoir for flood protection.

¹The Water Forum is a regional group of water purveyors, environmental organizations and business interests interested in the economic and environmental future of the American River watershed as affected by the diversion of water from the American River. Its members include Sacramento County; the cities of Sacramento, Roseville, and Folsom; Sacramento County Water Agency; El Dorado County Water Agency; Placer County Water Agency; San Juan Water District; Northridge Water District; Save the American River Association; the Sierra Club; Friends of the River; and others.

(3) PCWA's deliveries of American River water to Northridge in each of these years will be limited to the amounts of water provided in the water use schedule in the Northridge Agreement, which allows annually increasing diversions to a maximum total of 29,000 acre-feet per year under that agreement.

c. After the 10-year period, Permittee may deliver American River water to Northridge only:

(1) In years when the projected March to November unimpaired inflow to Folsom Reservoir is greater than 1,600,000 acre-feet, or

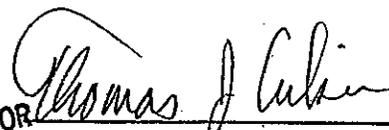
(2) Notwithstanding subparagraph (1) above, in a December, January, and February following a March through November period when the unimpaired inflow into Folsom Reservoir was less than 1,600,000 acre-feet, when and after water is being released from Folsom Reservoir for flood protection, or

(3) As otherwise permitted by the Board pursuant to an Order releasing or modifying the provisions of c(1) and c(2): Provided, That such Order is issued after a hearing before the SWRCB in which Reclamation is afforded the opportunity to participate; and Provided further, That this subparagraph is not interpreted as constituting a waiver by Reclamation of any rights it may have to contest the subject Board Order in a court of competent jurisdiction.

2. Nothing in this stipulation shall affect the right of Permittee to terminate the Northridge agreement if Permittee reasonably determines that any term of the Board Order resulting from the hearing is unacceptable.

3. Nothing in this stipulation is intended to restrict deliveries of water from Folsom Reservoir for use by Northridge under a Section 215 (surplus water) contract with Reclamation, whenever such water may be available.

Date: 9/8/98

ACTING FOR 
Roger K. Patterson, Regional Director
UNITED STATES
BUREAU OF RECLAMATION

Date: 8/24/98


David Breninger, General Manager
PLACER COUNTY WATER AGENCY

**SETTLEMENT AGREEMENT CONCERNING
PLACER COUNTY WATER AGENCY'S
PETITION TO EXPAND ITS PLACE OF USE
UNDER WATER RIGHTS PERMITS 13856 AND 13858**

This Settlement Agreement is executed on 23, March, 1999, by and between the Placer County Water Agency (hereafter referred to as "PCWA") and the County of Sacramento and Sacramento County Water Agency (Collectively referred to as "County").

RECITALS

- A. On July 31, 1996, PCWA filed a petition with the State Water Resources Control Board ("SWRCB") to change the place of use ("POU") authorized under PCWA's water right Application 18085 (Permit 13856) and Application 18087 (Permit 13858). This petition is referred to hereafter as the "POU Petition."
- B. The purpose of the POU Petition is to expand the POU to include a portion of Sacramento County that currently is almost entirely dependent on groundwater for its water supply, to allow surface water that is diverted by PCWA under Permits 13856 and 13858 to be used in lieu of groundwater in the expanded POU. PCWA intends to deliver water to the expanded POU pursuant to agreements with water purveyors whose service areas include portions of the expanded POU, including existing agreements with San Juan Water District ("San Juan") and Northridge Water District ("Northridge").
- C. On December 12, 1996, the County filed a protest based on environmental considerations to the POU Petition ("County Protest").
- D. PCWA and the County are members of the ongoing Water Forum, a regional group of water purveyors, environmental organizations, public and business interests interested in the economic and environmental future of the American River watershed as affected by the diversion of water from the American River. Other Water Forum members include the cities of Sacramento, Roseville and Folsom, El Dorado County Water Agency, San Juan Water

District, Northridge Water District, Save the American River Association, the Sierra Club, Friends of the River, and others.

- E. The provisions of this Settlement Agreement that pertain to the use of PCWA water in the expanded POU under the Northridge-PCWA Agreement are based on conditions that were negotiated in the Water Forum process.
- F. The County and PCWA now desire to resolve their differences regarding the proposed POU expansion, and therefore agree as follows:

Agreement

NOW, THEREFORE, in consideration of the mutual obligations and commitments set forth herein, the parties agree as follows:

I. Withdrawal of County's Protest. Immediately upon execution of this Settlement Agreement by both parties, the County shall withdraw the County's Protest, and the County will support the POU Petition.

II. Use or Delivery of Water in Expanded POU by Northridge.

A. The County and PCWA agree that diversions or rediversions of PCWA water for use or delivery in the expanded POU by Northridge Pursuant to the PCWA-Northridge Agreement shall be subject to compliance with the following conditions:

- 1. For the first ten years that water is available for diversion by Northridge Water District ("Northridge") from Folsom Reservoir under the August 21, 1995, Northridge-PCWA Agreement ("Northridge-PCWA Agreement"), but not more than twelve years from the effective date of the Water Forum Agreement, whichever

occurs first,¹ diversions of PCWA water under the Northridge-PCWA Agreement, for Northridge's own use or delivery to other purveyors, will be subject to the following restrictions:

- a. PCWA water can be diverted only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 950,000 acre feet.
 - b. In December, January and February following a March through November period when the unimpaired inflow into Folsom Reservoir was less than 950,000 acre feet, PCWA water cannot be diverted until such time as or after water is being released from Folsom Reservoir for flood protection.
 - c. In addition to the foregoing, diversions of PCWA water will be limited during the ten-year period pursuant to the water use schedule in the Northridge-PCWA Agreement, which allows annually-increasing diversions of up to 24,000 acre feet per year during the first ten years of water deliveries under that agreement.
 - d. Nothing set forth herein is intended to restrict Northridge's ability to take delivery of Section 215 water from Folsom Reservoir from the Bureau of Reclamation whenever it may be available.
2. If Northridge is able to take delivery of Sacramento river water through the Sacramento River Pipeline (a pipeline that would connect the Sacramento River to the Northridge pipeline), PCWA water will thereafter be diverted under the Northridge-PCWA Agreement for Northridge's own use or delivery to other

¹This time period is hereafter referred as the "ten-year period", and it may be extended for a period of up to two additional years by agreement of the parties to the Water Forum Agreement.

purveyors, only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 1,600,000 acre feet (i.e., "above-Hodge").

3. If Northridge is not able to take delivery of Sacramento River water through the Sacramento River Pipeline within the ten-year period, the SWRCB would hold a hearing "(SWRCB Hearing)" if requested by Northridge, the City of Sacramento, County of Sacramento, Friends of the River, Sierra Club or Save the American River Association. The purpose of the SWRCB Hearing will be to determine whether to add or revise conditions to PCWA's water rights for diversion of water from Folsom Reservoir under the Northridge-PCWA Agreement that are necessary to mitigate impacts from such diversions and/or prevent such diversions from adversely impacting diversion of American River water under the City's Rights. Nothing set forth in this section II determines the relative priority of the water rights of the City of Sacramento and PCWA. If Northridge is not able to take delivery of Sacramento River water through the Sacramento River Pipeline within the ten-year period, PCWA water will thereafter be diverted under the Northridge-PCWA Agreement for Northridge's own use or delivery to other purveyors, only in years when the projected March through November unimpaired inflow into Folsom Reservoir was greater than 1,600,000 acre feet (i.e., "above-Hodge") and under the conditions referred to in Section 1.b. above, unless these conditions are revised by a SWRCB order issued following the SWRCB Hearing. In addition, Northridge could divert water under the conditions referred to in Section 1.d. above.

The diversion restrictions set forth above reflect a compromise by the Water Forum parties in order to settle a dispute among them. If there is a SWRCB Hearing, the parties do not intend that the SWRCB consider the existence of this compromise as evidence of appropriate diversion conditions after the conclusion of the ten-year period. It is the intention of the parties that the SWRCB's determination following the SWRCB Hearing be based upon the best available scientific and other evidence available at the time of the SWRCB Hearing. Nothing set forth herein shall affect the right of PCWA to terminate the Northridge-PCWA Agreement if PCWA

reasonably determines that any term of the SWRCB order resulting from the SWRCB Hearing is unacceptable.

- B. The restrictions on diversions of PCWA water pursuant to the Northridge-PCWA Agreement, set forth in subsection A, above, also shall apply to diversions or rediversions of PCWA water for use or delivery in the expanded POU by Northridge pursuant to any other agreement or other arrangement.
- C. The diversion restrictions set forth above apply only to the use or delivery of PCWA water in the expanded POU.

III. Use of PCWA Water in Expanded POU By Other Purveyors. The County and PCWA agree to the following condition governing the use of PCWA water in the expanded POU by other purveyors:

The diversion of American River water under Permit 13856 or Permit 13858 for use or delivery in the expanded POU by any purveyor other than Northridge shall be permitted only if either of the following occur: (1) the purveyor has signed and is in compliance with the Purveyor Specific Agreement set forth for the purveyor in the Water Forum Agreement; or (2) there is no Purveyor Specific Agreement for the purveyor in the Water Forum Agreement or the Water Forum Agreement has not been finalized, but (a) the purveyor has formally adopted and is in compliance with a water conservation plan applicable to the area to receive water within the expanded POU that achieves a level of water conservation equal or greater to the level achieved by the water conservation measures included in the Water Forum Action Plan, and (b) the purveyor publicly supports and is participating in, consistent with the purveyor commitments set forth in the Water Forum Action Plan, the implementation of (i) an updated lower American River flow standard and improved pattern of fishery flow releases from Folsom reservoir, (ii) a habitat mitigation program for the lower American River, and (iii) the installation of a temperature control device on the urban water intake at Folsom Dam.

IV. Protest Dismissal Conditions. Immediately upon execution of this Settlement Agreement

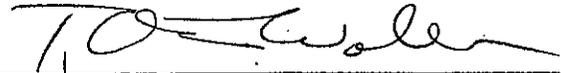
by both parties, the County and PCWA both shall provide written requests to the SWRCB to include all of the conditions set forth in Section II, Section III and Section IV of this Settlement Agreement in the SWRCB's order approving the POU Petition, and both parties shall fully and unconditionally support implementation of those requests. Regardless of whether the SWRCB does or does not comply with these requests, this Settlement Agreement and all of the terms and conditions hereof shall remain in full force and effect between the parties.

V. Future Actions; Binding on Successors. The parties agree to take all actions necessary or convenient to carry out the purposes and intent of this Settlement Agreement. This Settlement Agreement shall inure to the benefit of and be binding upon successors and assigns of the parties.

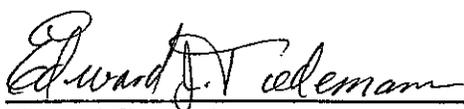
VI. Miscellaneous. This Settlement Agreement and each provision hereof shall be interpreted as if drafted equally by all parties. Any of the terms or conditions of this Settlement Agreement may be waived at any time by the party entitled to the benefits thereof, but no such waiver shall affect or impair the right of the waiving party to require observance, performance or satisfaction either of that term or condition as it applies on a subsequent occasion or of any other term or condition hereof. This document constitutes the entire agreement between the parties concerning the POU Petition, and may only be amended in a writing signed by authorized representatives of both parties. Each representative signing below warrants and represents that he or she has the full legal authority to bind his or her respective party to all of the provisions of this Settlement Agreement, and that no further approvals or consents are necessary from his or her respective party in connection therewith.

PLACER COUNTY WATER AGENCY

Date: 3-19-99

By: 

APPROVED AS TO FORM:


General Counsel

COUNTY OF SACRAMENTO

Date: 23rd, March, 1999

By: Muriel P. Johnson
Chairperson

SACRAMENTO COUNTY WATER AGENCY

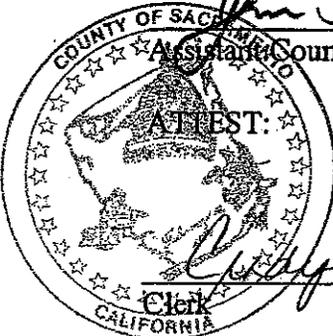
By: Muriel P. Johnson
Chairperson

APPROVED AS TO FORM:

John F. Whit
Assistant County Counsel

ATTEST:

Cindy H. Turner
Clerk
CALIFORNIA



FILED

MAR 23 1999

BOARD OF SUPERVISORS
By Cindy H. Turner
CLERK OF THE BOARD

FILED

MAR 23 1999

BOARD OF DIRECTORS
By Cindy H. Turner
Clerk of the Board

In accordance with Section 25103 of the Government Code of the State of California a copy of this document has been delivered to the Chairmen of the Board of Supervisors, County of Sacramento on

MAR 23 1999

By D.P. Platt
Deputy Clerk, Board of Supervisors

**SETTLEMENT AGREEMENT CONCERNING
PLACER COUNTY WATER AGENCY'S
PETITION TO EXPAND ITS PLACE OF USE
UNDER WATER RIGHTS PERMITS 13856 AND 13858**

This Settlement Agreement is executed on March ____, 1999, by and between the Placer County Water Agency (hereafter referred to as "PCWA") and the City of Sacramento ("City").

RECITALS

- A. On July 31, 1996, PCWA filed a petition with the State Water Resources Control Board ("SWRCB") to change the place of use ("POU") authorized under PCWA's water right Application 18085 (Permit 13856) and Application 18087 (Permit 13858). This petition is referred to hereafter as the "POU Petition."
- B. The purpose of the POU Petition is to expand the POU to include a portion of Sacramento County that currently is almost entirely dependent on groundwater for its water supply, to allow surface water that is diverted by PCWA under Permits 13856 and 13858 to be used in lieu of groundwater in the expanded POU. PCWA intends to deliver water to the expanded POU pursuant to agreements with water purveyors whose service areas include portions of the expanded POU, including existing agreements with San Juan Water District ("San Juan") and Northridge Water District ("Northridge").
- C. City has four water right Permits (nos. 11358, 11359, 11360 and 11361) that authorize diversions of American River water, and one water right Permit (no. 992) and pre-1914 rights that authorize diversions of Sacramento River water, in addition of the City's 1957 water rights settlement contract with the U.S. Bureau of Reclamation (hereafter all collectively referred to as the "City's Rights"). Pursuant to a May 21, 1962 agreement between City and PCWA, PCWA's rights to divert from the American River and any of its tributaries, including its rights pursuant to Permit 13856 and Permit 13858, are and shall be subordinate to the City's prior rights. A copy of the May 21, 1962 agreement is attached hereto as Exhibit A, and incorporated herein.

- D. On December 18, 1996, City filed a protest based on environmental considerations and a protest based on injury to the City's Rights against the POU Petition, which protests are collectively referred to hereafter as the "City's Protest."
- E. PCWA and City are members of the ongoing Water Forum, a regional group of water purveyors, environmental organizations, public and business interests interested in the economic and environmental future of the American River watershed as affected by the diversion of water from the American River. Other Water Forum members include Sacramento County, the cities of Roseville and Folsom, Sacramento County Water Agency, El Dorado County Water Agency, San Juan Water District, Northridge Water District, Save the American River Association, the Sierra Club, Friends of the River, and others.
- F. The provisions of this Settlement Agreement that pertain to the use of PCWA water in the expanded POU under the Northridge-PCWA Agreement are based on conditions that were negotiated in the Water Forum process.
- G. City and PCWA now desire to resolve their differences regarding the proposed POU expansion, and therefore agree as follows:

Agreement

NOW, THEREFORE, in consideration of the mutual obligations and commitments set forth herein, the parties agree as follows:

- I. **Withdrawal of City's Protest.** Immediately upon execution of this Settlement Agreement by both parties, the City shall withdraw the City's Protest, and the City will support the POU Petition.
- II. **Use or Delivery of Water in Expanded POU by Northridge.**

- A. The City and PCWA agree that diversions or rediversions of PCWA water for use or delivery in the expanded POU by Northridge Pursuant to the PCWA-Northridge Agreement shall be subject to compliance with the following conditions:
1. For the first ten years that water is available for diversion by Northridge Water District ("Northridge") from Folsom Reservoir under the August 21, 1995, Northridge-PCWA Agreement ("Northridge-PCWA Agreement"), but not more than twelve years from the effective date of the Water Forum Agreement, whichever occurs first,¹ diversions of PCWA water under the Northridge-PCWA Agreement, for Northridge's own use or delivery to other purveyors, will be subject to the following restrictions:
 - a. PCWA water can be diverted only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 950,000 acre feet.
 - b. In December, January and February following a March through November period when the unimpaired inflow into Folsom Reservoir was less than 950,000 acre feet, PCWA water cannot be diverted until such time as or after water is being released from Folsom Reservoir for flood protection.
 - c. In addition to the foregoing, diversions of PCWA water will be limited during the ten-year period pursuant to the water use schedule in the Northridge-PCWA Agreement, which allows annually-increasing diversions of up to 24,000 acre feet per year during the first ten years of water deliveries under that agreement.

¹This time period is hereafter referred as the "ten-year period", and it may be extended for a period of up to two additional years by agreement of the parties to the Water Forum Agreement.

- d. Nothing set forth herein is intended to restrict Northridge's ability to take delivery of Section 215 water from Folsom Reservoir from the Bureau of Reclamation whenever it may be available.
2. If Northridge is able to take delivery of Sacramento river water through the Sacramento River Pipeline (a pipeline that would connect the Sacramento River to the Northridge pipeline), PCWA water will thereafter be diverted under the Northridge-PCWA Agreement for Northridge's own use or delivery to other purveyors, only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 1,600,000 acre feet (i.e., "above-Hodge").
3. If Northridge is not able to take delivery of Sacramento River water through the Sacramento River Pipeline within the ten-year period, the SWRCB would hold a hearing "(SWRCB Hearing)" if requested by Northridge, the City of Sacramento, County of Sacramento, Friends of the River, Sierra Club or Save the American River Association. The purpose of the SWRCB Hearing will be to determine whether to add or revise conditions to PCWA's water rights for diversion of water from Folsom Reservoir under the Northridge-PCWA Agreement that are necessary to mitigate impacts from such diversions and/or prevent such diversions from adversely impacting diversion of American River water under the City's Rights. Nothing set forth in this section II determines the relative priority of the water rights of the City of Sacramento and PCWA. If Northridge is not able to take delivery of Sacramento River water through the Sacramento River Pipeline within the ten-year period, PCWA water will thereafter be diverted under the Northridge-PCWA Agreement for Northridge's own use or delivery to other purveyors, only in years when the projected March through November unimpaired inflow into Folsom Reservoir was greater than 1,600,000 acre feet (i.e., "above-Hodge") and under the conditions referred to in Section 1.b. above, unless these conditions are revised by a SWRCB order issued following the SWRCB Hearing. In addition, Northridge could divert water under the conditions referred to in Section 1.d. above.

The diversion restrictions set forth above reflect a compromise by the Water Forum parties in order to settle a dispute among them. If there is a SWRCB Hearing, the parties do not intend that the SWRCB consider the existence of this compromise as evidence of appropriate diversion conditions after the conclusion of the ten-year period. It is the intention of the parties that the SWRCB's determination following the SWRCB Hearing be based upon the best available scientific and other evidence available at the time of the SWRCB Hearing. Nothing set forth herein shall affect the right of PCWA to terminate the Northridge-PCWA Agreement if PCWA reasonably determines that any term of the SWRCB order resulting from the SWRCB Hearing is unacceptable.

- B. The restrictions on diversions of PCWA water pursuant to the Northridge-PCWA Agreement, set forth in subsection A, above, also shall apply to diversions or rediversions of PCWA water for use or delivery in the expanded POU by Northridge pursuant to any other agreement or other arrangement.
- C. The diversion restrictions set forth above apply only to the use or delivery of PCWA water in the expanded POU.

III. Use of PCWA Water in Expanded POU By Other Purveyors. The City and PCWA agree to the following condition governing the use of PCWA water in the expanded POU by other purveyors:

The diversion of American River water under Permit 13856 or Permit 13858 for use or delivery in the expanded POU by any purveyor other than Northridge shall be permitted only if either of the following occur: (1) the purveyor has signed and is in compliance with the Purveyor Specific Agreement set forth for the purveyor in the Water Forum Agreement; or (2) there is no Purveyor Specific Agreement for the purveyor in the Water Forum Agreement or the Water Forum Agreement has not been finalized, but (a) the purveyor has formally adopted and is in compliance with a water conservation plan applicable to the area to receive water within the expanded POU that achieves a level of water conservation equal or greater to the level achieved by the water conservation measures included in the Water Forum

Action Plan, and (b) the purveyor publicly supports and is participating in, consistent with the purveyor commitments set forth in the Water Forum Action Plan, the implementation of (i) an updated lower American River flow standard and improved pattern of fishery flow releases from Folsom reservoir, (ii) a habitat mitigation program for the lower American River, and (iii) the installation of a temperature control device on the urban water intake at Folsom Dam.

IV. City's Rights. Notwithstanding any other provision hereof, and in accordance with the May 12, 1962, agreement between City and PCWA, PCWA will not divert or redivert water originating in the American River or in any of its tributaries for use in any portion of the POU, including the expanded POU, whenever diversions or rediversions for such purpose, alone or in conjunction with other diversions, would limit or impair surface water diversions or rediversions by the City of Sacramento under the City's Rights.

V. Protest Dismissal Conditions. Immediately upon execution of this Settlement Agreement by both parties, City and PCWA both shall provide written requests to the SWRCB to include all of the conditions set forth in Section II, Section III and Section IV of this Settlement Agreement in the SWRCB's order approving the POU Petition, and both parties shall fully and unconditionally support implementation of those requests. Regardless of whether the SWRCB does or does not comply with these requests, this Settlement Agreement and all of the terms and conditions hereof shall remain in full force and effect between the parties.

VI. Future Actions; Binding on Successors. The parties agree to take all actions necessary or convenient to carry out the purposes and intent of this Settlement Agreement. This Settlement Agreement shall inure to the benefit of and be binding upon successors and assigns of the parties.

VII. Miscellaneous. This Settlement Agreement and each provision hereof shall be interpreted as if drafted equally by all parties. Any of the terms or conditions of this Settlement Agreement may be waived at any time by the party entitled to the benefits thereof, but no such waiver shall affect or impair the right of the waiving party to require observance, performance or satisfaction either of that term or condition as it applies on a subsequent occasion or of any other term or condition hereof. This document constitutes the entire agreement between the parties concerning the POU Petition,

and may only be amended in a writing signed by authorized representatives of both parties. Each representative signing below warrants and represents that he or she has the full legal authority to bind his or her respective party to all of the provisions of this Settlement Agreement, and that no further approvals or consents are necessary from his or her respective party in connection therewith.

PLACER COUNTY WATER AGENCY

Date: 3/19/99

By: [Signature]

APPROVED AS TO FORM:

[Signature]
General Counsel

CITY OF SACRAMENTO

Date: _____

By: _____

APPROVED AS TO FORM:

[Signature]
Deputy City Attorney

ATTEST:

City Clerk

AGREEMENT

CITY OF SACRAMENTO, a municipal corporation, hereinafter referred to as "CITY", and PLACER COUNTY WATER AGENCY, a political subdivision of the State of California, hereinafter referred to as "AGENCY", hereby agree as follows:

Recitals

1. AGENCY has filed with the State Water Rights Board of the State of California Applications 18084, 18085, 18086, and 18087 to appropriate unappropriated water from North Fork and Middle Fork American River and from various tributaries thereto for power, irrigation, incidental domestic, municipal, industrial and recreational purposes.
2. CITY diverts water from the Sacramento River below its confluence with the American River, at the intake of its existing Filtration Plant, pursuant to appropriative rights dating from 1849 or 1850, and Permit 992 on Application 1743. CITY will also soon divert or redirect water from the American River at a point near the new Filtration Plant now under construction, pursuant to Permit No. 11358 on Application 12140, Permit No. 11361 on Application 16060, Permit 11359 on Application 12321, and Permit 11360 on Application 12622, under agreements with the U. S. Bureau of Reclamation, and with Sacramento Municipal Utility District, both dated June 28, 1957. All of such diversions are for municipal use of the City of Sacramento and the areas adjacent to said CITY.

3. CITY has filed with the aforesaid State Water Rights Board a protest against the applications filed by AGENCY and referred to in Paragraph 1 hereinabove on the ground that AGENCY's proposed diversions would interfere with CITY's diversions under prior right.

4. AGENCY has filed with said State Water Rights Board an answer to the aforesaid protest stating, inter alia, that water is available at AGENCY's proposed points of diversion for the uses proposed under its applications without interfering with the reasonable needs of protestant CITY under any prior downstream vested rights.

Agreements

5. CITY and AGENCY hereby agree (a) that the rights of AGENCY to divert water originating in the American River or in any of its tributaries are and shall be subordinate to CITY's rights under the appropriations, permits, and agreements referred to in Paragraph 2 hereinabove, and (b) that this agreement may be incorporated into and made a condition of any permit or permits issued to AGENCY by the aforesaid State Water Rights Board on the applications referred to in Paragraph 1 hereinabove.

6. CITY agrees that the protest referred to in Paragraph 3 hereinabove may be disregarded and dismissed if

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this agreement is incorporated into and made a condition
of said permit or permits issued to AGENCY.

Dated: May 21, 1962.

CITY OF SACRAMENTO

By E. A. Fairbairn

PLACER COUNTY WATER AGENCY

By St Thomas E. Dault
Acting Chairman

**Stipulated Agreement for Dismissal of Protest to Placer County
Water Agency's Petition to Expand the Place of Use Under Application
18085 (Permit 13856) and Application 18087 (Permit 13858)**

Friends of the River agrees that its protest to Placer County Water Agency's ("PCWA") petition for change in place of use may be dismissed if the conditions set forth below are included in the State Board's order approving the petition:

1. For the first ten years that water is available for diversion by Northridge Water District ("Northridge") from Folsom Reservoir under the August 21, 1995 Northridge-PCWA Agreement ("Northridge-PCWA Agreement"), but not more than twelve years from the effective date of the Water Forum Agreement, whichever occurs first,¹ Northridge's diversions under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, will be subject to the following restrictions:

a. Northridge will be able to divert PCWA water only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 950,000 acre feet.

b. In December, January and February following a March through November period when the unimpaired inflow into Folsom Reservoir was less than 950,000 acre feet, Northridge will not divert PCWA water until such time as or after water is being released from Folsom Reservoir for flood protection.

c. In addition to the foregoing, Northridge's diversions of PCWA water will be limited during the ten-year period pursuant to the water use schedule in the Northridge-PCWA Agreement, which allows annually-increasing diversions of up to 24,000 acre feet per year during the first ten years of water deliveries under that agreement.

d. Nothing in this Agreement is intended to restrict Northridge's ability to take

¹ This time period is hereafter referred to as the "ten-year period," and it may be extended for a period of up to two additional years by agreement of the parties to this Agreement.

delivery of Section 215 water from Folsom Reservoir from the Bureau of Reclamation whenever it may be available.

2. If Northridge is able to take delivery of Sacramento River water through the Sacramento River Pipeline (a pipeline that would connect to the Northridge pipeline), Northridge will thereafter divert water from Folsom Reservoir under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 1,600,000 acre feet (i.e., "above-Hodge").

3. If Northridge is not able to take delivery of Sacramento River water through the Sacramento River Pipeline within the ten-year period, the SWRCB would hold a hearing ("SWRCB Hearing") if requested by Northridge, the City of Sacramento, County of Sacramento, Friends of the River, Sierra Club or Save the American River Association. The purpose of the SWRCB Hearing will be to determine whether to add or revise conditions to PCWA's water rights for diversion of water from Folsom Reservoir under the Northridge-PCWA Agreement that are necessary to mitigate impacts from such diversions and/or prevent such diversions from adversely impacting diversion of American River water under the City of Sacramento's prior water rights. Nothing in this Agreement determines the relative priority of the water rights of the City of Sacramento and PCWA. If Northridge is not able to take delivery of Sacramento River water through the Sacramento River Pipeline within the ten-year period, Northridge would thereafter divert water from Folsom Reservoir under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, only in years when the projected March through November unimpaired inflow into Folsom Reservoir was greater than 1,600,000 acre feet (i.e., "above-Hodge") and under the conditions referred to in Section 1.b. of this Agreement unless these conditions are revised by a SWRCB order issued following the SWRCB Hearing. In addition, Northridge could divert water under the conditions referred to in section 1.d. of this Agreement.

The diversion restrictions set forth in this Agreement reflect a compromise by the Water Forum parties in order to settle a dispute among them. If there is a SWRCB Hearing, the parties do not intend that the SWRCB consider the existence of this compromise as evidence of appropriate diversion conditions after the conclusion of the ten-year period. It is the intention of the parties that

the SWRCB's determination following the SWRCB Hearing be based upon the best available scientific and other evidence available at the time of the SWRCB Hearing. Nothing in this Agreement shall affect the right of PCWA to terminate the Northridge-PCWA Agreement if PCWA reasonably determines that any term of the SWRCB order resulting from the SWRCB Hearing is unacceptable.

4. Northridge will neither divert nor accept diversions of PCWA water from Folsom Reservoir or the American River under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, whenever such diversions alone or in conjunction with other diversions would limit or impair diversions from the American River by the City of Sacramento under its prior water rights.

Northridge's delivery to other purveyors of water diverted from the American River under the Northridge-PCWA Agreement is subject to those purveyors signing and implementing their commitments under the Water Forum Agreement.

The foregoing is hereby approved by the parties hereto.

Date: September 1, 1999

Ronald W. Stah
Friends of the River

Date: 09/16/99

[Signature]
Placer County Water Agency

**Stipulated Agreement for Dismissal of Protest to Placer County
Water Agency's Petition to Expand the Place of Use Under Application
18085 (Permit 13856) and Application 18087 (Permit 13858)**

Save the American River Association agrees that its protest to Placer County Water Agency's ("PCWA") petition for change in place of use may be dismissed if the conditions set forth below are included in the State Board's order approving the petition:

1. For the first ten years that water is available for diversion by Northridge Water District ("Northridge") from Folsom Reservoir under the August 21, 1995 Northridge-PCWA Agreement ("Northridge-PCWA Agreement"), but not more than twelve years from the effective date of the Water Forum Agreement, whichever occurs first,¹ Northridge's diversions under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, will be subject to the following restrictions:

a. Northridge will be able to divert PCWA water only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 950,000 acre feet.

b. In December, January and February following a March through November period when the unimpaired inflow into Folsom Reservoir was less than 950,000 acre feet, Northridge will not divert PCWA water until such time as or after water is being released from Folsom Reservoir for flood protection.

c. In addition to the foregoing, Northridge's diversions of PCWA water will be limited during the ten-year period pursuant to the water use schedule in the Northridge-PCWA Agreement, which allows annually-increasing diversions of up to 24,000 acre feet per year during the first ten years of water deliveries under that agreement.

d. Nothing in this Agreement is intended to restrict Northridge's ability to take

¹ This time period is hereafter referred to as the "ten-year period," and it may be extended for a period of up to two additional years by agreement of the parties to this Agreement.

delivery of Section 215 water from Folsom Reservoir from the Bureau of Reclamation whenever it may be available.

2. If Northridge is able to take delivery of Sacramento River water through the Sacramento River Pipeline (a pipeline that would connect to the Northridge pipeline), Northridge will thereafter divert water from Folsom Reservoir under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 1,600,000 acre feet (i.e., "above-Hodge").

3. If Northridge is not able to take delivery of Sacramento River water through the Sacramento River Pipeline within the ten-year period, the SWRCB would hold a hearing ("SWRCB Hearing") if requested by Northridge, the City of Sacramento, County of Sacramento, Friends of the River, Sierra Club or Save the American River Association. The purpose of the SWRCB Hearing will be to determine whether to add or revise conditions to PCWA's water rights for diversion of water from Folsom Reservoir under the Northridge-PCWA Agreement that are necessary to mitigate impacts from such diversions and/or prevent such diversions from adversely impacting diversion of American River water under the City of Sacramento's prior water rights. Nothing in this Agreement determines the relative priority of the water rights of the City of Sacramento and PCWA. If Northridge is not able to take delivery of Sacramento River water through the Sacramento River Pipeline within the ten-year period, Northridge would thereafter divert water from Folsom Reservoir under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, only in years when the projected March through November unimpaired inflow into Folsom Reservoir was greater than 1,600,000 acre feet (i.e., "above-Hodge") and under the conditions referred to in Section 1.b. of this Agreement unless these conditions are revised by a SWRCB order issued following the SWRCB Hearing. In addition, Northridge could divert water under the conditions referred to in section 1.d. of this Agreement. || ||

The diversion restrictions set forth in this Agreement reflect a compromise by the Water Forum parties in order to settle a dispute among them. If there is a SWRCB Hearing, the parties do not intend that the SWRCB consider the existence of this compromise as evidence of appropriate diversion conditions after the conclusion of the ten-year period. It is the intention of the parties that

the SWRCB's determination following the SWRCB Hearing be based upon the best available scientific and other evidence available at the time of the SWRCB Hearing. Nothing in this Agreement shall affect the right of PCWA to terminate the Northridge-PCWA Agreement if PCWA reasonably determines that any term of the SWRCB order resulting from the SWRCB Hearing is unacceptable.

4. Northridge will neither divert nor accept diversions of PCWA water from Folsom Reservoir or the American River under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, whenever such diversions alone or in conjunction with other diversions would limit or impair diversions from the American River by the City of Sacramento under its prior water rights.

Northridge's delivery to other purveyors of water diverted from the American River under the Northridge-PCWA Agreement is subject to those purveyors signing and implementing their commitments under the Water Forum Agreement.

The foregoing is hereby approved by the parties hereto.

Date: 9-1-99

Alan W. Wade
Save the American River Association, Inc.

Date: 09/16/99

[Signature]
Placer County Water Agency

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**Stipulated Agreement for Dismissal of Protest to Placer County
Water Agency's Petition to Expand the Place of Use Under Application
18085 (Permit 13856) and Application 18087 (Permit 13858)**

The Sierra Club, Sacramento agrees that its protest to Placer County Water Agency's ("PCWA") petition for change in place of use may be dismissed if the conditions set forth below are included in the State Board's order approving the petition:

1. For the first ten years that water is available for diversion by Northridge Water District ("Northridge") from Folsom Reservoir under the August 21, 1995 Northridge-PCWA Agreement ("Northridge-PCWA Agreement"), but not more than twelve years from the effective date of the Water Forum Agreement, whichever occurs first,¹ Northridge's diversions under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, will be subject to the following restrictions:

a. Northridge will be able to divert PCWA water only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 950,000 acre feet.

b. In December, January and February following a March through November period when the unimpaired inflow into Folsom Reservoir was less than 950,000 acre feet, Northridge will not divert PCWA water until such time as or after water is being released from Folsom Reservoir for flood protection.

c. In addition to the foregoing, Northridge's diversions of PCWA water will be limited during the ten-year period pursuant to the water use schedule in the Northridge-PCWA Agreement, which allows annually-increasing diversions of up to 24,000 acre feet per year during the first ten years of water deliveries under that agreement.

d. Nothing in this Agreement is intended to restrict Northridge's ability to take

¹ This time period is hereafter referred to as the "ten-year period," and it may be extended for a period of up to two additional years by agreement of the parties to this Agreement.

delivery of Section 215 water from Folsom Reservoir from the Bureau of Reclamation whenever it may be available.

2. If Northridge is able to take delivery of Sacramento River water through the Sacramento River Pipeline (a pipeline that would connect to the Northridge pipeline), Northridge will thereafter divert water from Folsom Reservoir under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 1,600,000 acre feet (i.e., "above-Hodge").

3. If Northridge is not able to take delivery of Sacramento River water through the Sacramento River Pipeline within the ten-year period, the SWRCB would hold a hearing ("SWRCB Hearing") if requested by Northridge, the City of Sacramento, County of Sacramento, Friends of the River, Sierra Club or Save the American River Association. The purpose of the SWRCB Hearing will be to determine whether to add or revise conditions to PCWA's water rights for diversion of water from Folsom Reservoir under the Northridge-PCWA Agreement that are necessary to mitigate impacts from such diversions and/or prevent such diversions from adversely impacting diversion of American River water under the City of Sacramento's prior water rights. Nothing in this Agreement determines the relative priority of the water rights of the City of Sacramento and PCWA. If Northridge is not able to take delivery of Sacramento River water through the Sacramento River Pipeline within the ten-year period, Northridge would thereafter divert water from Folsom Reservoir under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, only in years when the projected March through November unimpaired inflow into Folsom Reservoir was greater than 1,600,000 acre feet (i.e., "above-Hodge") and under the conditions referred to in Section 1.b. of this Agreement unless these conditions are revised by a SWRCB order issued following the SWRCB Hearing. In addition, Northridge could divert water under the conditions referred to in section 1.d. of this Agreement.

The diversion restrictions set forth in this Agreement reflect a compromise by the Water Forum parties in order to settle a dispute among them. If there is a SWRCB Hearing, the parties do not intend that the SWRCB consider the existence of this compromise as evidence of appropriate diversion conditions after the conclusion of the ten-year period. It is the intention of the parties that

the SWRCB's determination following the SWRCB Hearing be based upon the best available scientific and other evidence available at the time of the SWRCB Hearing. Nothing in this Agreement shall affect the right of PCWA to terminate the Northridge-PCWA Agreement if PCWA reasonably determines that any term of the SWRCB order resulting from the SWRCB Hearing is unacceptable.

4. Northridge will neither divert nor accept diversions of PCWA water from Folsom Reservoir or the American River under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, whenever such diversions alone or in conjunction with other diversions would limit or impair diversions from the American River by the City of Sacramento under its prior water rights.

Northridge's delivery to other purveyors of water diverted from the American River under the Northridge-PCWA Agreement is subject to those purveyors signing and implementing their commitments under the Water Forum Agreement.

The foregoing is hereby approved by the parties hereto.

Date: 9/1/99

Vicki Lee
The Sierra Club, Sacramento

Date: 09/16/99

[Signature]
Placer County Water Agency

**Stipulated Agreement for Dismissal of Protest to Placer County
Water Agency's Petition to Expand the Place of Use Under Application
18085 (Permit 13856) and Application 18087 (Permit 13858)**

William L. Berry, Jr. agrees that his protest to Placer County Water Agency's ("PCWA") petition for change in place of use may be dismissed if the conditions set forth below are included in the State Board's order approving the petition:

1. For the first ten years that water is available for diversion by Northridge Water District ("Northridge") from Folsom Reservoir under the August 21, 1995 Northridge-PCWA Agreement ("Northridge-PCWA Agreement"), but not more than twelve years from the effective date of the Water Forum Agreement, whichever occurs first,¹ Northridge's diversions under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, will be subject to the following restrictions:

a. Northridge will be able to divert PCWA water only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 950,000 acre feet.

b. In December, January and February following a March through November period when the unimpaired inflow into Folsom Reservoir was less than 950,000 acre feet, Northridge will not divert PCWA water until such time as or after water is being released from Folsom Reservoir for flood protection.

c. In addition to the foregoing, Northridge's diversions of PCWA water will be limited during the ten-year period pursuant to the water use schedule in the Northridge-PCWA Agreement, which allows annually-increasing diversions of up to 24,000 acre feet per year during the first ten years of water deliveries under that agreement.

d. Nothing in this Agreement is intended to restrict Northridge's ability to take

¹ This time period is hereafter referred to as the "ten-year period," and it may be extended for a period of up to two additional years by agreement of the parties to this Agreement.

delivery of Section 215 water from Folsom Reservoir from the Bureau of Reclamation whenever it may be available.

2. If Northridge is able to take delivery of Sacramento River water through the Sacramento River Pipeline (a pipeline that would connect to the Northridge pipeline), Northridge will thereafter divert water from Folsom Reservoir under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 1,600,000 acre feet (i.e., "above-Hodge").

3. If Northridge is not able to take delivery of Sacramento River water through the Sacramento River Pipeline within the ten-year period, the SWRCB would hold a hearing ("SWRCB Hearing") if requested by Northridge, the City of Sacramento, County of Sacramento, Friends of the River, Sierra Club, Save the American River Association or William L. Berry, Jr. The purpose of the SWRCB Hearing will be to determine whether to add or revise conditions to PCWA's water rights for diversion of water from Folsom Reservoir under the Northridge-PCWA Agreement that are necessary to mitigate impacts from such diversions and/or prevent such diversions from adversely impacting diversion of American River water under the City of Sacramento's and Carmichael Water District's ("Carmichael") prior water rights. Nothing in this Agreement determines the relative priority of the water rights of the City of Sacramento, Carmichael and PCWA. If Northridge is not able to take delivery of Sacramento River water through the Sacramento River Pipeline within the ten-year period, Northridge would thereafter divert water from Folsom Reservoir under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, only in years when the projected March through November unimpaired inflow into Folsom Reservoir was greater than 1,600,000 acre feet (i.e., "above-Hodge") and under the conditions referred to in Section 1.b. of this Agreement unless these conditions are revised by a SWRCB order issued following the SWRCB Hearing. In addition, Northridge could divert water under the conditions referred to in section 1.d. of this Agreement.

The diversion restrictions set forth in this Agreement reflect a compromise by the Water Forum parties in order to settle a dispute among them. If there is a SWRCB Hearing, the parties do not intend that the SWRCB consider the existence of this compromise as evidence of appropriate

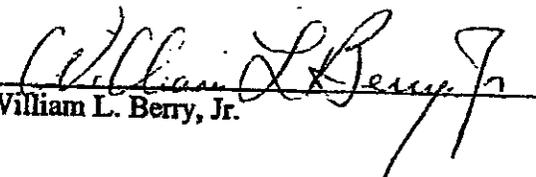
diversion conditions after the conclusion of the ten-year period. It is the intention of the parties that the SWRCB's determination following the SWRCB Hearing be based upon the best available scientific and other evidence available at the time of the SWRCB Hearing. Nothing in this Agreement shall affect the right of PCWA to terminate the Northridge-PCWA Agreement if PCWA reasonably determines that any term of the SWRCB order resulting from the SWRCB Hearing is unacceptable.

4. Northridge will neither divert nor accept diversions of PCWA water from Folsom Reservoir or the American River under the Northridge-PCWA Agreement, for its own use or delivery to other purveyors, whenever such diversions alone or in conjunction with other diversions would limit or impair diversions from the American River by the City of Sacramento or Carmichael under their prior water rights.

Northridge's delivery to other purveyors of water diverted from the American River under the Northridge-PCWA Agreement is subject to those purveyors signing and implementing their commitments under the Water Forum Agreement.

The foregoing is hereby approved by the parties hereto.

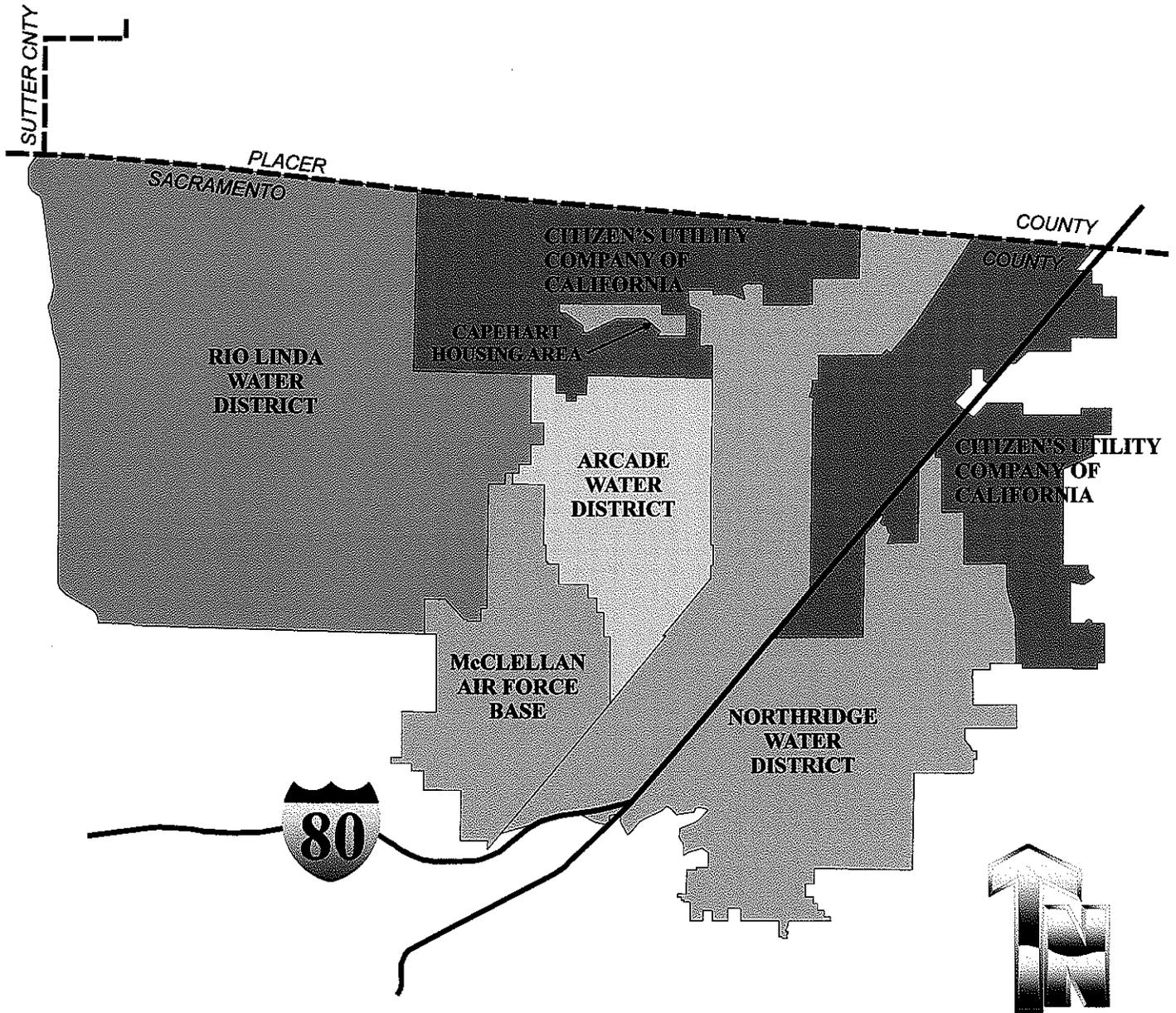
Date: November 10, 1999



William L. Berry, Jr.

Date: _____

Placer County Water Agency



Authorized Service Area For PCWA Water (Exhibit "B")

NOT TO SCALE

**WHOLESALE WATER SUPPLY AGREEMENT BETWEEN
THE CITY OF SACRAMENTO
AND SACRAMENTO SUBURBAN WATER DISTRICT**

THIS AGREEMENT is made and entered into this 20th day of January, 2003, ⁴ by the CITY OF SACRAMENTO, a charter municipal corporation (hereinafter referred to as "City") and the SACRAMENTO SUBURBAN WATER DISTRICT, a California special district (hereinafter referred to as "District").

RECITALS

- A.** On February 13, 1964, the City and Arcade Water District ("Arcade") entered into an agreement, a copy of which is attached to this Agreement as **Exhibit A** (the "1964 Water Supply Agreement"), under which the City granted to Arcade the right to divert up to 26,064 acre feet of water per year from the American River under the City's "Permit Supply," as that term is defined in the 1964 Water Supply Agreement, for use within the service area of Arcade that was within the portion of the authorized place of use ("POU") for the City's American River water right permits, referred to as "Area D" in the 1964 Water Supply Agreement. On September 19, 2001, the City and Arcade entered into an agreement under which the City consented to the transfer by Arcade of all rights and obligations under the 1964 Water Supply Agreement to the District, upon the consolidation of Arcade with Northridge Water District ("Northridge") to form the District. This Agreement does not involve the diversion of water by the District under the 1964 Water Supply Agreement. Except as expressly provided below, nothing in this Agreement affects the rights and obligations of the City and the District under the 1964 Water Supply Agreement.
- B.** The District owns and operates public utility water systems and provides public utility water service to the public located in Sacramento County, California, for residential and commercial and industrial purposes, pursuant to authority granted to it by the California Legislature.
- C.** The District desires to (1) obtain a wholesale supply of treated surface water under this Agreement, and (2) preserve the right of the District to divert untreated water if the District elects to do so, under the 1964 Water Supply Agreement for use within the service area described in the 1964 Water Supply Agreement. The District has capacity in its American River diversion facilities to divert and put to beneficial use within such service area approximately 3,500 acre-feet of water per year under the 1964 Water Supply Agreement.
- D.** The City and Arcade previously entered into agreements under which (1) Arcade reimbursed the City for a portion of the costs incurred by the City to construct City water transmission mains, and (2) Arcade acquired ownership rights in a portion of such transmission mains, for the purpose of conveying water from the City's E.A. Fairbairn Water Treatment Plant ("Fairbairn Plant") to Arcade, as shown in **Exhibit B**. The District is the successor to Arcade's ownership rights.

- E. The City is expanding the capacity of the Fairbairn Plant. Until such expansion is completed, studies conducted by the City indicate that the City's Fairbairn Plant, storage facilities and transmission mains have adequate Non-Firm Capacity (as defined below) as of the date of this Agreement to supply the District a maximum of up to ten million gallons per day ("mgd") of treated water. After the City's planned expansion of the Fairbairn Plant and improvement of transmission main capacities, the City expects to have adequate Firm Capacity (as defined below) to supply the District additional treated water, as provided herein. The maximum day flows specified herein for the use of Non-Firm and Firm Capacity are hereafter collectively referred to as the "District Water Requirements".
- F. The City has completed environmental review for the expansion of the Fairbairn Plant, and the expansion project currently is under construction.
- G. The City and the District are both signatories to the Sacramento Water Forum Agreement, and this Agreement is consistent with that agreement.
- H. Subject to the terms and conditions contained herein, the City is willing to provide a wholesale supply of treated surface water to meet the District Water Requirements.
- I. The City entered into an agreement with Northridge's predecessor, the Northridge Park County Water District, dated January 31, 1980 (the "1980 Water Supply Agreement"), under which the City granted to Northridge Park County Water District the right, subject to specified conditions, to divert up to 9,023 acre-feet per year from the American River under the City's Permit Supply for use within the service area of Northridge Park County Water District that was within that portion of the POU referred to as "Area D" in the 1980 Water Supply Agreement. The conditions specified for the 1980 Water Supply Agreement to be effective were not fulfilled. The parties agree that this Agreement does not constitute, and will not be interpreted as, an acknowledgment or admission by the City that the 1980 Water Supply Agreement remains a valid or binding agreement, nor does this Agreement involve any diversion of water by the District (as successor to Northridge) under the 1980 Water Supply Agreement.

In consideration of the foregoing and of the mutual covenants herein contained, the parties hereto agree as follows:

1. **Recitals Incorporated:**

The foregoing recitals are incorporated by reference.

2. **Purpose:**

The purpose of this Agreement is to establish the conditions under which the City will divert, treat, convey and sell surface water to the District on a wholesale basis to meet the District Water Requirements, for use within the District Service Area, both before and after expansion of the

Fairbairn Plant and the completion of improvements to the City's water transmission facilities. Nothing in this Agreement affects the right of the District to divert and put to beneficial use within the District Service Area untreated surface water under the 1964 Water Supply Agreement if the District so elects, subject to the provisions of Section 4, below.

3. **Definitions:**

- a. *Arcade:* Arcade Water District, one of the predecessor entities of the District.
- b. *Capital Costs:* Costs incurred by the City to design and construct diversion, pumping, treatment, storage and transmission facilities used to provide treated water to the District under this Agreement, including reasonable administrative costs.
- c. *City:* The City of Sacramento.
- d. *City Transmission Facilities:* All facilities, including transmission mains, storage facilities and all appurtenances that are owned and operated by the City to supply water from the City Treatment Facilities, as they exist today and as they may be modified and expanded in the future.
- e. *City Treatment Facilities:* All facilities that are owned and operated by the City to divert and process water to meet the requirements established for drinking water by the California Department of Health Services and the United States Environmental Protection Agency, including the Fairbairn Plant, groundwater wells, and the Sacramento River Water Treatment Plant, as they exist today and as they may be modified and expanded in the future.
- f. *City Water Rights and Entitlements:* The City's surface water rights and entitlements, including pre-1914 rights, five water right permits issued by the State Water Resources Control Board and a water rights settlement contract entered into in 1957 with the United States Bureau of Reclamation.
- g. *Connection Fee:* The fee(s) paid by the District for its share of Capital Costs for Non-Firm and Firm Capacity used to provide treated water to the District under this Agreement, as provided in Section 9.b., below.
- h. *Delivery Criteria:* The operating guidelines and criteria governing the delivery of treated water under this Agreement.
- i. *District:* The Sacramento Suburban Water District.
- j. *District Water Facilities:* All facilities, including transmission mains, storage facilities and all appurtenances, which are owned and operated by the District to supply water. The District Water Facilities to be used to obtain water under this Agreement are shown on **Exhibit B**.

- k. *District Water Requirements:* The maximum-day flow amounts specified for the delivery to the District of treated water utilizing Non-Firm and Firm Capacity in accordance with the provisions of this Agreement.
- l. *District Service Area:* Those lands served by the District, as may change from time to time, within the POU. The current District Service Area is shown on **Exhibit C** to this Agreement.
- m. *Expanded Fairbairn Plant:* The City's E.A. Fairbairn Water Treatment Plant (Fairbairn Plant) after the current projects to expand the Fairbairn Plant's treatment capacity to 200 mgd and to modify the water intake to comply with current fish screening requirements are completed, and the modified water intake and expanded treatment capacity are fully operational.
- n. *Fairbairn Plant:* The City's E.A. Fairbairn Water Treatment Plant located on the south bank of the Lower American River downstream of Howe Avenue.
- o. *Firm Capacity:* Capacity in the City Treatment and Transmission Facilities that is available to divert, treat and deliver water to the District on an equal priority to the use of such capacity to meet the demands of the City's other water supply customers, except as provided otherwise in this Agreement.
- p. *1964 Water Supply Agreement:* The February 13, 1964 agreement between the City and Arcade Water District, attached hereto as **Exhibit A**.
- q. *Non-Firm Capacity:* Capacity in the City Treatment and Transmission Facilities that is available to divert, treat and deliver water to the District in accordance with the provisions of this Agreement after the capacity demands of the City's other water supply customers are fully met.
- r. *Northridge:* Northridge Water District, one of the predecessor entities of the District.
- s. *POU:* All lands where the City is authorized to use surface water pursuant to the City's four American River water right permits.
- t. *Service Charge:* A monthly fee for fixed administrative costs billed to the District, as provided in Section 9.a., below.
- u. *Service Connection:* A point of connection for delivery of treated water from the City Transmission Facilities to the District Water Facilities pursuant to this Agreement, of which there may be more than one as determined by the parties from time to time.
- v. *Transmission Main Improvements:* Planned improvements to the City Transmission

Facilities that will assist in providing adequate Firm Capacity for the delivery of treated water to the District in accordance with Section 6.b., below, as shown on **Exhibit B** to this Agreement.

- w. *Treated water or treated surface water:* Water that is treated to meet the requirements established for drinking water by the California Department of Health Services and the United States Environmental Protection Agency.
- x. *Unit Rate:* The charge billed to the District at a cost per unit quantity of treated water delivered under this Agreement, as provided in Section 9.a., below.
- y. *Water Forum Agreement:* The Sacramento Water Forum Agreement dated January 2000 and any subsequent amendments or supplements thereto, including the Purveyor Specific Agreement signed by the District on June 5, 2003.
- z. *Wholesale Water Rate:* The Unit Rate and Service Charge billed to the District, as provided in Section 9.a., below.

4. Diversion of Untreated Water by the District:

Nothing in this Agreement affects the right of the District under the 1964 Water Supply Agreement to divert untreated water for use within the portion of the District Service Area located within "Area D," in accordance with the terms of the 1964 Water Supply Agreement, provided that (a) the District complies with all applicable legal, regulatory and contractual requirements, including applicable provisions of the Water Forum Agreement, and (b) notwithstanding any provision of this Agreement to the contrary, the City may deduct any amount of untreated water diverted by the District under the 1964 Water Supply Agreement from the amount of water otherwise required to be diverted, treated and delivered to the District under this Agreement.

5. Delivery Criteria for Treated Water:

The delivery of treated water under this Agreement will be governed by the operating guidelines and criteria set forth in the Delivery Criteria attached hereto as **Exhibit D**. The Delivery Criteria may be modified from time to time by the mutual written agreement of the City's Director of Utilities and the District's General Manager, provided that such modifications are consistent with the provisions of this Agreement.

6. Maximum Treated Water Diversions and Deliveries:

- a. Pre-Fairbairn Plant Expansion. Prior to the completion and commencement of operation of the Fairbairn Plant Expansion and Transmission Main Improvements, only Non-Firm Capacity will be available to divert, treat and deliver water to the District in accordance with the provisions of this Agreement. The water diverted, treated and delivered to the District utilizing Non-Firm Capacity, prior to the completion and commencement of operation of the Fairbairn Plant Expansion and

Transmission Main Improvements, will not exceed a maximum amount of ten million gallons per day (mgd), and will not exceed the maximum instantaneous rate specified in the Delivery Criteria.

- b. Post-Fairbairn Plant Expansion. After the completion and commencement of operation of the Fairbairn Plant Expansion and Transmission Main Improvements, Firm Capacity will be available to divert, treat and deliver water to the District in accordance with the provisions of this Agreement. The water diverted, treated and delivered to the District utilizing Firm Capacity, after the completion and commencement of operation of the Fairbairn Plant Expansion and Transmission Main Improvements, will not exceed a maximum amount of twenty mgd, and will not exceed the maximum instantaneous rate specified in the Delivery Criteria.
- c. Additional Water. At any time during the term of this Agreement after the completion and commencement of operation of the Fairbairn Plant Expansion and Transmission Main Improvements, District may request that the City divert, treat and deliver additional water to the District utilizing up to ten mgd of Non-Firm and/or Firm Capacity beyond the twenty mgd maximum specified in subsection b, above (hereafter referred to as "Additional Water"). To the extent that the City determines in its sole discretion that adequate Non-Firm Capacity and/or Firm Capacity is available in the City Treatment and Transmission Facilities, up to such additional ten mgd, the City will utilize Non-Firm Capacity and/or Firm Capacity, as determined by City, to divert, treat and deliver Additional Water to District on the same terms and conditions as provided in this Agreement, including the Delivery Criteria, except that the Wholesale Water Rate and Connection Fee for Capital Costs paid by District for the diversion, treatment and delivery of Additional Water will be determined by mutual agreement of the City and District at that time. No Additional Water will be diverted, treated or delivered hereunder until the parties have agreed upon such Wholesale Water Rate and Connection Fee to be paid by the District.
- d. Notwithstanding any other provision of this Agreement to the contrary, the City will not be required to divert, treat or deliver any water to the District under this Agreement if any City facility(ies) necessary to do so are shut down for maintenance or repair, provided that such shut down also prevents the use of such facilities for the City's retail water customers.
- e. Water treated and delivered to the District under this Agreement may only be used by the District to provide municipal and industrial water service within the District Service Area, and will not be used by the District for any other purpose.
- f. Notwithstanding any other provision of this Agreement to the contrary, no water diverted and treated at the Fairbairn Plant, utilizing either Non-Firm or Firm Capacity, will be delivered to District under this Agreement at any time when the City's diversions at the Fairbairn Plant are restricted or limited, or the diversion of water for the District would cause the City's diversions to be restricted or limited, by

the Water Forum diversion restrictions incorporated in the City's four American River water right permits, which diversion restrictions are shown on **Exhibit E** to this Agreement.

- g. The limitation specified in subsection f., above, will not prevent the delivery by the City to the District of treated water diverted from the Sacramento River, utilizing Non-Firm and/or Firm Capacity, provided that facilities and capacity to divert, treat and deliver such water are available and the parties agree in writing upon, or amend this Agreement to set forth, the terms and conditions for the diversion, treatment and delivery of such water to the District, consistent with all applicable legal, regulatory and contractual requirements, including applicable provisions of the Water Forum Agreement.
- h. The parties acknowledge and agree that the City (1) does not lose or otherwise forfeit or abandon its rights to any quantity of water that is not diverted at the Fairbairn Plant by operation of the Water Forum diversion restrictions shown on **Exhibit E**, and (2) retains its rights to divert or redivert such water for municipal and industrial use at or downstream of the confluence of the American River and the Sacramento River, as well as any rights City may have to transfer that water for other beneficial uses. The City and the District intend that, (1) in the event that water deliveries to the District under this Agreement are curtailed pursuant to subsection f., above, and (2) the City receives revenues for a transfer of water that would have been delivered to the District but for such curtailment, the City will consult with the District for the purpose of providing to the District a credit against payments due from the District to the City under this Agreement in an amount that reflects an equitable sharing between the City and the District of net revenues received by the City for such transfer.

7. Services Performed by the City:

The City will supply treated surface water to the District in accordance with the terms of this Agreement. The City will provide District with the City's water quality testing data on an annual basis or on such other schedule as may be agreed to by the parties.

8. Obligations of the District:

- a. The District will take delivery of the treated surface water made available by the City pursuant to the Delivery Criteria.
- b. The District will pay any and all costs associated with diverting, treating and delivering water to the District pursuant to this Agreement, as set forth in Sections 9 and 10 of this Agreement. In addition, the District will be wholly responsible for its pro rata share (comparing the quantities of water that the City delivers to the District and to other City retail and wholesale customers) of any and all costs reasonably incurred by the City in order to comply with all laws and regulations that may apply

to the diversion, treatment and delivery of water to the District hereunder, including but not limited to, the California Environmental Quality Act, the National Environmental Policy Act, the Federal and State Endangered Species Acts, the Federal Reclamation Laws, the Clean Water Act and the Porter-Cologne Water Quality Control Act. Further, the District will be wholly responsible for its pro rata share (comparing the quantities of water that the City delivers to the District and to other City retail and wholesale customers) of any and all costs associated with any other requirements and/or conditions that are or may be imposed on the diversion, treatment and/or delivery of water to the District by any federal, state or local agency, including but not limited to the U.S. Bureau of Reclamation, the California Department of Water Resources, the State Water Resources Control Board, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service or the California Department of Fish and Game.

- c. Any deliveries of water to the District will be subject to any and all requirements and/or conditions contained in or in the future imposed on any of the City Water Rights and Entitlements.

9. Cost Allocation and Payment:

The cost allocations and payment for any water delivered pursuant to this Agreement will be governed by the following paragraphs.

a. Operations and Maintenance

- (1) The District will be charged a Wholesale Water Rate for diversion, treatment and conveyance of water. The Wholesale Water Rate shall consist of a Unit Rate calculated on a cost-per-unit quantity basis for water actually delivered, plus a monthly Service Charge for fixed administrative costs incurred irrespective of the quantity of water delivered. The Wholesale Water Rate will be determined by the City in an equitable manner such that the District neither subsidizes nor is subsidized by any other City customer or contractor. In no event, however, will the unit cost of water delivered exceed the City's annual operating, maintenance and applicable capital improvement costs (excluding Capital Costs included in the Connection Fees described in Section 9.b., below) for surface water treatment and conveyance divided by the number of gallons produced. Operating, maintenance and capital improvement costs included in the Unit Rate will include but not be limited to costs for operating, maintenance, personnel, services and supplies, and an equitable proration of appropriate overhead distribution. Operating, maintenance and capital improvement costs included in the Unit Rate will also include any costs attributable to any limitation, requirement, modification or other condition that applies, or that may in the future be applied, to any of the City Water Rights and Entitlements, but will exclude those costs that have no relationship to diverting, treating and delivering

water to the District, such as unrelated distribution system expenses or capital improvement costs. The initial Wholesale Water Rate (consisting of a Unit Rate plus a monthly Service Charge) is shown on **Exhibit F** to this Agreement.

- (2) The City may adjust the Wholesale Water Rate on an annual basis to reflect actual or anticipated cost increases.
- (3) Billing procedures and payment for water will be in accordance with the City's standard practice. The Wholesale Water Rate will be in addition to the Connection Fee(s) described in subsection b., below.
- (4) The Wholesale Water Rate for water diverted, treated and delivered using Non-Firm Capacity and Firm Capacity will be the same.

b. Connection Fees for Use of Non-Firm and Firm Capacity

- (1) The District will pay a Connection Fee for its share of Capital Costs for diversion, pumping, treatment, storage and transmission facilities, which fee will include reasonable administrative costs. The initial Connection Fee for use of Non-Firm Capacity in the City's existing facilities to divert, treat and deliver water to the District up to the maximum amount and rate specified in Section 6.a., above, is shown on **Exhibit G** to this Agreement.
- (2) The District will pay City the initial Connection Fee specified in **Exhibit G** in a single payment not later than thirty days after the City's completion and commencement of operation of the Fairbairn Plant Expansion, or prior to receiving any water diverted, treated and delivered under this Agreement, whichever occurs first.
- (3) Although the initial Connection Fee described in subsection b(1), above, is based on the use of Non-Firm Capacity, the initial Connection Fee specified in **Exhibit G** is the same as the Connection Fee that would be charged for the use of Firm Capacity. This is because the City's preliminary studies show that adequate Non-Firm Capacity is likely to be available in the City's existing facilities for the delivery of treated water, in accordance with the provisions of this Agreement, up to the maximum amount and rate specified in Section 6.a., above, at all times. If Non-Firm Capacity is not available in the City's existing facilities for the delivery of treated water, in accordance with the provisions of this Agreement, up to the maximum amount and rate specified in Section 6.a., above, for a cumulative total amount of thirty or more days prior to the City's completion and commencement of operation of the Fairbairn Plant Expansion and Transmission Main Improvements, the City will provide the District a credit against payments due from the District to the City under this Agreement in the amount specified in **Exhibit H**.

- (4) In the event that the City completes and commences operation of the Fairbairn Plant Expansion and Transmission Main Improvements, thereby making available Firm Capacity to divert, treat and deliver water to the District up to the maximum amount and rate specified in Section 6.b., above, the District will pay an additional Connection Fee for the District's share of Capital Costs for Firm Capacity in such expanded and improved diversion and treatment facilities, based on the difference between the maximum amounts specified in Section 6.b. and Section 6.a. of this Agreement. The additional Connection Fee will use the same unit cost fee that is specified for the initial Connection Fee in **Exhibit G**, except that such unit cost fee will include annual adjustments to reflect increases in the construction cost index in the same manner that the amount of the City's water system development fee is adjusted pursuant to Section 13.04.820(C) of the Sacramento City Code. The District will have the option of paying the additional Connection Fee (i) in a single payment prior to receiving any water diverted, treated and delivered using Firm Capacity as specified in Section 6.b., above, or (ii) in the form of an annual capital recovery charge payable upon such terms and conditions as may be reasonably determined by the City.
- (5) The Connection Fees specified above shall be in addition to the District's payment of a portion of the City's cost to design and construct the Transmission Main Improvements, pursuant to the Agreement for Payment of Cost Share between the District and the City, dated October 1, 2003.

10. Service Connections:

- a. Treated water delivered to the District under this Agreement will be provided from the City Transmission Facilities to the District at the Service Connection to be designed and constructed by the District at the location shown on **Exhibit B**. Additional Service Connections may be established by mutual written agreement of the City's Director of Utilities and the District's General Manager, provided that the City will determine whether an additional Service Connection will be designed and constructed by the District or by the City.
- b. If a Service Connection is designed and constructed by the City, subject to review and comment by the District, the District will pay all direct and indirect costs incurred by the City to design, bid and construct the Service Connection, including all reasonable costs of administering design and construction contracts, as well as the cost of preparing all environmental documents and obtaining all permits, property rights or other approvals required for the installation, operation, maintenance and repair of the Service Connection in compliance with all applicable laws and regulations. Such payments will be in addition to the charges, costs and fees set forth in Section 9, above, and will be made in the following manner:
 - (1) After performing a preliminary design of the Service Connection, the City

Director of Utilities will estimate all costs described herein, and such preliminary design and estimate will be provided to the District for approval. Such approval will not be unreasonably withheld.

- (2) During the design phase and the construction phase, the City will bill the District at regular intervals for reasonable costs incurred by the City during the billing cycle. The District will pay each invoice within six weeks.
 - (3) Upon completion of construction of the Service Connection, and the resolution of any claims, disputes or litigation related to its design or construction, including claims or litigation related to the acquisition of permits, property rights or other approvals, claims or litigation related to the preparation or approval of environmental documents, stop notice claims or litigation, and contract claims or litigation, the City will provide the District with a statement of any and all costs actually incurred by the City. Such statement will include any and all costs reasonably incurred by the City with regard to any of the claims, disputes or litigation described above, including any and all costs related to the settlement of any such claims, disputes or litigation. If such costs exceed the amount of money theretofore paid by the District to the City, the District will pay to the City the amount by which such actual costs exceed the amount already paid. Any payments made by the District pursuant to this provision will be made no later than six weeks after the statement of costs actually incurred by the City is provided to the District.
 - (4) Notwithstanding anything contained herein to the contrary, the District will reimburse the City for any and all reasonable preliminary design costs incurred by the City in connection with any proposed Service Connection, even if such preliminary design or any cost estimate based on such design is not accepted or approved by the District.
- c. If a Service Connection is designed and constructed by the District, the District will be wholly responsible for designing, bidding and constructing the Service Connection, as well as preparing all environmental documents and obtaining all permits, property rights or other approvals required for the installation, operation, maintenance and repair of the Service Connection in compliance with all applicable laws and regulations. Such activities will be paid for entirely by the District, and will be subject to the following requirements:
- (1) Prior to the construction of any Service Connection by the District, both the preliminary design and the final design must be approved in writing by the City Director of Utilities. Such approval will not be unreasonably withheld. If either or both the preliminary design or final design is not approved by the City Director of Utilities, the City will notify the District in writing of the reason or reasons why such design is not acceptable, and the District will perform such revisions as may be necessary to obtain the approval of the

City.

- (2) In addition to paying its own costs, the District will reimburse the City for reasonable costs incurred by the City during the design and construction of the Service Connection by the District. Upon completion of construction of the Service Connection, and the resolution of any claims, disputes or litigation related to its design or construction, including claims or litigation related to the acquisition of permits, property rights or other approvals, claims or litigation related to the preparation or approval of environmental documents, stop notice claims or litigation, and contract claims or litigation, the City will provide the District with a statement of any and all costs actually incurred by the City to review, inspect or otherwise participate in the design and construction of the Service Connection. Such statement will also include any and all costs reasonably incurred by the City with regard to any of the claims, disputes or litigation described above, including any and all costs related to the settlement of any such claims, disputes or litigation, provided that any such settlement was approved in advance by the District staff, and provided further that such approval will not be unreasonably withheld. The District will pay the costs identified on such statement no later than 6 weeks after the City provides such statement to the District.
 - (3) Notwithstanding anything contained herein to the contrary, the District will reimburse the City for any and all reasonable costs incurred by the City in connection with the design of any proposed Service Connection by the District, even if the preliminary or final design is not approved or if such Service Connection is not constructed.
- d. The City will own, operate, maintain and repair all facilities associated with the Service Connection, including flowmeter, flow transmitter, pressure transmitter, motor operated valve (M.O.V.), S.C.A.D.A. and electrical pedestal. As part of such operation, maintenance and repair, the City will calibrate instrumentation at reasonable scheduled intervals, at least annually, and will report such calibration as requested by the District. If such facilities are constructed by the District, upon the completion and City acceptance of such facilities, the District will convey to the City (1) title to such facilities, and (2) permanent access rights to operate, maintain and repair such facilities, at no cost to the City. All operation, maintenance and repair costs incurred by the City will be reimbursed by the District by including such costs in the Wholesale Water Rate paid by the District under Section 9, above. For metering errors in excess of 2 percent, Wholesale Water Rates may be adjusted upward or downward, as appropriate.
 - e. The District will design, construct, own, operate and maintain all facilities downstream of the Service Connection, including surge control facilities to mitigate the effects of flow stoppage. The District will submit plans for surge control facilities for review and approval of the City prior to construction, which approval

will not be unreasonably withheld.

- f. Unless required by the City's Director of Utilities or otherwise required by law or regulation, backflow prevention devices will not be required at the Service Connections provided that (i) the District has a backflow prevention program meeting State regulations, and (ii) all facilities within the District Service Area meet the standards of the California Department of Health Services and U.S. EPA.
- g. Delivery pressure will be a minimum of 30 pounds per square inch ("psi"), but in no event will it be greater than 80 psi. The City will not be obligated to supply water to any or all Service Connection points at an aggregate rate exceeding the maximums set forth in Section 6, above.

11. Term of Agreement:

This Agreement will become effective as of the date it is signed by the last signatory and is approved by the Board of Directors of the District and the City Council, and will continue in full force and effect unless terminated by mutual written agreement of the parties hereto or by operation of law.

12. Failure to Deliver Water:

It is understood and agreed that, while the City will make every reasonable effort to treat and convey water pursuant to the terms of this Agreement, the City is not warranting or guaranteeing that it will be able to divert, treat, store and/or deliver water, nor will the City be liable for any failure to deliver water to the District hereunder, provided such failure is caused in whole or in part by an emergency condition or other factors beyond the direct control of the City. It is further understood and agreed that City will not be liable for any failure to deliver water to the District hereunder, prior to completion of the Fairbairn Plant Expansion project and/or Fairbairn intake modification project, that is caused in whole or in part by any construction conditions or requirements or other actions or omissions occurring in the course of project construction, whether or not beyond the direct control of the City.

13. The City Water Rights and Entitlements:

This Agreement will not affect or limit in any way the City Water Rights and Entitlements. Notwithstanding anything herein to the contrary, it is understood and agreed that the District's rights hereunder will at all times be subject to, and exercised in accordance with, any limitation, requirement, modification or other condition that applies, or that may in the future be applied, to any of the City Water Rights and Entitlements.

14. Fluoridation:

The District acknowledges that treated water delivered to the District may contain fluoride, and agrees that, in the event that the City treats water with fluoride, the District will be

solely responsible for: (1) any public notification to all or any portion of the District Service Area that the water provided hereunder has been treated with fluoride; and (2) for all costs associated with or resulting from the introduction of fluoridated water into the District facilities, including monitoring and testing costs. In the event that the City treats water delivered to the District hereunder with fluoride, the District will comply, at no cost to the City, with any requirements pertaining to such fluoridation imposed by any governmental agencies with jurisdiction, including without limitation, the Department of Health Services. The District's failure to comply with any such requirements applicable to the wholesale of water hereunder will relieve the City of any responsibility to deliver water pursuant to this Agreement, until such requirements are fulfilled.

15. Notices:

Unless indicated otherwise herein, all notices, invoices, payments, statements or other writing authorized or required by this Agreement may be delivered personally, or sent in the United States mail, postage prepaid, or sent by electronic mail if the recipient confirms receipt, and addressed to the respective parties as follows:

The City:

Director, Department of Utilities
City of Sacramento
1395 35th Avenue
Sacramento, CA 95822
Electronic mail: greents@cityofsacramento.org

The District:

General Manager
Sacramento Suburban Water District
3701 Marconi Avenue, Suite 100
Sacramento, CA 95881
Electronic mail: rroscoe@sswd.org

All notices, invoices, payments or other writings will be deemed served on the day that they are personally served, deposited, postage prepaid, in the United States mail, or if served electronically, on the day that the recipient acknowledges receipt. A party may change the above designations by providing notice thereof to the other party.

16. Indemnification and Defense:

- a. By The District: The District will fully indemnify, hold harmless and defend the City, its officers and employees, from any claims, actions or liability for any damages, any injury to persons or property, or any violation of any law or regulation, occurring by reason of anything done or omitted to be done by the District, its officers or employees, under this Agreement. Except as specified in subsection b., below, the District will fully indemnify, hold harmless and defend the City, its officers and employees from any claims, actions or liability for any damages, any

injury to persons or property, or any violation of any law or regulation, occurring by reason of any action taken by the City, its officers or employees, if such action is required or authorized under this Agreement, unless such damages, injury, or violation result solely from the willful or intentional acts of the City.

- b. By The City: Notwithstanding anything to the contrary herein, the City will fully indemnify, hold harmless and defend the District, its officers and employees, from any claims, actions or liability for any damages, any injury to persons or property, or any violation of any law or regulation, occurring by reason of anything done or omitted to be done by the City, its officers or employees in connection with the processing, treating or conveyance of water by the City Treatment and Transmission Facilities. Such duty to indemnify, hold harmless and defend will include all claims, actions or liability occurring by reason of anything done or omitted to be done by the City in connection with any delivery by the City of water that fails to comply with the definition of Treatment contained herein.

17. Dispute Resolution:

- a. Disputes: If a dispute arises concerning any controversy or claim arising out of or relating to this Agreement or the breach thereof, or relating to its application or interpretation, the aggrieved party will notify the other party of the dispute in writing within twenty days after such dispute arises. If the parties fail to resolve the dispute within thirty days after delivery of such notice, each party will promptly nominate a senior officer of its organization to meet at any mutually-agreed time and location to resolve the dispute. The parties agree to use their best efforts to reach a just and equitable solution satisfactory to both parties. Should the parties be unable to resolve the dispute to their mutual satisfaction within thirty days thereafter, the dispute will be subject to arbitration, pursuant to subsection b., below. The time periods set forth in this section are subject to extension as agreed to by the parties.
- b. Arbitration: A dispute that is not resolved in accordance with subsection a., above, will be subject to arbitration by an arbitrator in Sacramento, California, provided, however, that each party reserves the right to file with a court of competent jurisdiction an application for temporary or preliminary injunctive relief on the grounds that the arbitration award to which the applicant may be entitled may be rendered ineffectual in the absence of such relief. Except as otherwise provided herein, the arbitration will be conducted under and will be subject to the provisions of the California Arbitration Act (Code of Civil Procedure sections 1280 through 1294.2). The parties in the arbitration will select a single, qualified, neutral arbitrator. If they cannot agree on an arbitrator, or an alternative selection process, the parties will request that the Presiding Judge of the Sacramento County Superior Court select an arbitrator in accordance with the provisions of section 1281.6 of the Code of Civil Procedure.

A hearing on the matter to be arbitrated will take place before the arbitrator in the

County of Sacramento at a time and place selected by the arbitrator. However, the hearing will take place no later than sixty days after selection of the arbitrator. The arbitrator will select the time and place for the hearing, and will give the parties written notice of the time and place at least twenty days before the date of the hearing. At the hearing, any relevant evidence may be presented by the parties, and the formal rules of evidence applicable to judicial proceedings will not apply. The arbitrator will hear and determine the matter. The arbitration award may include an award of damages and/or an award or decree of specific performance or declaratory or injunctive relief, will be in writing and will specify the factual and legal bases for the award. An award rendered pursuant hereto may be confirmed, corrected or vacated by a court of competent jurisdiction in accordance with the provisions of the California Arbitration Act. The arbitrator will have no authority, power or right to award punitive or other damages not measured by the prevailing party's actual damages, and will not make any ruling, finding or award that is inconsistent with or which alters, changes, amend, modifies, waives, adds to or deletes from any of the provisions of this Agreement.

The ongoing cost of the arbitration, including the arbitrator's fees, will be borne equally by the parties. Each party will also pay the costs of its own counsel, experts, witnesses and preparation and presentation of proofs. Additional incidental costs of arbitration may be allocated by the arbitration award.

- c. Defense to Suit: The parties agree that the failure to comply with the provisions of this Section will be a complete defense to any suit, action or proceeding instituted in any federal or state court, or before any administrative body, with respect to any dispute that is subject to arbitration hereunder, provided, however, that this subsection c. will not apply to any application for temporary or preliminary injunctive relief authorized under this Section.

18. Records Inspection:

Each party will be entitled to inspect and photocopy the records of the other party that pertain to this Agreement, upon providing reasonable notice to such other party of its intent to do so. Each party may also appoint an auditor or auditors to examine the financial records of the other party to determine the adequacy of cost accumulation and billing information maintained by each party. After reasonable notice, each party will make available to the other party's auditor or auditors all requested records, and will assist and cooperate with such auditors. Each party will keep its accounting and financial records in accordance with generally-accepted accounting principles and any applicable laws or regulations.

19. Amendments:

No amendment or modification to this Agreement will be valid unless executed in writing and approved by the governing bodies of the parties, provided, however, that the Delivery Criteria may be modified by mutual written agreement of the City Director of Utilities and the

District General Manager without obtaining approvals from the governing bodies of the parties hereto, as specified in Section 5, above.

20. No Third-Party Beneficiary:

This Agreement is not intended to, and will not be interpreted as conferring, any benefit or right whatsoever upon any person or entity that is not a party hereto.

21. Exhibits Incorporated:

All Exhibits referred to herein and attached hereto are fully incorporated into this Agreement as if such Exhibits were set forth in their entirety at this place.

22. General Provisions:

- a. This Agreement will be construed in accordance with, and governed by, the laws of the State of California. The place where this Agreement is to be performed and its situs or forum will at all times be in the County of Sacramento.
- b. The headings of the sections and paragraphs in this Agreement are inserted for convenience only. They do not constitute part of this Agreement and will not be used in its construction.
- c. This Agreement is the result of the joint efforts and negotiations of both parties, and both parties agree that this Agreement will be interpreted as though each of the parties participated equally in the drafting and composition of this Agreement and each and every part hereof.
- d. This Agreement may not be assigned by either party without the written consent of the non-assigning party, and any purported assignment without such consent will be void.
- e. The provisions of this Agreement shall bind the parties' successor entities and authorized assigns.
- f. Neither party nor its agents, consultants or contractors are or shall be considered to be agents of the other party in connection with the performance of this Agreement. Nothing in this Agreement shall be construed to create a joint venture, partnership or other relationship between the parties, other than the City acting in its municipal capacity with respect to the provision of wholesale water service to the District.
- g. The waiver by either party to this Agreement of a breach of any provision of this Agreement shall not be deemed a continuing waiver or a waiver of any subsequent breach of that or any other provision of the Agreement.

Attest:

By:

City Clerk

Approved as to Form:

By:

City Attorney

CITY OF SACRAMENTO

By:

Thomas Lee
For: Robert Thomas, City Manager

SACRAMENTO SUBURBAN WATER DISTRICT

By:

Board President

Attest:

By:

Secretary

CITY

AGREEMENT NO. _____

2004-013

List of Exhibits:

- Exhibit A: 1964 Water Supply Agreement
- Exhibit B: Map Showing City and District Facilities, with Detail of Service Connection
- Exhibit C: District Service Area within POU
- Exhibit D: Delivery Criteria
- Exhibit E: Water Forum Diversion Restrictions in City's American River Water Right Permits
- Exhibit F: Initial Wholesale Water Rate
- Exhibit G: Initial Connection Fee
- Exhibit H: Formula for Interest on Portion of District's Initial Connection Fee Payment
(Section 9.b.(3))

Exhibit A

1964 Water Supply Agreement

AGREEMENT BETWEEN CITY OF SACRAMENTO
AND ARCADE COUNTY WATER DISTRICT

City of Sacramento, a municipal corporation, hereinafter called Sacramento, and Arcade County Water District, a county water district, hereinafter called Arcade, jointly recite the following:

- A. Sacramento has the right to a water supply from the American River under Permits Nos. 11358, 11359, 11360, and 11361 on Applications 12140, 12321, 12622, and 16060, as they now exist or may hereafter be amended, as such permits are supplemented by an agreement between Sacramento and the United States Bureau of Reclamation dated June 28, 1957. Such water supply is hereafter referred to as the Permit Supply; the said agreement is sometimes referred to as the Bureau Agreement.
- B. The quantity of the Permit Supply was based upon serving the area shown as "Potential Water Service Areas" on Sacramento's Exhibit 3 to the State Water Rights Board introduced in the proceedings before that Board which resulted in Decision D 893. Said Exhibit 3 is attached hereto, marked Exhibit A and made a part of this agreement. Said Exhibit A also delineates the area to be served by water from Applications 12321

and 12662, above referred to, which were the applications assigned to Sacramento by the Sacramento Municipal Utility District with the express provision of such limitation in use. Only Area D of such Potential Water Service Areas as shown by said Exhibit A is involved in this agreement. The Permit Supply equals 1.133 cubic feet per second per 100 gross acres of the Potential Water Service Areas, and this figure is the basis for the water supply provided by this agreement to Arcade. The use basis shall be 50% as established before the State Water Rights Board and by the Bureau Agreement, that is to say, the annual use of such supply shall not exceed a quantity equal to 50% of the quantity which would be produced if such supply ran continuously throughout the year. Therefore, the water supply provided to Arcade by this agreement shall be 410.146 acre-feet of annual use for each 100 gross acres of the Potential Water Service Area served by Arcade.

- C. Arcade now serves 5988 acres of Area D as shown on Exhibit A which is also within the boundaries of Arcade, and 373 acres of Area D which is outside Arcade's boundaries, or a total of 6361

acres, which at the rate of 1.133 cfs per 100 acres equals 72 cfs, which is the maximum diversion allowable under this agreement at its date. As is provided by Paragraph 11 of the Bureau Agreement, the City is entitled to reasonable flexibility in its demands based on maximum daily requirements and maximum peaks during such days. Arcade shall be entitled to this same flexibility with the limiting provision that during any twenty-four hour period a quantity of water at the rate set forth, maintained for the full twenty-four hour period, shall not be exceeded. The maximum quantity to be diverted in any year shall be 26,064 acre feet allowable under this agreement at its date. During the life of this agreement it shall be the intent that Arcade will be provided water to serve its customers in such parts of Area D as shown on Exhibit A that Arcade may serve and should the areas being so served vary from the figures used in this agreement at its date then the maximum diversion allowable and the maximum permissible quantity to be diverted shall be proportionately adjusted in accordance with the diversion and quantity criteria set forth in this paragraph above.

Increases in the size of Area D as shown on Exhibit A which Arcade serves shall be agreed upon in advance, provided however that nothing in this agreement shall be construed as limiting or affecting the power of Arcade to conduct and act on any annexation or inclusion proceedings which may hereafter be brought. Hereafter in this agreement the permissible quantity which Arcade may divert, as established by this paragraph, shall be sometimes referred to as Arcade's Permissible Annual Diversion.

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. Sacramento grants to Arcade the right to divert from the American River that portion of its Permit Supply which Arcade requires for serving any portion of Area D as shown on Exhibit A which Arcade may actually serve from time to time, not to exceed the rate of diversion and annual quantity diverted as determined by Paragraph C of the recitals in this agreement. Arcade shall meter such diversions continuously and keep the original records thereof subject to inspection by Sacramento, and shall report in writing to Sacramento at least twice each year, and oftener if required, both the maximum diversion rates and the quantities of such

diversion, on a monthly basis.

2. The diversion of American River water by Arcade under this agreement shall be from a facility which serves area only within Area D as shown on Exhibit A. If Arcade wishes to construct facilities which will also divert water to serve outside of Area D as shown on Exhibit A, then Arcade must have suitable agreements with the U. S. Bureau of Reclamation for the furnishing of the additional water to be diverted by that facility and be used outside of Area D as shown on Exhibit A. Arcade shall furnish proof to Sacramento that either the diversion facility to be built will serve only area within Area D as shown on Exhibit A or that a combination diversion which may be built is the subject of separate agreement with the U. S. Bureau of Reclamation.
3. The operative date of this agreement shall be the first day of the calendar year in which Arcade diverts any water under this agreement, but in no event later than January 1, 1966.
4. Payment for water by Arcade to Sacramento under this agreement is intended to be on the same basis of actual cost of the water as represented by payments to the Bureau by Sacramento, plus

possible future additional costs as set forth in this paragraph. Definitions and methods of payment computation are as follows:

a. Arcade's Permissible Annual Diversion is as defined in recital "C" of this agreement.

b. Sacramento's Maximum Permissible Diversion shall be defined as the figure shown in Schedule "B" of the Bureau Agreement for the year 2030 or a reduced figure if such is ever established under the provisions of paragraph 13 of the Bureau Agreement.

c. Sacramento's Unit Cost of water in any year shall be the amount of money paid to the U. S. Bureau of Reclamation under the Bureau Agreement divided by the maximum quantity of water which Sacramento may divert from the American River under the Bureau Agreement for said payment.

d. Arcade's actual diversion shall be the annual quantity of water diverted by Arcade in accordance with the terms of this agreement and measured as provided by this agreement.

e. Arcade's Minimum Quantity for payment in any year shall be determined by computing the ratio between Arcade's Permissible Diversion and Sacramento's Maximum Permissible Diversion and multiplying this ratio by the Diversion permissible under

Schedule B of the Bureau Agreement as it is printed without modification by other terms of the Bureau Agreement.

f. Payment by Arcade to Sacramento in any year shall be Sacramento's Unit Cost of water multiplied by either "Arcade's actual diversion" or "Arcade's Minimum Quantity for payment", whichever shall be the greater.

g. If in the future the City of Sacramento shall be assessed taxes by any public agency on water rights or diversions which comprise any part of the Permit Supply then this shall constitute an "additional cost" and this shall be charged to Arcade on the same pro rated basis of computation as was used to charge Arcade for payments made by Sacramento under its Bureau Agreement.

5. Payments for water to Sacramento by Arcade shall be made twice annually, immediately after July 1st of any year for the payments due for the first six months of that year, and immediately after January 1st of each year for payments due for the second six months of the preceding year.
6. All diversions and deliveries by Arcade under this agreement are subject to all of the

provisions of Decision D 893 of the State Water Rights Board and the conditions of Sacramento permits, including releases and flows for fish life, including protection of fish life, and to Sacramento's "Agreement of Assignment" with Sacramento Municipal Utility District dated June 28, 1957.

7. This Agreement shall not take effect until it has been approved in writing by the U. S. Bureau of Reclamation and until the State Water Rights Board has approved Arcade's points of diversion as an addition to those specified in Sacramento's permits. The parties will cooperate to obtain such approval.
8. This Agreement shall be in effect concurrent with, and at all times consonant with, the American River diversion permits, and State regulations or State laws relating thereto, held by Sacramento and with all terms of the Bureau Agreement. For reference, the Bureau Agreement shall be considered as an appendix to this agreement.
9. Arcade shall hold Sacramento harmless and indemnify it for any loss or damage resulting from any act or occurrence in any way

related to this agreement.

Dated this 13th day of February, 1964.

CITY OF SACRAMENTO

By /s/ JAMES B. MC KINNEY
Mayor

ATTEST:

/s/ Reginald H. Boggs
City Clerk

ARCADE COUNTY WATER DISTRICT,
a county water district

(seal)

By /s/ N. B. KELLER
President

and /s/ NANCY ROSS
Secretary

Approved as to form

/s/ WILLIAM T. SWEIGERT

Attorney for Arcade County
Water District.

RESOLUTION NO. 43

Adopted by The Sacramento City Council on date of
FEB. 13 1964

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF SACRAMENTO:

That the Mayor and City Clerk are hereby authorized and directed to sign and execute on behalf of the City of Sacramento that certain agreement by and between the CITY OF SACRAMENTO, a municipal corporation, therein called SACRAMENTO, and ARCADE COUNTY WATER DISTRICT, a county water district, therein called ARCADE, covering the selling of certain quantities of water under the terms of the City's agreement with the United States Bureau of Reclamation.

JAMES B. MCKINNEY

MAYOR

ATTEST:

REGINALD H. BOGGS

CITY CLERK

CERTIFIED AS TRUE COPY

OF RESOLUTION NO. 43

February 14, 1964
Date Certified

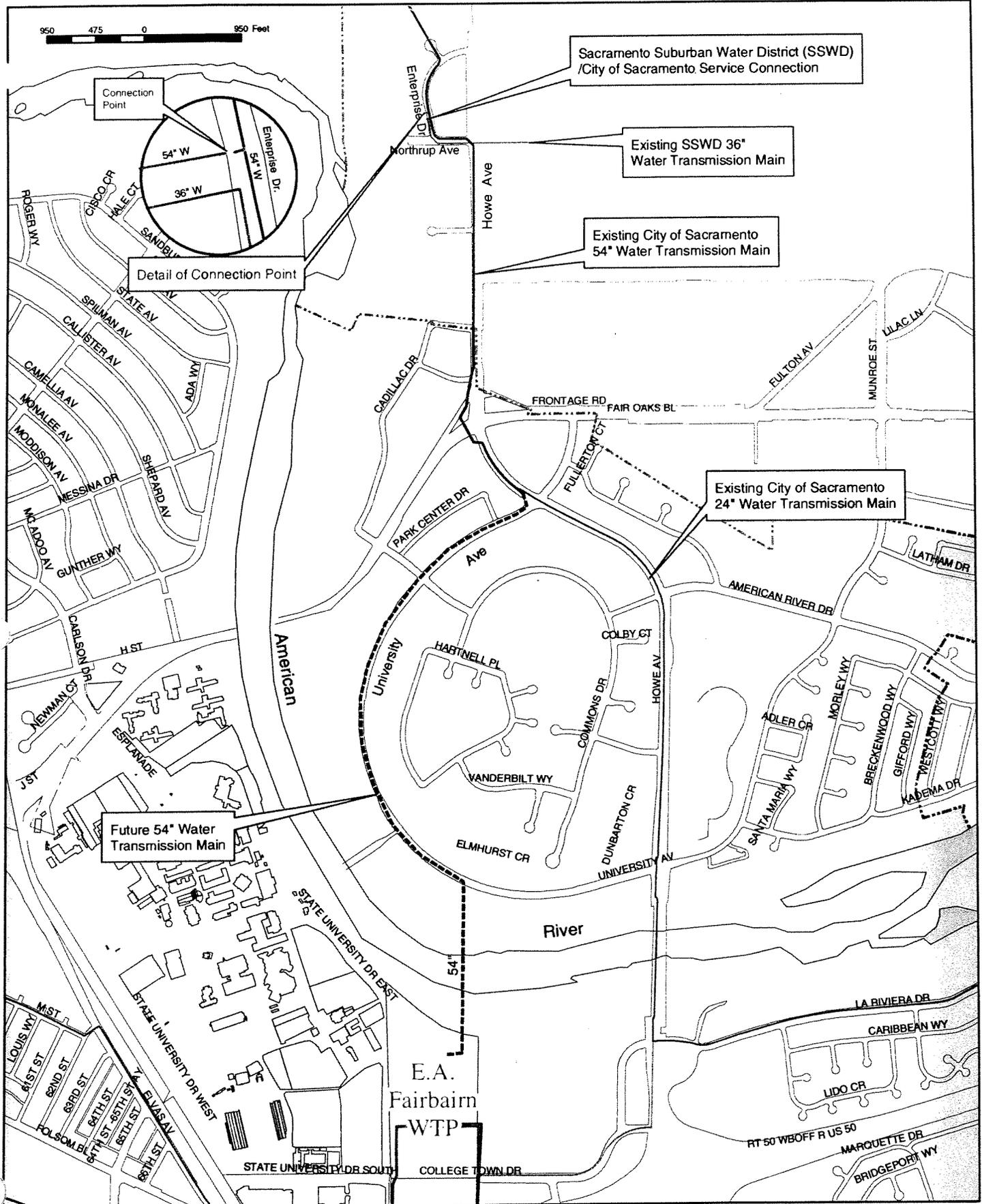
/s/ REGINALD H. BOGGS
City Clerk, City of
Sacramento

(SEAL)

Exhibit B

Map Showing City and District Facilities, with Detail of Service Connection

Exhibit "B"



**Sacramento Suburban Water District/City of Sacramento
Wholesale Water Supply Service Connection**



Exhibit C

District Service Area within POU

Exhibit D

Delivery Criteria

EXHIBIT D

CITY / SACRAMENTO SUBURBAN ENTERPRISE DRIVE SERVICE CONNECTION

DELIVERY CRITERIA

This document outlines the general delivery guidelines and criteria for the operation of service connections between the City of Sacramento (City) and the Sacramento Suburban Water District (District). The initial wholesale water service connection is located on Enterprise Drive between Northrop Avenue and Venture Court.

LIST OF CONTACTS:

The following listing of City and District contact names and phone numbers is provided in order of contact priority.

District:	WORK
James Arenz, Operator on Call	679-2892 (Cell-869-7359)
*Field Operations Dispatch (for Operator on Call)	972-7171
Richard Creechley, Treatment Plant Supervisor	679-2884 (Cell-416-5468)
*Utility Emergency Number (24-hr Line)	972-7171
Dan York, Field Operations Manager	679-2880 (Cell-869-7349)
Warren Jung, District Engineer, Operations	679-3987 (Cell-416-5467)
*Daily 8am-5pm; after hours, weekends and holidays-same number to answering service.	

City of Sacramento:	WORK
E.A. Fairbairn WTP Control Room	382-3106
E.A. Fairbairn WTP Hotline	383-1516
Steve Willey, Plant Operator Supervisor	382-3712
Mike Yee, Plant Service Division Manager	264-5583
Kathy Mullen, Water Superintendent	382-3105
Roland Pang, Water Superintendent	382-3119

OPERATIONAL PARAMETERS:

Per the agreement the following operational parameters shall be maintained by the City and District operators controlling the service connection.

Pre-Fairbairn Plant Expansion/Howe Avenue Transmission Main Construction

Instantaneous maximum flow rate = 10 mgd (6,950 gpm)*

Maximum daily volume = 10 mg

Post-Fairbairn Plant Expansion/Howe Avenue Transmission Main Construction

Instantaneous maximum flow rate = 20 mgd (13,900 gpm)*

Maximum daily volume = 20 mg

* A10% tolerance shall be allowed due to operational variations.

Per the operational requirements of the City supply and distribution system, the following additional operational parameters shall be maintained.

Minimum Pump Start Service Connection Pressure	= 35 psi
Minimum Service Connection Operation Pressure	= 30 psi

OPERATIONAL PROCEDURES:

1. For initial start-up, and for subsequently significant shut-down periods, District will call the E.A. Fairbairn Water Treatment Plant (FWTP) Control Room to communicate delivery status.
2. The FWTP Operator will check the system pressure at the service connection using the City's Supervisory Control and Data Acquisition (SCADA) system. If the pressure equals or exceeds 35 psi, the FWTP Operator will use the SCADA system to open the motor operated valve (MOV) located at the service connection. If the system pressure at the service connection is less than 35 psi, or the FWTP Operator has reason to suspect that the pressure shall fall to or below 35 psi within a short period from the call for delivery (based on historic demand trends), the FWTP Operator will deny District's request for delivery and not open the valve.

The SCADA system shall enunciate visually and audibly a low pressure condition (35 psi) and a low-low pressure condition (30 psi) in the FWTP Control room, and at the District control station. Should the low-low pressure condition remain in effect for 90 seconds, the District's booster pump station control logic shall initialize booster pump station shut-down. Should the District's booster pump station control logic fail to perform shut-down of the booster pumps, the City shall be obligated to close the service connection MOV.

3. When a request for delivery is authorized by the FWTP Operator, and the service connection MOV has been opened, the District Operator shall receive a fully open valve position signal through the pump station SCADA system. The District can then start the

first pump at the pump station using the VFD to ramp up flow while the FWTP Operator and the District monitors system pressure on the City side of the service connection. If the pressure falls to or below 35 psi the District shall adjust the flow to retain suction side pressure at or above 35 psi. The District shall strive to set stabilized operation of the pump station to maintain service connection pressure at or above 35 psi. If at any time the suction side pressure should fall to or below 30 psi the District's booster pump station control logic shall initiate booster pump station shut down.

4. If the system pressure remains above 35 psi the District shall be authorized to start additional pumps while monitoring service connection pressure to ensure that pressure does not fall below 35 psi. The District shall control the booster pump station control logic to maintain the service connection pressure at or above 35 psi. At no time shall the service connection pressure drop below 30 psi.
5. The City shall be responsible for reading and recording the time and flow quantities.
6. District can take a daily flow rate of up to 6,950 gpm (within a 10% tolerance due to operational variations) as measured by the City maintained service connection flowmeter as long as service connection pressures and conditions in paragraphs 2, 3, and 4 are met prior to completion of the FWTP expansion and construction of the Howe Avenue Transmission Main.
7. District can take a daily flow rate of up to 13,900 gpm (within a 10% tolerance due to operational variations) as measured by the City maintained service connection flowmeter as long as the service connection pressures and conditions in paragraphs 2, 3, and 4 are met once expansion of the FWTP and construction of the Howe Avenue Transmission Main have been completed.
8. If the District encounters an emergency situation that requires additional water for their system for a short duration, the City may allow the District to take water even though the system pressure at the service connection is below 30 psi. In the event of an emergency, the District may request the FWTP Operator to over ride the service connection MOV.
9. If the City encounters an emergency situation that requires additional water for their system, the City may close the service connection MOV even though the system pressure at the service connection is at or above 30 psi. In the event of an emergency, the FWTP Operator shall notify the District before closing the service connection MOV.
10. The aforementioned delivery criteria can be modified at the discretion of the City.

AGREEMENT:

Both parties agree to the procedures and conditions set forth in this document to deliver City water to the Service connection, by and between the CITY OF SACRAMENTO and the District.

Dated: _____, 2003

CITY OF SACRAMENTO

By: Mike Yee
Mike Yee, Plant Services Manager

DISTRICT

By: Ed Formosa
Ed Formosa, Assistant General Manager

Exhibit E

Water Forum Diversion Restrictions in City's American River Water Right Permits

The City of Sacramento's American River water right permits contain the following condition:

“At such time as the additional water treatment capacity to be provided by the City's Water Facility Expansion project (as described in the final Environmental Impact Report, SCH # 1998032046) is available for use by the City, the following terms shall go into effect.

In extremely dry years (i.e., years in which the State of California Department of Water Resources [DWR] annual projected unimpaired inflow into Folsom Reservoir would be 550,000 acre-feet annually [afa] or less; also referenced as the March through November projected unimpaired flow into Folsom Reservoir being less than 400,000 acre feet [af]) the City would limit its diversions of City water (i.e., water diverted pursuant to the City's water rights and entitlements) at the Fairbairn Water Treatment Plant (FWTP) to not greater than 155 cubic feet per second (cfs) and not greater than 50,000 afa. Any additional water needs would be met by diversions at other locations and/or other sources.

In all other years (i.e. when the DWR annual projected unimpaired runoff into Folsom Reservoir is greater than 550,000 af, or the March through November projected unimpaired inflow into Folsom Reservoir is greater than 400,000 af) the City may divert City water at the FWTP in accordance with the following criteria:

- (1) Diversion up to 310 cfs (200 million gallons per day [mgd]) so long as the flow bypassing the diversion at the FWTP is greater than the Hodge Flow Criteria. (The Hodge Flow Criteria refers to the following minimum Lower American River flows established by Judge Hodge in the *EDF v. EBMUD* case: October 15 through February - 2,000 cfs; March through June - 3,000 cfs; July through October 15 - 1,750 cfs.)
- (2) Whenever flow bypassing the diversion at the FWTP is less than the Hodge Flow Criteria, City of Sacramento diversions at the FWTP may not be greater than the following: January through May - 120 cfs; June through August - 155 cfs; September - 120 cfs; October through December - 100 cfs.”

Exhibit F

Initial Wholesale Water Rate

**SACRAMENTO SUBURBAN WATER DISTRICT
WHOLESALE WATER RATE
FISCAL YEAR 2003-2004**

**Exhibit F
Initial Wholesale Water Rate**

**SACRAMENTO SUBURBAN WATER DISTRICT
WHOLESALE WATER - UNIT COST CALCULATION
FISCAL YEAR 2003-2004**

FY 2004 Operating/CIP Budget: (a)		\$53,744,362	FY 2003 Water Production (AF): (b)	135,537
		BUDGET	UNIT COST ELEMENTS	
OPERATING				
LABOR				
2	Employee Services	14,928,745	\$110.15	
3	Cost Reimb-Credit	(1,887,983)	(\$13.93)	
4	Cost Reimb-Charge	1,897,859	\$14.00	
5	CIP Reimbursement	(684,743)	(\$5.05)	
6		<u>\$14,253,878</u>	<u>\$105.17</u>	
OPERATIONS				
7	Utilities	2,797,513	\$20.64	
8	Operations Equipment	1,434,727	\$10.59	
9	Direct Operations Supplies	1,524,615	\$11.25	
10	Chem & Gases	803,425	\$5.93	
11		<u>\$6,560,280</u>	<u>\$48.40</u>	
ADMINISTRATION/OVERHEAD				
12	Office/Admin	1,239,658	\$9.15	
13	Interdepartmental Allocation/Taxes	7,143,237	\$52.70	
14	Comp Liability Exp	514,649	\$3.80	
15	Water Rights/Supply	207,000	\$1.53	
16	Professional Services	545,660	\$4.03	
17		<u>\$9,650,204</u>	<u>\$71.20</u>	
18	TOTAL OPERATING	\$30,464,362	\$224.77	
CAPITAL IMPROVEMENT PROGRAM				
19	CIP	\$10,140,000	\$74.81	
20	Debt Service	<u>\$13,140,000</u>	<u>\$96.95</u>	
21	TOTAL CIP	\$23,280,000	\$171.76	
22	TOTAL OPERATING/CIP COSTS	\$53,744,362	\$396.53	
EXCLUDED COSTS (\$SWD only)				
23	Unrelated Energy Costs	(\$1,811,581)	(\$13.37)	
24	Unrelated Distribution Costs	(\$6,307,883)	(\$46.54)	
25	Unrelated Dist Overhead	(\$2,731,704)	(\$20.15)	
26	Unrelated Water Rights Costs	(\$207,000)	(\$1.53)	
27	Unrelated CIPs	(\$7,690,000)	(\$56.74)	
28	Unrelated Debt Svc	(\$13,140,000)	(\$96.95)	
29	Non-operating Revenues	<u>(\$6,891,000)</u>	<u>(\$50.84)</u>	
30	TOTAL EXCLUDED COSTS	(\$38,779,169)	(\$286.11)	
31	TOTAL COST	\$14,965,193	UNIT RATE	\$110.41 per AF
32b				\$0.2535 per CCF
33b			SERVICE CHARGE	\$150.00 per month

Note: Unit Rate is adjusted annually to reflect current costs.

**SACRAMENTO SUBURBAN WATER DISTRICT
WHOLESALE WATER - UNIT COST CALCULATION
FISCAL YEAR 2003-2004**

1	FY 2004 Operating/CIP Budget: (a)	\$53,744,362	FY 2003 Water Production (AF): (b)	135,537
		BUDGET	UNIT COST ELEMENTS	
OPERATING				
LABOR				
2	Employee Services	14,928,745		\$110.15
3	Cost Reimb-Credit	(1,887,983)		(\$13.93)
4	Cost Reimb-Charge	1,897,859		\$14.00
5	CIP Reimbursement	(684,743)		(\$5.05)
6		<u>\$14,253,878</u>		<u>\$105.17</u>
OPERATIONS				
7	Utilities	2,797,513		\$20.64
8	Operations Equipment	1,434,727		\$10.59
9	Direct Operations Supplies	1,524,615		\$11.25
10	Chem & Gases	803,425		\$5.93
11		<u>\$6,560,280</u>		<u>\$48.40</u>
ADMINISTRATION/OVERHEAD				
12	Office/Admin	1,239,658		\$9.15
13	Interdepartmental Allocation/Taxes	7,143,237		\$52.70
14	Comp Liability Exp	514,649		\$3.80
15	Water Rights/Supply	207,000		\$1.53
16	Professional Services	545,660		\$4.03
17		<u>\$9,650,204</u>		<u>\$71.20</u>
18	TOTAL OPERATING	\$30,464,362		\$224.77
CAPITAL IMPROVEMENT PROGRAM				
19	CIP	\$10,140,000		\$74.81
20	Debt Service	<u>\$13,140,000</u>		<u>\$96.95</u>
21	TOTAL CIP	\$23,280,000		\$171.76
22	TOTAL OPERATING/CIP COSTS	\$53,744,362		\$396.53
EXCLUDED COSTS (SSWD only)				
23	Unrelated Energy Costs	(\$1,811,581)		(\$13.37)
24	Unrelated Distribution Costs	(\$6,307,883)		(\$46.54)
25	Unrelated Dist Overhead	(\$2,731,704)		(\$20.15)
26	Unrelated Water Rights Costs	(\$207,000)		(\$1.53)
27	Unrelated CIPs	(\$7,690,000)		(\$56.74)
28	Unrelated Debt Svc	(\$13,140,000)		(\$96.95)
29	Non-operating Revenues	<u>(\$6,891,000)</u>		<u>(\$50.84)</u>
30	TOTAL EXCLUDED COSTS	(\$38,779,169)		(\$286.11)
31	TOTAL COST	\$14,965,193	UNIT RATE	\$110.41 per AF
32b				\$0.2535 per CCF
33b			SERVICE CHARGE	\$150.00 per month

Note: Unit Rate is adjusted annually to reflect current costs.

SACRAMENTO SUBURBAN WATER DISTRICT
ITEMIZED COST DESCRIPTION FOR WHOLESALE UNIT COST ALLOCATION

1A	FY2004 Operating/CIP Budget:	Total Operation Budget from line 11 below.
1B	FY03 Water Production	Total Water Production: Acre feet delivered.
2	Employee Services	Water related labor costs, including insurance and social security.
3	Cost Reimb-Credit	A reimbursement to the water fund -payments from other City departments for actual work done by Utilities staff.
4	Cost Reimb-Charge	A cost to the water fund - payments to other City departments for work done by non-Utilities staff.
5	CIP Reimbursement	A reimbursement to the water fund -Operations and maintenance (O&M) labor costs absorbed through work performed on a Capital Improvement Project (CIP).
6	Total Labor	Total Labor Costs - add lines 2 thru 5.
7	Utilities	Facility Energy costs - Smud
8	Operations Equipment	Major operating equipment costs - Vehicle/equipment purchase, rental, and maintenance.
9	Direct Operations Supplies	Standard O & M equipment costs - Mech parts, small tools, constr, elect, welding, paint, safety, misc, supplies, plumbing, hose fittings, asphalt, lube/oils, clothes, etc.
10	Chem & Gases	Primarily water treatment chemicals.
11	Total Operations	Total Operations - add lines 7 thru 10.
12	Office/Admin	Office supplies, postage, property insurance, data lines, janitorial, etc.
13	Interdepartmental Allocation & Taxes	Cost Plan which reflects use of Attorney, City Manager, and Facility Maintenance, etc., & voter approved general tax paid to general fund.
14	Comp Liability Exp	Comprehensive liability insurance on facilities.
15	Water Rights/Supply	Annual fee for water rights
16	Professional Services	Specialized legal fees, lobbying, educational consultants, etc.
17	Total Admin/Overhead	Total of lines 12 thru 16.
18	TOTAL OPERATING	Total Operating - add lines 6, 11 & 17.
19	CIP	Adopted Water Capital Improvement Plan
20	Debt Service	Principal and Interest on bonded debt.
21	TOTAL CIP	Total CIP - add lines 19 & 20.
22	TOTAL OPERATING/CIP COSTS	Total Operating/Cip costs - add lines 18 & 21.
23	Unrelated Energy Costs	Remove energy charges for Wells and Sac River Water Treatment Plant.
24	Unrelated Distribution Costs	Remove operating distribution costs.
25	Unrelated Dist Overhead	Remove Admin / overhead related to distribution.
26	Unrelated Water Rights Costs	Remove Water Rights Costs
27	Unrelated CIPs	Remove CIPs associated with Distribution System: Main Replacements, Water Meter Retrofit, Automatic Meter Reading, Fire Hydrant Repl, etc. See Water Fund CIP Listing.
28	Unrelated Debt Svc	Remove debt related to financing all all facilities.
29	Non-operating Revenues	Remove non-user fee revenues: interest on investments, revenues from other agencies, water tap sales, other departmental services, misc revenues.
30	TOTAL EXCLUDED COSTS	Total Excluded Costs - add lines 23 thru 29.
31a	TOTAL COST	Total Cost - add lines 22 & 30.
31b	UNIT RATE PER AF	Unit Cost: Total cost (line 31a) divided by Water production (AF, line 1b)
32b	UNIT RATE PER CCF	Unit Rate per hundred cubic feet.
33b	SERVICE CHARGE	Monthly basic service charge for 12" meter size.

2003/2004 WATER FUND CIP

<u>CIP#</u>	<u>CIP PROJECT NAME</u>	<u>TYPE</u>	<u>FY 03/04 CIP</u>	<u>UNRELATED</u>	<u>RELATED</u>
ZB46	WATER METER RETORFIT	G	250,000.00	250,000.00	
ZG21	AUTOMATED METER READING	G	200,000.00	200,000.00	
ZD36	WATER SUPPLY MASTER PLAN	G	100,000.00		100,000.00
ZE36	RISK MANAGEMENT PREVENTION	G	100,000.00		100,000.00
ZG06	MAINTENANCE MANAGEMENT	G	50,000.00		50,000.00
ZG86	UTILITIES ADA IMPROVEMENT	G	5,000.00		5,000.00
ZI96	WATER FACILITIES SECURITY	G	100,000.00		100,000.00
ZJ21	FIELD SERVICE BLD INTERIOR	G	400,000.00		400,000.00
	SUB-TOTAL GENERAL CIP		\$1,205,000.00	450,000.00	\$755,000.00
ZD51	FIRE HYDRANT REPLACEMENT	H	\$90,000.00	\$90,000.00	\$0.00
ZJ36	ELKHORN 3MG RESERVOIR	S	\$1,750,000.00	\$1,750,000.00	\$0.00
ZB71	WATER PROD MISC IMPV	T	100,000.00		100,000.00
ZE31	SACR RIVER SOURCE WATER QUALITY	T	70,000.00		70,000.00
ZF61	AMER RIVER SOURCE WATER QUALITY	T	65,000.00		65,000.00
ZH41	DRINKING WATER QUALITY	T	60,000.00		60,000.00
ZJ56	SRWTP PROP ACQ	T	400,000.00		400,000.00
	SUB-TOTAL TREATMENT CIP		\$695,000.00	\$0.00	\$695,000.00
ZJ11	RESIDENTIAL WATER METERS	D	250,000.00	250,000.00	
X001	ECONOMIC DEVELOP PGM	D	400,000.00	400,000.00	
ZB31	WATER SYSTEM MISC IMPROVEMENT	D	250,000.00	250,000.00	
ZE46	BASE CIP RESERVE-WATER	D	400,000.00	400,000.00	
ZF26	BACKFLOW PREVENTION	D	250,000.00	250,000.00	
ZI71	DEEBLE/28TH STREET MAIN REPL	D	850,000.00	850,000.00	
ZJ26	WOODLAKE MAIN REPL, PH2	D	850,000.00	850,000.00	
ZJ31	FRUITRIDGE MNR STL R	D	850,000.00	850,000.00	
ZJ41	POWER INN T-MAIN RELOCATE	D	100,000.00	100,000.00	
ZJ46	JIBBOOM ST REHAB/PARK	D	250,000.00	250,000.00	
ZJ66	WOODLAKE MN RPL PH3	D	850,000.00	850,000.00	
	SUB-TOTAL DISTRIBUTION CIP		\$5,300,000.00	\$5,300,000.00	\$0.00
ZJ51	H ST RV ST MN REPL 5-10 ST	TM	\$1,000,000.00	0.00	\$1,000,000.00
ZD26	WELL SYSTEM MISC IMPV	W	\$100,000.00	100,000.00	\$0.00
	TOTAL CIP		\$10,140,000.00	\$7,690,000.00	\$2,450,000.00

LEGEND	
D	DISTRIBUTION
G	GENERAL
H	HYDRANT
P	PUMPING
S	STORAGE
T	TREATMENT
TM	TRANSMISSION
W	WELLS

Exhibit G

Initial Connection Fee

**SACRAMENTO SUBURBAN WATER DISTRICT
WHOLESALE WATER - INITIAL CONNECTION FEE**

FISCAL YEAR 2003-2004

Exhibit G
Connection Fee

**SACRAMENTO SUBURBAN WATER DISTRICT
WHOLESALE WATER - CONNECTION FEE**

DESCRIPTION	NET REPL COST 6/30/2004	CAPACITY mgd	WHOLESALE UNIT COST FY 03/04
T & D	143,250,772	310	n/a
Hydrants	968,892	310	n/a
Storage	25,837,126	310	n/a
Wells	6,919,872	310	n/a
Treatment	190,143,487	310	\$ 613,366
Pumping	23,688,189	310	76,414
General	14,371,753	310	46,360
Total	\$405,180,092	310	\$ 736,140

UNIT COST	MGD	TOTAL FEE
\$736,140	10	\$7,361,140

WHOLESALE CAPACITY CHARGE CALCULATION - 09/25/02
 Extrapolation of figures developed from the
 Water Utility System Development Fee Study
 Completed in October, 1998 by Brown & Caldwell

SACRAMENTO SUBURBAN WATER DISTRICT

	(a) REPL COST 6/30/2003	(b) CAPITAL ADDITIONS FY 03/04	(c) INFLATION	REPL COST 6/30/2004	OUTSTG DEBT FY 03/04	NET REPL COST 6/30/2004	(d) CAPACITY mgd	WHOLESALE UNIT COST FY 03/04
1 T & D	132,870,167	6,300,000	4,080,605	143,250,772		143,250,772		
2 Hydrants	851,983	90,000	26,909	968,892		968,892		
3 Storage	23,360,074	1,750,000	727,052	25,837,126		25,837,126		
4 Wells	6,619,779	100,000	200,093	6,919,872		6,919,872		
5 Treatment	271,314,574	695,000	8,149,862	280,159,436	90,015,949	190,143,487	310	613,366
6 Pumping	56,596,428	-	1,697,893	58,294,321	34,606,132	23,688,189	310	76,414
7 General	13,209,153	755,000	407,600	14,371,753		14,371,753	310	46,360
Total	504,822,158	9,690,000	15,290,015	529,802,173	124,622,081	405,180,092	(e)	736,140

(a) Repl Cost = Water System value net of contributions and assessments.

(b) Repl cost inflated by 3% per year.

(c) Capital additions are inflated one half years interest in year they are added.

(d) 310 capacity mgd includes 90 mgd EAF existing, 110 mgd EAF new expansion & 110 mgd Sac existing.

(e) Excludes Distribution, Transmission, Hydrants, Storage & Wells.

Wholesale Capacity Calculation Description

- 1 T & D
Transmission & Distribution.
- 2 Hydrants
Fire Hydrants.
- 3 Storage
Storage reservoirs plus booster pump stations.
- 4 Wells
Potable water wells only.
- 5 Treatment
Two water treatment plants: EAF & Sacramento River Water Treatment Plants.
- 6 Pumping
Intakes at EAFWTP & SRWTP.
- 7 General
Includes misc. capital improvement projects, ie. Water Supply Master Plan, Risk Mgmt Prevention, Maint. Management, Utilities ADA Improvement, Water Facilities Security.

Appendix G: Groundwater Management Plan (on CD)

Appendix H: Water Shortage Contingency Plan – Regulation 15

Regulation No. 15 Water Conservation

Adopted: July 19, 2004

Amended: November 17, 2008; March 16, 2009; April 20, 2009;
December 21, 2009, April 19, 2010

A. Water Conservation Stage Declaration

Each year, the District Board of Directors shall determine, based on data in the California Department of Water Resource's (DWR) Bulletin #120 and present water conditions, the water stage applicable to the District for the coming year. The declaration shall consist of a "normal water supply" year, or with one of the four (4) stages of varying water conservation measures. The applicable stage determined by the District shall be effective upon adoption by the Board of Directors each year and shall remain in effect until changed by the Board based on updated data from DWR, past water usage within the District, and existing water supply and use conditions.

Regardless of water supply availability or service conditions within the District, the Board of Directors reserves the right to set water conservation goals and modify stage declarations as necessary to align with regional or state water conservation policies, agreements or declarations, or legal requirements. All wasteful practices or unreasonable uses of District water, whether willful or negligent, are always prohibited. The General Manager, following the guidelines set forth in this Regulation and other relevant Board policies, state laws and regulations, shall determine what constitutes a wasteful practice or unreasonable use of water.

In addition to Normal Water Supply Conditions, the following four stages, including their conservation requirements, shall be observed by all water users within the District:

NORMAL WATER SUPPLY

Water supply conditions are adequate to meet the demands of the District's Customers. The goal of this stage is the use of water efficiently in conformance with the water conservation Best Management Practices (BMPs) specified in the District's Urban Water Management Plan. Requirements specified in this stage are applicable to and in force at all times and in all other stages of this regulation. The following requirements shall be in force during Normal Water Supply and in all subsequent stage declarations unless the Board modifies or adds to these restrictions:

1. Water must not be permitted to discharge, flow, or run to waste into any gutter, sanitary sewer, water course, or storm drain, or to any adjacent lot, from any tap, hose, faucet, pipe, sprinkler, or nozzle. In the case of irrigation, "discharge," "flow," or "run to waste" means that the earth intended to be irrigated has been saturated with water to the point that excess water flows over the earth to waste.

In the case of washing, “discharge,” “flow,” or “run to waste” means the water in excess of that which is necessary to wash, wet or clean the dirty or dusty object, such as an automobile or boat, flows to waste.

2. Washing of vehicles is permitted only with the use of a water saver nozzle equipped with automatic shut-off and bucket, provided minimal runoff occurs on sidewalks or street (less than 3 gpm is considered minimal).
3. The use of water for washing down sidewalks, walkways, driveways, parking lots or buildings, except as necessary for health, sanitary, or fire protection purposes, is prohibited except for health, sanitary or fire protection purposes. When used for these exceptions, high-pressure washers shall be used.
4. All water hoses or filling apparatus shall be equipped with a control nozzle capable of completely shutting off the flow of water except when positive pressure to the nozzle is applied.
5. All water fixtures or heating or cooling devices must not be allowed to leak or discharge. All known leaks must be repaired within seven (7) days or less depending on the severity of the leak.
6. The operation of an irrigation system that applies water to an impervious surface (example: concrete or asphalt) or that is in disrepair is prohibited.
7. Irrigation of landscaping during rainfall is prohibited.
8. Backwashing or overfilling, so as to discharge water to waste, swimming pools, decorative basins, or ponds in excess of the frequency reasonably necessary to maintain the clarity or cleanliness of the water is prohibited. Pool draining and refilling, between May 1 and October 1, will be allowed only for health, maintenance, or structural considerations upon submittal of a written report by a health official or pool consultant and approval provided by the District.
9. All pools, spas, decorative or ornamental fountains, ponds and waterways must be equipped with a recirculation pump and must be constructed to be leak-proof.
10. The use of water in new conveyer car washes and new commercial laundry systems that do not use a recirculation system shall be prohibited.

The following are recommended practices for this stage:

1. Water during cooler morning and evening hours to reduce evaporation and avoid peak energy demand times. Outdoor watering from 12:00 noon to 8:00 p.m. is not recommended.
2. Watering three (3) days or less per week is encouraged. Customers whose address ends with an odd number are encouraged to only water on Tuesdays, Thursdays and Saturdays. Customers whose address ends with an even number are

encouraged to only water on Sundays, Wednesday and Fridays. No watering on Mondays.

3. Pool covers for swimming pools and spas are recommended to reduce evaporation.
4. District Customers are encouraged to take advantage of the District's conservation programs and rebates.

STAGE 1 – WATER ALERT

Water supply conditions may be impeded by lack of available sources including surface water supplies conjunctively used by the District, regional circumstances or statewide climate influences. The goal of this stage is to reduce District-wide consumption of water by up to 10% in order to meet the needs of District Customers, comply with State mandates, cooperate with regional programs and/or comply with County regulations declaring water shortages. The following requirements shall be in force during Stage 1 and all subsequent increases in stage declarations:

1. All requirements of Normal Water Supply Conditions except that the District will make mandatory and will enforce the following:
 - a. No outdoor watering between 12 noon and 8:00 p.m.
 - b. Odd/Even outdoor watering shall be followed.

The following are recommended practices for this stage:

1. All recommendations of Normal Water Supply Conditions.
2. District Customers with “smart” irrigation timers are encouraged to set their controllers to achieve watering efficiency equal to no more than 80% of the evapotranspiration (ET) rate for the Sacramento area.
3. New or expanded landscaping should be limited to drought tolerant trees, shrubs and ground cover. The planting of new turf or grass, whether hydro-seeded or laid, is discouraged.
4. Restaurants are encouraged to not serve water to their customers unless requested.

STAGE 2 – WATER WARNING

Water supply conditions may be impeded by lack of available sources including surface water supplies conjunctively used by the District, regional circumstances or statewide climate influences. The goal of this stage is to reduce District-wide consumption of water by up to 25% in order to meet the needs of District Customers, comply with State mandates, cooperate with regional programs and/or comply with County regulations

declaring water shortages. The following requirements shall be in force during Stage 2 and all subsequent increases in stage declarations:

1. All requirements of the previous stages unless further modified below.
2. Outdoor watering shall be limited to no more than two days per week, as determined by the Board of Directors at the time of a Stage 2 declaration.
3. Restaurants shall not serve water to their customers unless requested.
4. Hydrant permits for construction water will be issued only with the approval of the General Manager. Potable water must not be used for construction site street cleaning or dust control.
5. A County or State health official must verify all health and emergency conditions requiring potable water use for the purpose of any washing of sidewalks, walkways, streets, parking lots, driveways or buildings.
6. New or expanded landscaping shall be limited to drought tolerant trees, shrubs and ground cover. No new turf or grass shall be planted, hydro-seeded or laid without prior approval of the General Manager.

The following are recommended practices for this stage:

1. All recommendations of the previous stages unless modified to requirements.
2. District Customers with “smart” irrigation timers are encouraged to set their controllers to achieve watering efficiency equal to no more than 75% of the evapotranspiration (ET) rate for the Sacramento area.
3. Washing of vehicles and other mobile equipment should be conducted at commercial establishments that use fully recycled water.

STAGE 3 – WATER CRISIS

Water supply conditions are significantly impeded by interruption of available sources, a regional emergency, a county emergency or state mandates. The goal of this stage is to reduce District-wide consumption of water by up to 50% in order to meet the needs of District Customers. A declaration of this stage will be in conformance with the activation of the District’s Emergency Response Plan and/or Water Shortage Contingency Plan. The following requirements shall be in force during Stage 3 and any subsequent increase in stage declaration:

1. All requirements of the previous stages unless further modified below.

2. Outdoor landscape irrigation shall be limited to one day, as determined by the Board of Directors at the time of a Stage 3 declaration.
3. The planting of new or expanded landscaping is prohibited.
4. Except where non-potable water is used, all Large Landscape Irrigation Customers (CII) must cease turf irrigation.

The following are recommended practices for this stage:

1. All recommendations of the previous stages unless modified to requirements.
2. District Customers with “smart” irrigation timers are encouraged to set their controllers to achieve watering efficiency equal to no more than 70% of the evapotranspiration (ET) rate for the Sacramento area.

STAGE 4 – WATER EMERGENCY (Health and Safety Only)

Water supply conditions are significantly impeded by interruption of available sources, a regional emergency, a county emergency or state mandates. The goal of this stage is to reduce District-wide consumption of water by greater than 50% in order to meet the needs of District Customers. A declaration of this stage will be in conformance with the activation of the District’s Emergency Response Plan and/or Water Shortage Contingency Plan. The following requirements shall be in force during Stage 4:

1. All requirements of the previous stages unless further modified below.
2. Any use of water for washing down sidewalks and driveways is prohibited.
3. Use of District water is prohibited for filling pools, ponds or spas.
4. Outdoor landscape irrigation is prohibited.
5. All washing of vehicles and other mobile equipment is prohibited unless conducted at a commercial establishment that uses fully recycled water.
6. All metered services will be subject to additional tiered rates approved by the District Board of Directors.
7. No commitments will be provided for new water service connections until the District has returned, at a minimum, to Stage 3 restrictions. The District reserves the right to limit or refuse new service connections until Stage 2 conditions exist.

Recommended practices identified in previous stages are not applicable in Stage 4.

WATER USE PERMITTED

Water used for the following purposes is considered essential for public health and safety and is therefore permitted during all stage declarations:

- A. Water use for firefighting or routine inspection of fire hydrants or from fire training activities.
- B. Water applied to abate spills of flammable or other hazardous materials, where water is an appropriate abatement methodology.
- C. Water applied to prevent or abate imminent health, safety, or accident hazards when alternate methods are not available.

B. ENFORCEMENT

Enforcement of any violation of the water conservation requirements provided in this Regulation No. 15, as they may be amended from time to time by the District Board of Directors, is provided in this section. Service charges will be assessed for a violation of the District's conservation rules in accordance with the following provisions. A Customer will be notified when violations may result in service charges. The service charges that may be assessed are provided in Section L of Regulation No. 3. In cases of tenant occupancy, landowners retain full responsibility for the use of water by their tenants, including payment of any service charges imposed for violations of this Regulation 15.

Enforcement of the requirements of each water conservation stage will be conducted in a progressive manner and may ultimately lead to termination of service in cases where a violator refuses to discontinue activities constituting water waste. The enforcement steps are as follows:

Warning: Upon observation by authorized District personnel, or demonstrated to the District's satisfaction, of the existence of a violation, the District shall request Customer compliance with this Regulation via a notice delivered in person.

First Violation: Upon observation by authorized District personnel, or demonstrated to the District's satisfaction, of the existence of the next violation after a Warning was issued, the District shall request Customer compliance with this Regulation via a notice delivered in person by District personnel, or by certified mail to the billing address of the Parcel upon which the violation has occurred.

The first violation charged to a Parcel will begin the District's monitoring of that Parcel for water waste. Should there be no additional violations on the Parcel prior to April 1st of the following year, then that Parcel's violation from the previous year will be expunged and the Parcel will be deemed to be free of

violations and the counting of any violations incurred in the new water year will begin on a clean record. The District shall keep on file copies of all violations of the District's water conservation requirements that were incurred in the same water year.

For one time only, and upon request, a Customer may participate in a Water-Wise House Call to remove a first violation from the District's records.

Second Violation: Upon observation by authorized District personnel, or demonstrated to the District's satisfaction, of a second water conservation violation of any kind on the same Parcel, the Customer and Landowner shall be notified of the violation in writing at the established billing address by District personnel or via certified mail. The District will assess a service charge for the violation, which will be added to the Customer's next bill. The second violation service charge will be billed in accordance with Regulation 3, Section L.1.

If a second violation occurs at a Stage 2 or higher water conservation stage in this Regulation, the District shall install a permanent water meter on any existing Service Connection on the Parcel where the violation occurred and/or the District may impose an additional service charge as approved by the District Board of Directors. Metered rate billing will be initiated on the account at the next billing period following the meter installation.

A Customer may avoid paying a service charge for a second violation by attending a water conservation awareness workshop, at the customer's expense, and participating in a Water-Wise House Call if not completed following the first violation.

Third Violation: Upon observation by authorized District personnel, or demonstrated to the District's satisfaction, of a third water conservation violation of any kind on the same Parcel, the Customer and Landowner shall be notified of the violation in writing at the established billing address by District personnel or via certified mail. The District will assess a service charge for servicing the violation, which will be added to Customer's next bill in accordance to Regulation 3, Section L.2. The notice of violation also will state that a subsequent violation may result in disconnection or reduction of service.

Fourth Violation: Upon observation by authorized District personnel, or demonstrated to the District's satisfaction, of a fourth water conservation violation of any kind on the same Parcel, the Customer and Landowner shall be notified of the violation in writing at the established billing address by District personnel or via certified mail. The District will assess a charge for the fourth violation as follows:

Flat Rate Services: Upon the fourth water conservation violation of a non-metered account, the District may discontinue or reduce the water supply to the Parcel

where the violation occurred. The District shall, in its sole discretion, decide whether to terminate or reduce service based on all of the facts and circumstances of the violation and the Customer's past water use history. The Landowner shall be notified in writing by District personnel or via certified mail of the violation that a water meter shall be installed on that Parcel. The Landowner shall bear the cost of installing the meter, which shall be based on the cost of the District's time and materials. The installation of this meter shall cause the billing for the Parcel to be changed from a flat rate to a metered rate. The monthly charge for a metered service will be computed on the current metered rate as more specifically set forth in the District's Regulation No. 3 and any additional tiered water conservation rates adopted by the Board. The installation of this Meter shall be deemed permanent.

Metered Services: Upon the fourth water conservation violation on an existing metered service, the District will notify the Landowner of the violation in writing at the established billing address by District personnel or via certified mail. The Landowner will be informed that an additional charge for servicing the violation will be included in his/her next billing. The amount of the charge is as follows:

- (i) 1-inch or smaller service: 25% of the amount of the water bill for the month in which the violation occurs.
- (ii) 1½ inch or larger service: 50% of the amount of the water bill for the month in which the violation occurs.

In addition, the District may discontinue or reduce the water supply to the Parcel where the violation occurred. The District shall, in its sole discretion, decide whether to terminate or reduce service based on all of the facts and circumstances of the violation and the Customer's past water use history. To restore service or full flow capabilities, the affected Customer will be required to request a hearing of the District Board of Directors, where the Customer may present evidence to the Board concerning the violation and request the restoration of water service. At its next regular meeting after the hearing, the District Board shall enter into the record its findings and decision concerning the service restoration request and each issue there under. The Board's decision will be final. The Secretary of the Board will mail the Board's written findings and decision to the Customer within thirty days (30) after the date that the Board renders its decision.

Where compliance with the requirements of this Regulation 15 are beyond the control of the Customer or Landowner and written justification and supporting evidence has been provided by the Customer or Landowner and verified by a District representative, the General Manager may excuse the violation. Approval of such a variance by the General Manager shall be conditioned on the Customer's or Landowner's cooperation with the District in resolving the violation.

Where a water conservation violation occurs on a Parcel improved with multiple family units, and it is not practical to determine which unit is responsible for the violation, the District will assess the service charge described above for existing metered rates.

Where water is wastefully or negligently used on a water user's premises to the extent that the violation seriously affects the District's general service capability, the District may discontinue service to the premises if the water waste conditions causing the general service disruption are not corrected within twenty-four (24) hours after the District provides the water user with the violation notice. A door hanger (notice) shall be deemed sufficient written notice for this purpose.

When encountered in the course of routine daily activity, District personnel have the responsibility and authority to control leaks on any Premises at the point of connection or at the valve controlling the Customer's System. When water is shut off for control of a leak, the District will provide the Customer with notice of the condition.

Appendix I: AB 1420 Certification

AB 1420 Self- Certification Statement Table 1

Note: Table 1 documents Status of Past and Current BMP implementation.

Self-Certification Statement: The Urban Water Supplier and its authorized representative certifies, under penalty of perjury, that all information and claims, stated in this table, regarding compliance and implementation of the BMPs, including alternative conservation approaches, are true and accurate. This signed AB 1420 Self-Certification Statement Table 1, and Table 2 are the basis for granting funds by the Funding Agency. Falsification and/or inaccuracies in AB 1420 Self Certification Statement Table 1, and Table 2 and in any supporting documents substantiating such claims may, at the discretion of the funding agency, result in loss of all State funds to the applicant. Additionally, the Funding Agency, in its sole discretion, may halt disbursement of grant or loan funds, not pay pending invoices, and/or pursue any other applicable legal remedy and refer the matter to the Attorney General's Office.

Name of Signatory Sacramento Suburban Water District Title of Signatory _____ Signature of signatory _____ Date _____

Application Date:

Proposal Identification Number: C UWCC Member? Yes/No Yes

Has Urban Water Supplier submitted a 2005 Urban Water Management Plan? Yes/No Yes Is the UWM Plan Deemed Complete by DWR? Yes/No Yes

Applicant Name:

Project Title:

Applicant's Contact Information: Name: Phone: E-mail:

Retailer (List Below)						Wholesaler (List Below)					

C1 C2 C3 C4 C5 *C6 C7 **C8 **C9 **C10 C11 C12 C13 C14 C15 C16 C17 C18

BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	BMP Implemented by Retailers and/or Wholesalers / BMP			Compliance Options/Alternative Conservation Approaches (1)			BMP Is Exempt (2)			BMP Implementation Requirements Met (4)							
			Retailer Yes/No	Wholesaler Yes/No	Regional Yes/No	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD (5)	Not Cost Effective	Lack of Funding	Lack of Legal Authority	CUWCC MOU Requirement Met: Retailer Yes/No	CUWCC MOU Requirement Met: Wholesaler Yes/No	Date of BMP Report Submitted to CUWCC for (2007-2008) (MOU Signatories)	Date BMP Implementation Data Submitted to DWR in CUWCC Format (Non MOU Signatories) (3)	All Supporting Documents have been Submitted Yes/No			
	✓	BMP 1 Water Survey for Single/Multi-Family Residential Customers	Yes					X								Yes (on track)		2005 UWMP	N/A
	✓	BMP 2 Residential Plumbing Retrofit	Yes					X								Yes (on track)		2005 UWMP	N/A
✓	✓	BMP 3 System Water Audits, Leak Detection	Yes					X								Yes		2005 UWMP	N/A
✓	✓	BMP 3 Leak Repairs	Yes					X								Yes		2005 UWMP	N/A
	✓	BMP 4 Metering with Commodity Rates for All New connections	Yes					X								Yes		2005 UWMP	N/A
	✓	BMP 4 Retrofit of Existing Connections	Yes					X		X						Not retrofits completed by 2022)		2005 UWMP	See attached SSWD Meter Retrofit Plan
	✓	BMP 5 Large Landscape Conservation Programs and Incentives	Yes					X								Yes (on track)		2005 UWMP	N/A
	✓	BMP 6 High-Efficiency Washing Machine Rebate Programs	Yes					X								No		2005 UWMP	N/A
✓	✓	BMP 7 Public Information	Yes		Yes			X								Yes		2005 UWMP	N/A
✓	✓	BMP 8 School Education	Yes		Yes			X								Yes		2005 UWMP	N/A

C1	C2	C3	C4	C5	*C6	C7	**C8	**C9	**C10	C11	C12	C13	C14	C15	C16	C17	C18
BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	BMP Implemented by Retailers and/or Wholesalers /BMP			Compliance Options/Alternative Conservation Approaches (1)			BMP Is Exempt (2)			BMP Implementation Requirements Met (4)					
			Retailer Yes/No	Wholesaler Yes/No	Regional Yes/No	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD (5)	Not Cost Effective	Lack of Funding	Lack of Legal Authority	CUWCC MOU Requirement Met: Retailer Yes/No	CUWCC MOU Requirement Met: Wholesaler Yes/No	Date of BMP Report Submitted to CUWCC for (2007-2008) (MOU Signatories)	Date BMP Implementation Data Submitted to DWR in CUWCC Format (Non MOU Signatories) (3)	All Supporting Documents have been Submitted Yes/No	
	✓	BMP 9 Conservation programs for Commercial, Industrial, and Institutional (CII) Accounts	Yes						X				No			2005 UWMP	N/A
✓		BMP 10 Wholesale Agency Assistance Programs		No					N/A				N/A			2005 UWMP	N/A
	✓	BMP 11 Conservation Pricing	Yes						x				No			2005 UWMP	N/A
✓	✓	BMP 12 Conservation Coordinator	Yes						x				Yes			2005 UWMP	N/A
	✓	BMP 13 Water Waste Prohibitions	Yes						x				Yes			2005 UWMP	N/A
	✓	BMP 14 Residential ULFT Replacement Programs	Yes						x				No			2005 UWMP	N/A

*C6: Wholesaler may also be a retailer (supplying water to end water users)

**C8, **C9, **, and C10: Agencies choosing an alternative conservation approach are responsible for achieving water savings equal or greater than that which they would have achieved using only BMP list.

(1) For details, please see: <http://www.cuwcc.org/mou/exhibit-1-bmp-definitions-schedules-requirements.aspx>.

(2) BMP is exempt based on cost-effectiveness, lack of funding, and lack of legal authority criteria as detailed in the CUWCC MOU

(3) Non MOU signatories must submit to DWR reports and supporting documents in the same format as CUWCC.

(4) SSWD signed the CUWCC MOU in 2009 and will complete CUWCC reporting forms in the next reporting cycle.

(5) SSWD has been implementing BMPs on the checklist in historical implementation efforts but because they were not a signatory to the CUWCC MOU in the past they were not obligated to implement the CUWCC MOU in the past. Moving forward SSWD will implement the BMPs following the GPCD track approach. See attached BMP checklist based gpcd calculation vs. GPCD track estimate. This analysis shows that SSWD water savings achieved following the GPCD track are greater than those achieved by following the checklist approach.

AB 1420 Self- Certification Statement Table 2

Provide Schedule, Budget, and Finance Plan to Demonstrate Commitment to Implement All BMP's to Become in Compliance with BMP Implementation - Commencing Within 1st Year of Agreement for Which Applicant Receives Funds.

Self-Certification Statement: The Urban Water Supplier and its authorized representative certifies, under penalty of perjury, that all information and claims, stated in this table, regarding compliance and implementation of the BMPs, including alternative conservation approaches, are true and accurate. This signed AB 1420 Self-Certification Statement Table 1 and Table 2 are the basis for granting funds by the Funding Agency. Falsification and/or inaccuracies in AB 1420 Self Certification Statement Table 1 and Table 2, and in any supporting documents substantiating such claims may, at the discretion of the funding agency, result in loss of all State funds to the applicant. Additionally, the Funding Agency, in its sole discretion, may halt disbursement of grant or loan funds, not pay pending invoices, and/or pursue any other applicable legal remedy and refer the matter to the Attorney General's Office.

Name of Signatory _____ Title of Signatory _____ Signature of signatory _____ Date _____

Application Date:

Proposal Identification Number: CUWCC Member? Yes/No Yes

Applicant Name: Sacramento Suburban Water District Is the UWM Plan Deemed Complete by DWR? Yes/No Yes

Project Title:

Applicant's Contact Information: Name

Retailer (List Below)																		
Participants:																		

C1 C2 C3 C4 C5 *C6 C7 C8 **C9 **C10 **C11 C12 C13 C14 C15 C16 C17 C18 C19

CUWCC 2010 Flex Track BMPs	BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	BMP Implemented by Retailers and/or Wholesalers				Compliance Options / Alternative Conservation Approaches (1)			BMP is Exempt (2)			Implementation Scheduled to Commence within 1st Year of Agreement								
				Retailer Yes/No	Wholesaler Yes/No	Regional Yes/No	Alternative Conservation Approaches Yes/No	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	Start Date (MM/YR)	Completion Level (%)	BMP Completion Date (MM/YR)	Budget (Dollars)	Funding Source & Finance Plan to Implement BMPs	Meets CUWCC Coverage Yes/No	Funds Requested, if Available. (See AB 1420 Compliance Table 3) Yes/No		
1. Utility Operations Programs																						
1.11	✓	✓	BMP 12 Conservation Coordinator	Yes							x						100				Yes	
1.12		✓	BMP 13 Water Waste Prohibitions	Yes							x						100				Yes	
1.13	✓	✓	BMP 10 Wholesale Agency Assistance Programs								x											
1.20	✓	✓	BMP 3 System Water Audits, Leak Detection/Repair	Yes							x						100				Yes	
1.30		✓	BMP 4 Metering with Commodity Rates for All New/Retrofit of Existing connections	Yes													On track to meter all connections by 2022. See attached SSWD Meter Retrofit Plan					
1.40		✓	BMP 11 Conservation Pricing	Yes							x		X				0				No	
2. Educational Programs																						
2.10	✓	✓	BMP 7 Public Information	Yes		Yes					x						100				Yes	
2.20	✓	✓	BMP 8 School Education	Yes		Yes					x						100				Yes	

CUWCC 2010 Flex Track BMPs	BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	BMP Implemented by Retailers and/or Wholesalers			Alternative Conservation Approaches Yes/No	Compliance Options / Alternative Conservation Approaches (1)			BMP is Exempt (2)			Implementation Scheduled to Commence within 1st Year of Agreement					
				Retailer Yes/No	Wholesaler Yes/No	Regional Yes/No		BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	Start Date (MM/YR)	Completion Level (%)	BMP Completion Date (MM/YR)	Budget (Dollars)	Funding Source & Finance Plan to Implement BMPs	Meets CUWCC Coverage Yes/No
3. Residential (4)																			
3.11		✓	BMP 1 Indoor Water Survey for Single/Multi-Family Residential Customers							x								N/A	N/A
3.12			BMP 1 Outdoor Water Survey for Single/Multi-Family Residential Customers							x								N/A	N/A
3.20		✓	BMP 2 Residential Plumbing Retrofit							x								N/A	N/A
3.30		✓	BMP 6 High-Efficiency Washing Machine Rebate Programs							x								N/A	N/A
3.40		✓	BMP 14 Residential ULFT Replacement Programs							x								N/A	N/A
4. Commercial, Industrial, Institutional (4)																			
4.00		✓	BMP 9 Conservation programs for Commercial, Industrial, and Institutional (CII) Accounts							x								N/A	N/A
5. Landscape (4)																			
5.00		✓	BMP 5 Large Landscape Conservation Programs and Incentives							x								N/A	N/A

*C6: Wholesaler may also be a retailer (supplying water to end water users)

**C9, ** C10, and **C11: Agencies choosing an alternative conservation approach are responsible for achieving water savings equal or greater than that which they would have achieved using only BMP list.

(1) For details, please see <http://www.cuwcc.org/mou/exhibit-1-bmp-definitions-schedules-requirements.aspx>.

(2) BMP is exempt based on cost-effectiveness, lack of funding, or lack of legal authority, as detailed in the CUWCC MOU.

(3) Submitting exemption request to CUWCC is not necessary for gpcd tract. See attached benefit cost analysis for cost evaluations by BMP.

(4) Although SSWD is implementing BMPs 2, 3, and 4, these are not mandatory following the GPCD track because they are not within the Foundational category of BMPs.

**Sacramento Suburban Water District
BMP Checklist Savings vs. GPCD Track**

Sacramento Suburban Water District, BMP Checklist vs. GPCD Track Comparison

		Water savings life, years	Water savings, AF/yr										Benefit/Cost ratio (based on \$250/AF)	Comments	
			2011	2012	2013	2014	2015	2016	2017	2018	2011-2018 total savings, AF				
BMP Checklist Savings															
CUWCC 2010 Flex Track BMPs	BMPs														
1. Utility Operations Programs															
1.11	BMP 12 Conservation Coordinator	--													non-quantifiable
1.12	BMP 13 Water Waste Prohibitions	--													non-quantifiable
1.13	BMP 10 Wholesale Agency Assistance Programs	--													non-quantifiable
1.20	BMP 3 System Water Audits, Leak Detection/Repair	Annual	Total	890	858	857	830	835	807	812	751	6,639		Savings per year based on 2% of total production	
			Percent implemented in current program, %	100%	100%	100%	100%	100%	100%	100%	100%	--		Existing program is currently fully implemented	
			New savings (above and beyond continuing SSWD's current program)	0	0	0	0	0	0	0	0	-			
1.30	BMP 4 Metering with Commodity Rates for All New/Retrofit of Existing connections	Permanent	Total savings from new meters (New savings)	167	334	500	667	834	1,001	1,168	1,335	6,005	0.61	Based on being fully metered by 2022 (1,299 meters per year from 2010 through 2022).	
			Percent implemented in current program, %	0%	0%	0%	0%	0%	0%	0%	0%			All savings will be New Savings	
			New savings (above and beyond continuing SSWD's current program)	167	334	500	667	834	1,001	1,168	1,335	6,005			
1.40	BMP 11 Conservation Pricing	--	Total savings from new meters (New savings)	396	396	395	398	400	403	405	407			Savings per year based on 1% of total production	
			Percent implemented in current program, %	0%	0%	0%	0%	0%	0%	0%	0%			All savings will be New Savings	
			New savings (above and beyond continuing SSWD's current program)	396	396	395	398	400	403	405	407				
2. Educational Programs															
2.10	BMP 7 Public Information	1 year		396	396	395	398	400	403	405	407	3,200		Savings per year based on 1% of total production	
			New savings percentage, %	100%	100%	100%	100%	100%	100%	100%	100%	--		Existing program is currently fully implemented	
			New savings (above and beyond continuing SSWD's current program)	0	0	0	0	0	0	0	0	-			
2.20	BMP 8 School Education	1 year		396	396	395	398	400	403	405	407	3,200		Savings per year based on 1% of total production	
			Percent implemented in current program, %	100%	100%	100%	100%	100%	100%	100%	100%	--		Existing program is currently fully implemented	
			New savings (above and beyond continuing SSWD's current program)	0	0	0	0	0	0	0	0	-			

Foundational BMPs

3. Residential															
Programmatic BMPs	3.11	BMP 1 Indoor Water Survey for Single/Multi-Family Residential Customers	4 years	Total	33	66	98	131	130	130	130	130	848	0.44	Based on WCMP
				Percent implemented in current program, %	100%	100%	100%	100%	100%	100%	100%	100%	100%	--	Existing program is currently meeting CUWCC requirements (based on 2006 MOU requirements)
				New savings (above and beyond continuing SSWD's current program)	0	0	0	0	0	0	0	0	0	-	
	3.12	BMP 1 Outdoor Water Survey for Single/Multi-Family Residential Customers	4 years	Savings included in BMP 1 Indoor (3.11)											Included in 3.11 indoor savings
	3.20	BMP 2 Residential Plumbing Retrofit	4 years	Total	22	43	64	84	82	81	80	79	535	0.45	Based on WCMP
				Percent implemented in current program, %	100%	100%	100%	100%	100%	100%	100%	100%	100%	--	Existing program is currently meeting CUWCC requirements (based on 2006 MOU requirements)
				New savings (above and beyond continuing SSWD's current program)	0	0	0	0	0	0	0	0	0	-	
	3.30	BMP 6 High-Efficiency Washing Machine Rebate Programs	Permanent	Total	27	33	38	44	49	55	61	66	373	0.98	Based on the 2005 UWMP
				Percent implemented in current program, %	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	All savings will be New Savings
				New savings (above and beyond continuing SSWD's current program)	27	33	38	44	49	55	61	66	373		
	3.40	BMP 14 Residential ULFT Replacement Programs	Permanent	Total	38	73	106	135	163	187	210	230	1,142	0.47	
				Percent implemented in current program, %	0%	0%	0%	0%	0%	0%	0%	0%	0%	--	All savings will be New Savings
New savings (above and beyond continuing SSWD's current program)				38	73	106	135	163	187	210	230	1,142			
4. Commercial, Industrial, Institutional															
4.00	BMP 9 Conservation programs for Commercial, Industrial, and Institutional (CII) Accounts	Audits: 4 years, ULFT Rebates: Permanent	Total	23	46	70	93	93	92	92	92	601	0.37	Based on WCMP	
			Percent implemented in current program, %	50%	50%	50%	50%	50%	50%	50%	50%	50%	--		
			New savings (above and beyond continuing SSWD's current program)	12	23	35	47	47	46	46	46	301			
5. Landscape															
5.00	BMP 5 Large Landscape Conservation Programs and Incentives	4 years	Total	5	10	15	21	21	21	21	21	135	0.80	Based on WCMP	
			Percent implemented in current program, %	100%	100%	100%	100%	100%	100%	100%	100%	100%	--	Existing program is currently meeting CUWCC requirements (based on 2006 MOU requirements)	
			New savings (above and beyond continuing SSWD's current program)	0	0	0	0	0	0	0	0	0	-		
BMP Checklist new savings estimate, AF				Total new savings	243	462	680	893	1,093	1,289	1,484	1,677	7,821		
2007-2009 average GPCD				222											
Projected GPCD (based on full BMP checklist implementation)				221	219	218	217	216	215	214	213				
Note - Refer to Draft-Final Regional Water Conservation Technical Analysis, March 2006, Brown and Caldwell, for assumption references.															
GPCD Track Savings															
SSWD 10-year baseline				250										CUWCC gpcd tract approach (1997 through 2006)	
SSWD projected population				159,230	159,086	158,941	159,902	160,863	161,825	162,786	163,747			2013 and 2018 based on SACOG Projections	
GPCD track-highest acceptable bound (% of baseline)				100	96.4	96.4	92.8	92.8	89.2	89.2	82			CUWCC gpcd tract approach	
GPCD target (based on CUWCC GPCD track)				250	241	241	232	232	223	223	205			This is the highest acceptable gpcd target based on CUWCC GPCD track. It is most likely that SSWD will be lower than this highest acceptable numbers in the years preceeding 2018.	

**Sacramento Suburban Water District
Water Conservation Master Plan
Technical Memorandum**

WATER CONSERVATION

BROWN AND
CALDWELL

MASTER PLAN

TECHNICAL MEMORANDUM

017/127844-150

March 13, 2006

TO: ROB ROSCOE, SACRAMENTO SUBURBAN WATER DISTRICT

FROM: PAUL SELSKY, BROWN AND CALDWELL
MELANIE HOLTON, BROWN AND CALDWELL

CC: LINDA HIGGINS, SACRAMENTO SUBURBAN WATER DISTRICT
ED FORMOSA, SACRAMENTO SUBURBAN WATER DISTRICT

SUBJECT: WATER CONSERVATION MODELING RESULTS

This technical memorandum presents the results for the water conservation best management practices (BMPs) analysis of two alternative water conservation plans. These alternatives plans are based on the following:

1. Water Forum (WF) water conservation agreement (Water Forum analysis).
2. California Urban Water Conservation Council's (CUWCC) Memorandum of Understanding (MOU) water conservation requirements (CUWCC MOU analysis).

It should be noted that the water savings estimated in this analysis will not occur unless the required interventions are performed. This analysis estimates water savings for BMP activities starting in 2006.

1.1. Results of Water Forum Analysis

An analysis of the quantifiable WF 1, 2, 4, 5, 9, 12, and 16, as defined by the Sacramento Suburban Water District (SSWD) Water Forum purveyor specific agreement for water conservation, was conducted to determine estimated water savings, costs, and cost effectiveness. Table 1 summarizes the results of the economic analysis in terms of the benefit/cost (B/C) ratio, costs, benefits, total water saved over the study period (2006 through 2034), and the cost per acre-foot (ac-ft) of water saved. The annual estimated water savings for the quantifiable BMPs and the estimated annual costs for all of the BMPs are illustrated on Figures 1 and 2, respectively. Detailed Water Forum analysis results are provided in Attachment A.

1.2. Results of CUWCC MOU Analysis

An analysis of the quantifiable CUWCC MOU BMPs 1, 2, 4, 5, 6, 9, and 14, as defined by the CUWCC MOU, was conducted to determine estimated water savings, costs, and cost effectiveness.

Table 2 summarizes the results of the economic analysis in terms of the B/C ratio, costs, benefits, total water saved over the study period (2006-2034), and the cost per ac-ft of water saved. The annual estimated water savings for the quantifiable CUWCC BMPs and the estimated annual costs for all of the BMPs are illustrated on Figures 3 and 4, respectively. Detailed CUWCC MOU analysis results are provided in Attachment B.

1.3. Methodology

The analysis was performed using the Maddaus Demand Management Decision Support System (DSS), a Microsoft® Excel 2003 spreadsheet based program. The DSS has been designed to provide a detailed planning evaluation framework for water demand management programs. The DSS analysis spreadsheet program projects on an annual basis the number of interventions, water savings, and the dollar values of the benefits and costs that would result from implementing the BMPs. Terms and formulas used in the worksheets are defined in Table 3. Interventions are actions or activities required to implement a BMP according to coverage requirements from either the Water Forum or the CUWCC MOU.

Industry experience-based “common” assumptions and inputs from data provided by SSWD used in the economic analysis are provided in Attachment C. Information provided by SSWD is the best data available at this time. The analysis may be updated in the future if more accurate data becomes available. Also, the 2000 census data was reconciled with purveyor specific customer data. 2004 base year demographic data was estimated based on the change from 2000 to 2004 in customer billing data. There are possible demographic data inaccuracies based on the assumed percent of a census tract within a purveyors customer service area. A common assumption for all BMPs is the value of conserved water (\$250/acre-ft).

Attachments

Attachment A	Water Forum Analysis Detailed Results
Attachment B	CUWCC MOU Analysis Detailed Results
Attachment C	Model Assumptions and Inputs

TABLE 1. WATER FORUM: 30-YEAR CONSERVATION SUMMARY

Conservation Measure	Total Present Value Cost	Total Present Value Benefits	Total Water Saved (AC-FT)	Benefit-Cost Ratio	Cost of Water Saved (\$/AC-FT)
Water Forum #1 (Residential and Institutional Audits)	\$2,297,597	\$2,126,065	13,795	0.93	\$264
Water Forum #2 (Plumbing Retrofit Kits)	\$737,528	\$284,565	1,792	0.39	\$642
Water Forum #3 (System Audit)	\$27,371,799	--	--	--	--
Water Forum #4 (Meter Retrofit)	\$13,979,129	\$6,212,085	44,750	0.44	\$487
Water Forum #5 (Large Landscape Audits)	\$386,919	\$730,106	4,690	1.89	\$129
Water Forum #6 (Landscape Ordinance)	\$29,768	--	--	--	--
Water Forum #7 (Public Information)	\$148,841	--	--	--	--
Water Forum #8 (School Education)	\$74,420	#VALUE!	0	#VALUE!	#DIV/0!
Water Forum #9 (CI Water Audits)	\$1,341,943	\$1,677,148	10,760	1.25	\$196
Water Forum #11 (Conservation Pricing)	\$193,493	--	--	--	--
Water Forum #12 (Residential Landscape)	\$153,492	\$301,711	1,975	1.97	\$121
Water Forum #13 (Water Waste Prohibition)	\$1,013,977	--	--	--	--
Water Forum #14 (Conserv. Coordinator)	\$1,395,381	--	--	--	--
Water Forum #16 (Toilet Replacement)	\$1,179,616	\$1,732,115	11,359	1.47	\$125
TOTAL	\$50,303,904	#VALUE!	89,120	--	--

Detailed data for annual water savings, costs, and interventions are provided in Attachment A.

FIGURE 1. WATER FORUM: ANNUAL QUANTIFIABLE CONSERVATION WATER SAVINGS ESTIMATES

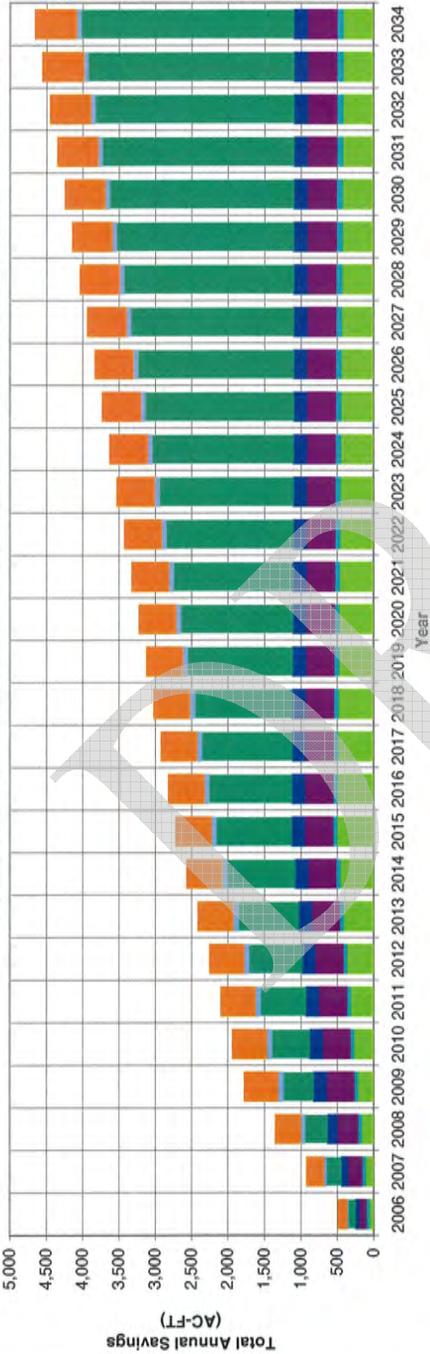


FIGURE 2. WATER FORUM: ANNUAL QUANTIFIABLE CONSERVATION UNDISCOUNTED COST ESTIMATES

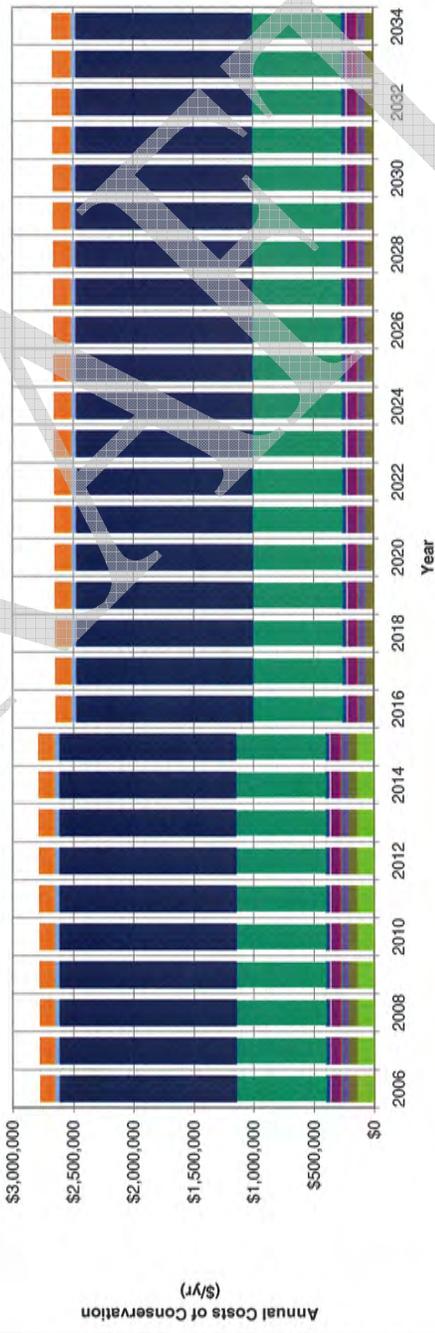


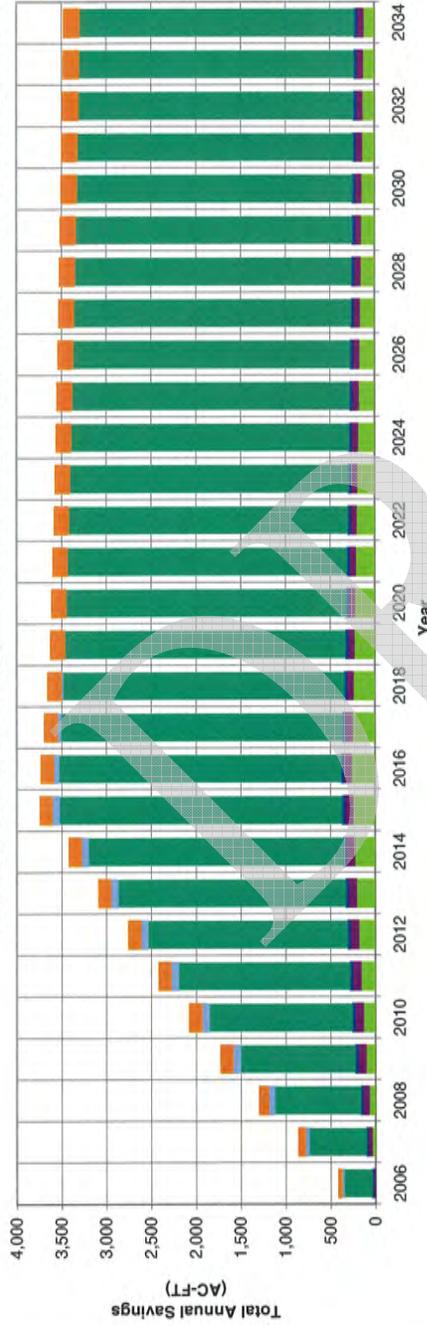
TABLE 2. CUWCC MOU: 30-YEAR CONSERVATION SUMMARY

Conservation Measure	Total Present Value Cost	Total Present Value Benefits	Total Water Saved (AC-FT)	Benefit-Cost Ratio	Cost of Water Saved (\$/AC-FT)
CUWCC #1 (Residential Water Audits)	\$1,420,474	\$632,023	4,138	0.44	\$548
CUWCC #2 (Plumbing Retrofit Kits)	\$357,902	\$160,399	807	0.45	\$536
CUWCC #3 (System Audit)	\$27,371,799	--	--	--	--
CUWCC #4 (Meter Retrofit)	\$18,811,583	\$11,522,650	76,712	0.61	\$296
CUWCC #5 (Large Landscape Audits)	\$113,483	\$91,263	586	0.80	\$302
CUWCC #6 (Clothes Washer Rebates)	--	--	--	--	--
CUWCC #7 (Public Information)	\$148,841	--	--	--	--
CUWCC #8 (School Education)	\$74,420	--	--	--	--
CUWCC #9 (Cil Water Audits)	\$922,974	\$337,832	2,092	0.37	\$671
CUWCC #11 (Conservation Pricing)	\$193,493	--	--	--	--
CUWCC #12 (Conservation Coordinator)	\$1,395,381	--	--	--	--
CUWCC #13 (Water Waste Prohibition)	\$1,013,977	--	--	--	--
CUWCC #14 (Residential ULFT Rebates)	\$1,659,519	\$776,114	4,959	0.47	\$400
TOTAL	\$53,483,846	\$13,520,281	89,294	--	--

Although CUWCC MOU BMPs 1, 5, and 9 each have a ten-year implementation period, this analysis presents interventions, costs, and water savings past the initial 10-year period assuming the Agency will continue implementing the BMPs at the average annual requirement level once they have completed the interventions required within the initial 10-year period.

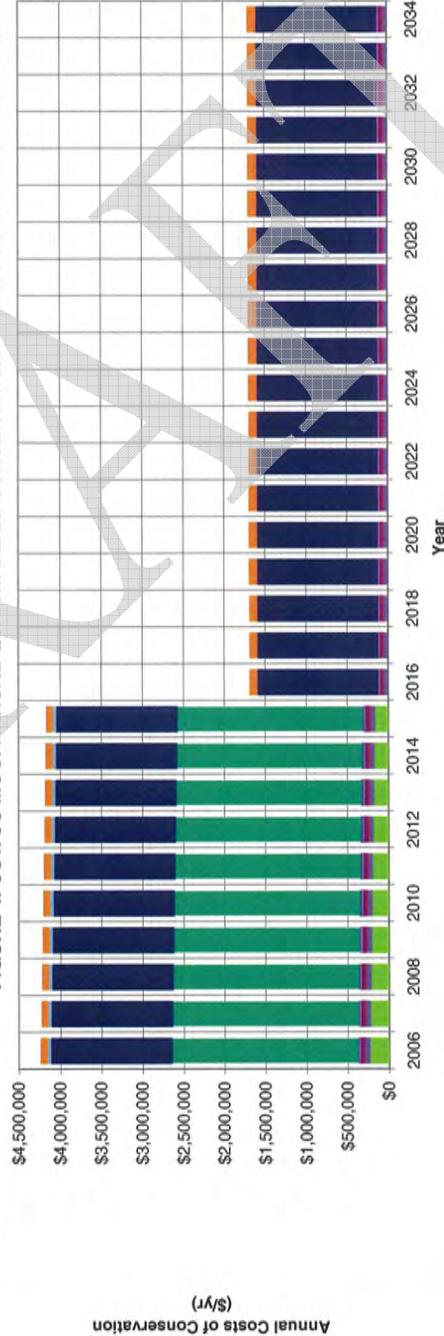
Detailed data for annual water savings, costs, and interventions are provided in Attachment B.

FIGURE 3. CUWCC MOU: ANNUAL QUANTIFIABLE CONSERVATION WATER SAVINGS ESTIMATES



- CUWCC #1 (Residential Water Audits)
- CUWCC #2 (Plumbing Retrofit Kits)
- CUWCC #4 (Meter Retrofit)
- CUWCC #5 (Large Landscape Audits)
- CUWCC #9 (CII Water Audits)
- CUWCC #14 (Residential ULFT Rebates)

FIGURE 4. CUWCC MOU: ANNUAL QUANTIFIABLE CONSERVATION UNDISCOUNTED COST ESTIMATES



- CUWCC #1 (Residential Water Audits)
- CUWCC #2 (Plumbing Retrofit Kits)
- CUWCC #3 (System Audit)
- CUWCC #4 (Meter Retrofit)
- CUWCC #5 (Large Landscape Audits)
- CUWCC #7 (Public Information)
- CUWCC #8 (School Education)
- CUWCC #9 (CII Water Audits)
- CUWCC #11 (Conservation Pricing)
- CUWCC #13 (Water Waste Prohibition)
- CUWCC #14 (Residential ULFT Rebates)

Table 3. Definition of Terms Used in the Economic Analysis

Term	Definition	Comments
Total discounted benefits	The present value of the value of saved water.	--
Total discounted costs	The present value of the sum of capital costs, financial incentives, and operating expenses.	--
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.
Non-discounted cost / water saved	The average cost of saving water on a per ac-ft basis. The sum of the total non-discounted costs divided by the total acre-feet of water saved over the study period.	A low value is considered economically attractive because it indicates a low implementation cost. Value must be less than the marginal cost of new water to be cost effective.

ATTACHMENT A

Water Forum Analysis Detailed Results

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WATER FORUM: ANNUAL CONSERVATION WATER SAVINGS (AC-FT)																
Conservation Measure	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
W.F. #1 (Residential and Inst. Audits)	113	226	340	454	458	461	465	469	472	476	480	484	488	492	496	
W.F. #2 (Plumbing Retrofit Kits)	19	37	55	72	71	70	70	69	68	68	67	66	66	65	65	
W.F. #3 (System Audit)	Savings Not Estimated															
W.F. #4 (Meter Retrofit)	107	213	319	425	529	633	737	840	943	1,046	1,148	1,249	1,351	1,452	1,552	
W.F. #5 (Large Landscape Audits)	41	82	123	165	165	166	166	167	167	168	168	169	169	170	170	
W.F. #6 (Landscape Ordinance)	Savings Not Estimated															
W.F. #7 (Public Information)	Savings Not Estimated															
W.F. #8 (School Education)	Savings Not Estimated															
W.F. #9 (CI Water Audits)	95	190	286	381	382	383	383	384	385	386	387	387	388	389	390	
W.F. #11 (Conservation Pricing)	Savings Not Estimated															
W.F. #12 (Residential Landscape)	47	48	50	51	53	54	55	57	58	60	61	63	64	66	68	
W.F. #13 (Water Waste Prohibition)	Savings Not Estimated															
W.F. #14 (Conserv. Coordinator)	Savings Not Estimated															
W.F. #16 (Toilet Replacement)	57	111	164	216	266	315	363	410	455	500	493	487	481	475	469	
TOTAL	478	908	1,337	1,764	1,924	2,083	2,240	2,395	2,549	2,702	2,804	2,905	3,007	3,109	3,210	
Conservation Measure	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034		
W.F. #1 (Residential and Inst. Audits)	500	505	509	513	518	522	527	532	537	541	546	551	556	561		
W.F. #2 (Plumbing Retrofit Kits)	64	64	63	63	63	62	62	61	61	61	61	60	60	60		
W.F. #3 (System Audit)	Savings Not Estimated															
W.F. #4 (Meter Retrofit)	1,653	1,753	1,853	1,953	2,053	2,152	2,252	2,351	2,450	2,549	2,648	2,747	2,846	2,945		
W.F. #5 (Large Landscape Audits)	171	171	172	172	173	173	174	174	175	175	176	176	177	177		
W.F. #6 (Landscape Ordinance)	Savings Not Estimated															
W.F. #7 (Public Information)	Savings Not Estimated															
W.F. #8 (School Education)	Savings Not Estimated															
W.F. #9 (CI Water Audits)	391	392	393	394	395	396	397	398	399	400	401	402	403	404		
W.F. #11 (Conservation Pricing)	Savings Not Estimated															
W.F. #12 (Residential Landscape)	69	71	72	74	76	77	79	81	82	84	86	88	89	91		
W.F. #13 (Water Waste Prohibition)	Savings Not Estimated															
W.F. #14 (Conserv. Coordinator)	Savings Not Estimated															
W.F. #16 (Toilet Replacement)	464	459	454	449	445	440	436	432	428	425	421	418	415	412		
TOTAL	3,312	3,414	3,516	3,618	3,721	3,823	3,926	4,029	4,132	4,235	4,339	4,442	4,546	4,650		

SACRAMENTO SUBURBAN WATER DISTRICT
RESULTS SUMMARY

WATER FORUM: ANNUAL CONSERVATION COSTS																
Conservation Measure	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
W.F. #1 (Residential and Inst. Audits)	\$111,249	\$112,198	\$113,156	\$114,123	\$115,098	\$116,082	\$117,075	\$118,077	\$119,088	\$120,108	\$121,137	\$122,176	\$123,224	\$124,282	\$125,349	
W.F. #2 (Plumbing Retrofit Kits)	\$39,721	\$39,711	\$39,702	\$39,694	\$39,686	\$39,678	\$39,671	\$39,664	\$39,657	\$39,651	\$39,645	\$39,639	\$39,633	\$39,628	\$39,623	
W.F. #3 (System Audit)	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	
W.F. #4 (Meter Retrofit)	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	
W.F. #5 (Large Landscape Audits)	\$20,200	\$20,249	\$20,297	\$20,346	\$20,396	\$20,445	\$20,494	\$20,544	\$20,594	\$20,643	\$20,693	\$20,744	\$20,794	\$20,844	\$20,895	
W.F. #6 (Landscape Ordinance)	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	
W.F. #7 (Public Information)	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	
W.F. #8 (School Education)	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	
W.F. #9 (CI Water Audits)	\$69,762	\$69,955	\$70,149	\$70,343	\$70,538	\$70,733	\$70,929	\$71,126	\$71,323	\$71,521	\$71,719	\$71,918	\$72,118	\$72,318	\$72,519	
W.F. #11 (Conservation Pricing)	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	
W.F. #12 (Residential Landscape)	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	
W.F. #13 (Water Waste Prohibition)	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	
W.F. #14 (Conserv. Coordinator)	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	
W.F. #16 (Toilet Replacement)	\$142,520	\$142,520	\$142,520	\$142,520	\$142,520	\$142,520	\$142,520	\$142,520	\$142,520	\$142,520	\$142,520	\$142,520	\$142,520	\$142,520	\$142,520	
TOTAL	\$2,767,762	\$2,768,944	\$2,770,135	\$2,771,337	\$2,772,548	\$2,773,769	\$2,775,000	\$2,776,241	\$2,777,492	\$2,778,753	\$2,637,505	\$2,638,787	\$2,640,080	\$2,641,382	\$2,642,695	
Conservation Measure																
W.F. #1 (Residential and Inst. Audits)	\$126,425	\$127,512	\$128,608	\$129,714	\$130,830	\$131,957	\$133,093	\$134,240	\$135,397	\$136,565	\$137,743	\$138,932	\$140,131	\$141,341	\$142,561	
W.F. #2 (Plumbing Retrofit Kits)	\$39,618	\$39,613	\$39,608	\$39,604	\$39,600	\$39,595	\$39,591	\$39,588	\$39,584	\$39,580	\$39,577	\$39,573	\$39,570	\$39,567	\$39,563	
W.F. #3 (System Audit)	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	
W.F. #4 (Meter Retrofit)	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	\$751,361	
W.F. #5 (Large Landscape Audits)	\$20,946	\$20,997	\$21,048	\$21,099	\$21,150	\$21,202	\$21,253	\$21,305	\$21,357	\$21,409	\$21,462	\$21,514	\$21,567	\$21,620	\$21,673	
W.F. #6 (Landscape Ordinance)	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	
W.F. #7 (Public Information)	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	
W.F. #8 (School Education)	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	
W.F. #9 (CI Water Audits)	\$72,720	\$72,922	\$73,124	\$73,328	\$73,531	\$73,736	\$73,941	\$74,146	\$74,353	\$74,560	\$74,767	\$74,975	\$75,184	\$75,393	\$75,603	
W.F. #11 (Conservation Pricing)	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	
W.F. #12 (Residential Landscape)	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	\$8,250	
W.F. #13 (Water Waste Prohibition)	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	
W.F. #14 (Conserv. Coordinator)	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	
W.F. #16 (Toilet Replacement)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
TOTAL	\$2,644,019	\$2,645,354	\$2,646,699	\$2,648,055	\$2,649,422	\$2,650,800	\$2,652,190	\$2,653,590	\$2,655,001	\$2,656,424	\$2,657,859	\$2,659,305	\$2,660,762	\$2,662,232	\$2,663,713	

WATER FORUM: ANNUAL NUMBER OF INTERVENTIONS															
Conservation Measure	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
W.F. #1 (Single Family Residential Audits)	870	878	885	893	902	910	918	926	935	943	952	960	969	978	986
W.F. #1 (Multi-Family Residential Audits)	433	437	440	444	448	453	457	461	465	469	473	478	482	486	491
W.F. #1 (Institutional Audits)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
W.F. #2 (Plumbing Retrofit Kits)	1,204	1,204	1,203	1,203	1,203	1,203	1,202	1,202	1,202	1,202	1,201	1,201	1,201	1,201	1,201
W.F. #3 (System Audit)	Not Estimated in DSS Model														
W.F. #4 (Meter Retrofit)	833	833	833	833	833	833	833	833	833	833	833	833	833	833	833
W.F. #5 (Large Landscape Audits)	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
W.F. #6 (Landscape Ordinance)	Not Estimated in DSS Model														
W.F. #7 (Public Information)	Not Estimated in DSS Model														
W.F. #8 (School Education)	Not Estimated in DSS Model														
W.F. #9 (Commercial Water Audits)	82	83	83	83	83	84	84	84	84	85	85	85	85	86	86
W.F. #9 (Industrial Water Audits)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
W.F. #9 (Institutional Water Audits)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
W.F. #11 (Conservation Pricing)	Not Estimated in DSS Model														
W.F. #12 (Residential Landscape)	Not Estimated in DSS Model														
W.F. #13 (Water Waste Prohibition)	Not Estimated in DSS Model														
W.F. #14 (Conserv. Coordinator)	Not Estimated in DSS Model														
W.F. #16 (Residential Toilet Replacement)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
W.F. #16 (Non-residential Toilet Replacement)	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847
Conservation Measure	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	
W.F. #1 (Single Family Residential Audits)	995	1,004	1,013	1,023	1,032	1,041	1,051	1,060	1,070	1,079	1,089	1,099	1,109	1,119	
W.F. #1 (Multi-Family Residential Audits)	495	500	504	509	513	518	523	527	532	537	542	547	552	557	
W.F. #1 (Institutional Audits)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
W.F. #2 (Plumbing Retrofit Kits)	1,201	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,199	1,199	1,199	1,199	1,199	1,199	
W.F. #3 (System Audit)	Not Estimated in DSS Model														
W.F. #4 (Meter Retrofit)	833	833	833	833	833	833	833	833	833	833	833	833	833	833	
W.F. #5 (Large Landscape Audits)	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
W.F. #6 (Landscape Ordinance)	Not Estimated in DSS Model														
W.F. #7 (Public Information)	Not Estimated in DSS Model														
W.F. #8 (School Education)	Not Estimated in DSS Model														
W.F. #9 (Commercial Water Audits)	86	87	87	87	87	88	88	88	88	89	89	89	89	90	
W.F. #9 (Industrial Water Audits)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
W.F. #9 (Institutional Water Audits)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
W.F. #11 (Conservation Pricing)	Not Estimated in DSS Model														
W.F. #12 (Residential Landscape)	Not Estimated in DSS Model														
W.F. #13 (Water Waste Prohibition)	Not Estimated in DSS Model														
W.F. #14 (Conserv. Coordinator)	Not Estimated in DSS Model														
W.F. #16 (Residential Toilet Replacement)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
W.F. #16 (Non-residential Toilet Replacement)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

ATTACHMENT B

CUWCC MOU Analysis Detailed Results

DRAFT

CUWCC MOU: ANNUAL CONSERVATION WATER SAVINGS (AC-FT)																
Conservation Measure	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
CUWCC #1 (Residential Water Audits)	33	66	98	131	130	130	130	129	129	129	134	140	146	153	154	
CUWCC #2 (Plumbing Retrofit Kits)	22	43	64	84	82	81	80	79	79	78	58	38	19	0	0	
CUWCC #3 (System Audit)	Savings Not Estimated															
CUWCC #4 (Meter Retrofit)	324	646	968	1,286	1,604	1,919	2,233	2,546	2,858	3,168	3,161	3,155	3,148	3,142	3,136	
CUWCC #5 (Large Landscape Audits)	5	10	15	21	21	21	21	21	21	21	21	21	21	21	21	
CUWCC #6 (Clothes Washer Rebates)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CUWCC #7 (Public Information)	Savings Not Estimated															
CUWCC #8 (School Education)	Savings Not Estimated															
CUWCC #9 (CII Water Audits)	23	46	70	93	93	92	92	92	92	92	85	79	72	66	66	
CUWCC #11 (Conservation Pricing)	Savings Not Estimated															
CUWCC #12 (Conservation Coordinator)	Savings Not Estimated															
CUWCC #13 (Water Waste Prohibition)	Savings Not Estimated															
CUWCC #14 (Residential ULFT Rebates)	0	38	73	106	135	163	187	210	230	248	265	254	244	234	225	
TOTAL	407	850	1,288	1,720	2,065	2,406	2,744	3,078	3,409	3,736	3,725	3,687	3,651	3,616	3,602	
Conservation Measure	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034		
CUWCC #1 (Residential Water Audits)	155	157	158	159	161	162	164	165	167	168	170	171	173	174		
CUWCC #2 (Plumbing Retrofit Kits)	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CUWCC #3 (System Audit)	Savings Not Estimated															
CUWCC #4 (Meter Retrofit)	3,130	3,125	3,120	3,115	3,110	3,106	3,102	3,098	3,094	3,090	3,087	3,083	3,080	3,077		
CUWCC #5 (Large Landscape Audits)	21	21	21	22	22	22	22	22	22	22	22	22	22	22		
CUWCC #6 (Clothes Washer Rebates)	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CUWCC #7 (Public Information)	Savings Not Estimated															
CUWCC #8 (School Education)	Savings Not Estimated															
CUWCC #9 (CII Water Audits)	66	66	66	66	67	67	67	67	67	67	68	68	68	68		
CUWCC #11 (Conservation Pricing)	Savings Not Estimated															
CUWCC #12 (Conservation Coordinator)	Savings Not Estimated															
CUWCC #13 (Water Waste Prohibition)	Savings Not Estimated															
CUWCC #14 (Residential ULFT Rebates)	216	207	199	191	183	176	169	162	156	149	143	138	132	127		
TOTAL	3,589	3,576	3,564	3,553	3,543	3,532	3,523	3,514	3,505	3,497	3,489	3,482	3,475	3,469		

Although CUWCC MOU BMPs 1, 5, and 9 each have a ten-year implementation period, this analysis presents interventions, costs, and water savings past the initial 10-year period assuming the Agency will continue implementing the BMPs at the average annual requirement level once they have completed the interventions required within the initial 10-year period.

CUWCC MOU: ANNUAL UNDISCOUNTED CONSERVATION COSTS															
Conservation Measure	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
CUWCC #1 (Residential Water Audits)	\$68,066	\$68,066	\$68,066	\$68,066	\$68,066	\$68,066	\$68,066	\$68,066	\$68,066	\$68,066	\$77,496	\$78,140	\$78,790	\$79,446	\$80,107
CUWCC #2 (Plumbing Retrofit Kits)	\$43,241	\$43,241	\$43,241	\$43,241	\$43,241	\$43,241	\$43,241	\$43,241	\$43,241	\$43,241	\$0	\$0	\$0	\$0	\$0
CUWCC #3 (System Audit)	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200
CUWCC #4 (Meter Retrofit)	\$2,272,790	\$2,272,790	\$2,272,790	\$2,272,790	\$2,272,790	\$2,272,790	\$2,272,790	\$2,272,790	\$2,272,790	\$2,272,790	\$0	\$0	\$0	\$0	\$0
CUWCC #5 (Large Landscape Audits)	\$6,025	\$6,031	\$6,037	\$6,043	\$6,049	\$6,056	\$6,062	\$6,068	\$6,074	\$6,080	\$6,087	\$6,093	\$6,099	\$6,106	\$6,112
CUWCC #6 (Clothes Washer Rebates)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CUWCC #7 (Public Information)	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
CUWCC #8 (School Education)	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000
CUWCC #9 (Cil Water Audits)	\$56,718	\$56,718	\$56,718	\$56,718	\$56,718	\$56,718	\$56,718	\$56,718	\$56,718	\$56,718	\$43,056	\$43,160	\$43,264	\$43,368	\$43,473
CUWCC #11 (Conservation Pricing)	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400
CUWCC #12 (Conservation Coordinator)	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000
CUWCC #13 (Water Waste Prohibition)	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500
CUWCC #14 (Residential ULFT Rebates)	\$235,045	\$226,841	\$218,637	\$210,433	\$202,229	\$194,026	\$185,822	\$177,618	\$170,812	\$164,006	\$0	\$0	\$0	\$0	\$0
TOTAL	\$4,304,985	\$4,296,787	\$4,288,590	\$4,280,392	\$4,272,194	\$4,263,997	\$4,255,799	\$4,247,601	\$4,240,802	\$4,234,002	\$1,749,739	\$1,750,493	\$1,751,253	\$1,752,019	\$1,752,792
Conservation Measure															
CUWCC #1 (Residential Water Audits)	\$80,775	\$81,449	\$82,129	\$82,815	\$83,507	\$84,205	\$84,910	\$85,621	\$86,339	\$87,063	\$87,794	\$88,531	\$89,275	\$90,025	\$90,785
CUWCC #2 (Plumbing Retrofit Kits)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CUWCC #3 (System Audit)	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200	\$1,471,200
CUWCC #4 (Meter Retrofit)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CUWCC #5 (Large Landscape Audits)	\$6,118	\$6,125	\$6,131	\$6,137	\$6,144	\$6,150	\$6,157	\$6,163	\$6,170	\$6,176	\$6,183	\$6,189	\$6,196	\$6,202	\$6,209
CUWCC #6 (Clothes Washer Rebates)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CUWCC #7 (Public Information)	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
CUWCC #8 (School Education)	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000
CUWCC #9 (Cil Water Audits)	\$43,577	\$43,683	\$43,788	\$43,894	\$44,000	\$44,107	\$44,214	\$44,321	\$44,429	\$44,537	\$44,645	\$44,754	\$44,863	\$44,972	\$45,081
CUWCC #11 (Conservation Pricing)	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400	\$10,400
CUWCC #12 (Conservation Coordinator)	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000
CUWCC #13 (Water Waste Prohibition)	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500	\$54,500
CUWCC #14 (Residential ULFT Rebates)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$1,753,571	\$1,754,356	\$1,755,148	\$1,755,946	\$1,756,751	\$1,757,563	\$1,758,381	\$1,759,206	\$1,760,037	\$1,760,876	\$1,761,721	\$1,762,574	\$1,763,433	\$1,764,300	\$1,765,172

Although CUWCC MOU BMPs 1, 5, and 9 each have a ten-year implementation period, this analysis presents interventions, costs, and water savings past the initial 10-year period assuming the Agency will continue implementing the BMPs at the average annual requirement level once they have completed the interventions required within the initial 10-year period.

CUWCC MOU: ANNUAL NUMBER OF INTERVENTIONS																											
Conservation Measure	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020												
CUWCC #1 (Single Family Residential Audits)	510	510	510	510	510	510	510	510	510	510	595	600	606	611	617												
CUWCC #1 (Multi-Family Residential Audits)	263	263	263	263	263	263	263	263	263	263	296	299	301	304	307												
CUWCC #2 (Plumbing Retrofit Kits)	1,319	1,319	1,319	1,319	1,319	1,319	1,319	1,319	1,319	1,319	0	0	0	0	0												
CUWCC #3 (System Audit)	Not Estimated in DSS Model																										
CUWCC #4 (Meter Retrofit)	2,523	2,523	2,523	2,523	2,523	2,523	2,523	2,523	2,523	2,523	0	0	0	0	0												
CUWCC #5 (Large Landscape Audits)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1												
CUWCC #5 (Large Landscape Rebates)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
CUWCC #6 (Clothes Washer Rebates)	Not Estimated in DSS Model																										
CUWCC #7 (Public Information)	Not Estimated in DSS Model																										
CUWCC #8 (School Education)	Not Estimated in DSS Model																										
CUWCC #9 (Commercial Water Audits)	60	60	60	60	60	60	60	60	60	60	42	43	43	43	43												
CUWCC #9 (Industrial Water Audits)	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3												
CUWCC #9 (Institutional Water Audits)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1												
CUWCC #11 (Conservation Pricing)	Not Estimated in DSS Model																										
CUWCC #12 (Conservation Coordinator)	Not Estimated in DSS Model																										
CUWCC #13 (Water Waste Prohibition)	Not Estimated in DSS Model																										
CUWCC #14 (Residential ULFT Rebates)	3,081	2,971	2,862	2,752	2,643	2,534	2,424	2,315	2,224	2,133	0	0	0	0	0												
Conservation Measure														2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
CUWCC #1 (Single Family Residential Audits)	622	628	633	639	645	651	657	663	669	675	681	687	693	699	705												
CUWCC #1 (Multi-Family Residential Audits)	309	312	315	318	321	324	327	330	333	336	339	342	345	348	351												
CUWCC #2 (Plumbing Retrofit Kits)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
CUWCC #3 (System Audit)	Not Estimated in DSS Model																										
CUWCC #4 (Meter Retrofit)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
CUWCC #5 (Large Landscape Audits)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1												
CUWCC #6 (Clothes Washer Rebates)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
CUWCC #7 (Public Information)	Not Estimated in DSS Model																										
CUWCC #8 (School Education)	Not Estimated in DSS Model																										
CUWCC #9 (Commercial Water Audits)	43	43	43	44	44	44	44	44	44	44	44	44	45	45	45												
CUWCC #9 (Industrial Water Audits)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3												
CUWCC #9 (Institutional Water Audits)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1												
CUWCC #11 (Conservation Pricing)	Not Estimated in DSS Model																										
CUWCC #12 (Conservation Coordinator)	Not Estimated in DSS Model																										
CUWCC #13 (Water Waste Prohibition)	Not Estimated in DSS Model																										
CUWCC #14 (Residential ULFT Rebates)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												

Although CUWCC MOU BMPs 1, 5, and 9 each have a ten-year implementation period, this analysis presents interventions, costs, and water savings past the initial 10-year period assuming the Agency will continue implementing the BMPs at the average annual requirement level once they have completed the interventions required within the initial 10-year period.

ATTACHMENT C

Model Assumptions and Inputs

DRAFT

BASE YEAR: 2004

Initial conditions for the DSS will be based on data compiled for the year 2004.

2004 WATER USE BY CATEGORY

Account Category	Number of Accounts ¹	Average Indoor Water Use ² (GPD/capita)	Average Water Use per Account ³ (GPD/account)	Consumption by Category, MGD	Percent of Total Use
Single Family	10,358	79	679	7.03	18.85%
Multi-Family	3,268	69	1,219	3.98	10.68%
Commercial	4,099	85	2,637	10.81	28.98%
Industrial	242	--	3,116	0.75	2.02%
Institutional	59	--	2,128	0.13	0.34%
Irrigation	96	--	890	0.09	0.23%
Flat Rate Residential	25,231	79	575	14.51	38.90%
Total	43,353	--	--	37.29	100.0%

- 1 - Number of accounts were provided by SSWD via email correspondence 2/16/06.
- 2 - Average per-capita indoor water use is obtained from the indoor/outdoor split and dividing by the average household size and average dwelling units per account. Typical ranges include 60-80 gal/cap/day for single family residential; 50-70 gal/cap/day for multi-family residential; and 50-150 gal/employee/day for non-residential.
- 3 - The average water usage per account was calculated by dividing the average water use from the monthly billing data divided by the average number of accounts billed for the year 2004.

TOTAL PRODUCTION FOR 2004

Total Production ⁴ (AC-FT)	47,782	42.66
Average Daily Production (MGD)		4.27
Estimated Unaccounted-for-Water ⁵ (%), (MGD)	10.0%	38.39
Total Consumption: Production minus Unaccounted-for-water (MGD)		37.29
Total Consumption: Accounts times Per-Account Usage, Summed for all Categories (MGD)		1.10
Difference in Total Consumption Estimate (MGD):		41.44
Total Base Year Production for Model Input ⁶ (MGD)		

- 4 - The total production provided by SSWD via email correspondence (1/23/06).
- 5 - An unaccounted-for-water estimate of 10% has been assumed. This can be changed if an estimate is available, or if the total production is known.
- 6 - Model input uses the total consumption calculated from per-account usage plus unaccounted-for-water.

Billing Data: Average Number of Accounts by Year



1 - Number of accounts provided by SSWD via email correspondence (1/23/06).

Census Data: Dwelling Units per Structure

Data Description	Dwelling Units	Average Units per Structure ¹	Number of Structures	Select a Billing Category for
Housing Unit: Total	70,450	16.2	--	Single Family Multi-Family
Housing Unit: 1 Detached units in structure	15,743	1.0	35,482.5	<input type="radio"/> SF <input type="radio"/> MF
Housing Unit: 1 Attached units in structure	5,157	1.0	5,674.1	<input type="radio"/> SF <input type="radio"/> MF
Housing Unit: 2 units per structure	1,827	2.0	913.4	<input type="radio"/> SF <input type="radio"/> MF
Housing Unit: 3 or 4 units per structure	5,120	3.5	1,462.8	<input type="radio"/> SF <input type="radio"/> MF
Housing Unit: 5 to 9 units per structure	4,210	7.0	601.4	<input type="radio"/> SF <input type="radio"/> MF
Housing Unit: 10 to 19 units per structure	3,228	15.0	215.2	<input type="radio"/> SF <input type="radio"/> MF
Housing Unit: 20 to 49 units per structure	3,712	35.0	106.1	<input type="radio"/> SF <input type="radio"/> MF
Housing Unit: 50 or more units per structure	9,170	75.0	122.3	<input type="radio"/> SF <input type="radio"/> MF
Housing Unit: Mobile home	1,827	100.0	18.3	<input type="radio"/> SF <input type="radio"/> MF
Housing Unit: Boat, RV, van, etc.	0	1.0	0.0	<input type="radio"/> SF <input type="radio"/> MF

1 - When a range is given, assume the mid-point of that range. Assume 75 for '50 or more.' Assume 100 for 'mobile home' parks. Assume 1 for 'Boat, RV, van, etc.'

2 - "1-Attached" and "2-attached" were included in the Single Family category, which assumes that these households are metered and billed separately.

3 - Structures greater than 20-units were assumed to be billed under commercial accounts. Mobile homes also assumed to be billed under commercial accounts.

Reconcile Number of Accounts with Number of Structures to Obtain Dwelling Units per Account

SINGLE FAMILY ACCOUNTS (2000)	
Number of Structures from Census : Single Family	42,070
Number of Single Family Accounts from 2000 Billing Data	37,464
Difference between Billing Accounts and Census Structures	-4,606
Average Dwelling Units per Single Family Structure, Census	1.0
Average Dwelling Units per Account, Billing Data	1.0
MULTI-FAMILY ACCOUNTS (2000)	
Number of Structures from Census : Multi-Family	2,279
Number of Multi-Family Accounts from 2000 Billing Data	2,318
Difference between Billing Accounts and Census Structures	39
Average Dwelling Units per Multi-Family Account, Census	5.5
Average Dwelling Units per Multi-Family Account, Billing Data	5.4
RESIDENTIAL ACCOUNT TOTALS (2000)	
Total Number of Residential Accounts in 2000 from Billing Data	39,782
Total Number of Structures from Census	44,349
Difference between Billing Accounts and Census Structures	-4,567
Percent Difference	10%
Housing Units: Total, Census	70,450
Vacant Housing Units: Total, Census	2,837
Vacancy Rate (Percent of Total)	4%

Choose the account category (SF or MF) for the "1 Attached" housing units that minimizes this difference.

The assumptions for number of dwelling units per structure (above) should be iteratively adjusted to minimize this difference.

The difference between the accounts and the structures might be due to vacancies. Compare this percentage with the vacancy rate below.

Estimate Single Family and Multi-Family Household Sizes

SERVICE AREA POPULATION SOURCE		FALSE	TRUE
<input checked="" type="radio"/>	Calculate Household Sizes Using an Estimate of Service Area Population		
<input type="radio"/>	Calculate Household Sizes Using Only Census Data		

If an estimate of the Service Area Population is available, it can be used to determine the Single Family and Multi Family household sizes.

NO SERVICE AREA POPULATION ESTIMATE	
<input type="radio"/>	No Population Estimate
<input type="radio"/>	No Population Estimate
<input type="radio"/>	No Population Estimate

Enter the year of the Service Area Population estimate (if available). This should be more recent than the 2000 Census.

RESIDENTIAL POPULATION (Census)	
Total Population, 2000	168,118
Subtract Population not included in Residential Accounts¹	38,448
Total Residential Population (Nominstitutionalized), 2000	129,670

1 - Population not in residential account includes both institutionalized population and any population in residential buildings that are assumed to be billed under commercial accounts.

RESIDENTIAL HOUSEHOLD SIZES (Census)	
Average Household Size of All Occupied Units	2.51
Average Household Size of Owner-Occupied Units	2.50
Average Household Size of Renter-Occupied Units	2.53
Ratio of Owner-Occupied to Renter-Occupied Household Sizes	0.99

MATCH POPULATION ESTIMATE		SOLVE ITERATIVELY	
Choose a Single Family Household Size:			
Category	Accounts in 2000	Dwelling Units per Account	Household Size ¹
Single Family	37,464	1.0	2.58
Multi-Family	2,318	5.4	2.62
Total Residential Population Calculated from Household Sizes			
Ratio of Single Family to Multi-Family Household Sizes:			
Difference in HHS Ratios Between Census and Calculated (minimized by iteration):			
			0.99
			0.00

Select a Single Family household size (SFHHS), which is used to calculate the corresponding Multi-Family household size (MFHHS) that results in the selected Service Area Population estimate. In general, the SFHHS should be slightly greater than the MFHHS. A good reference for this is the "Owner-Occupied" versus "Renter-Occupied" household sizes provided in the Census data.

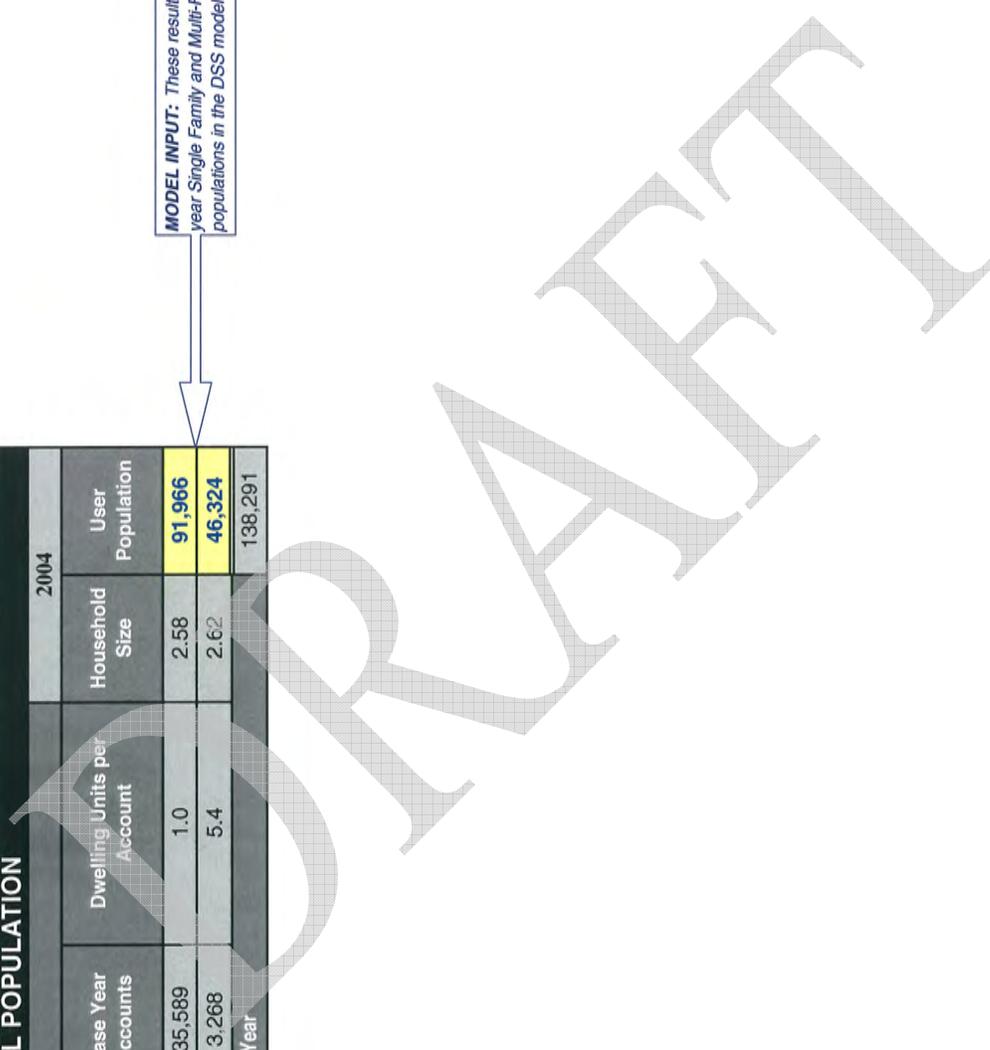
SOLVE ITERATIVELY: The iterative solution finds household sizes that result in a ratio (SFHHS to MFHHS) that most nearly matches the ratio of "Owner-Occupied" household size to "Renter-Occupied" household size provided in the Census data. (Note: Solver Add-in and VBA reference must be active.)

1 - Single family household sizes should be between 2.5 and 3.0, and are normally between 2.7 and 3.0; multi-family household sizes should be between 1.5 and 2.4, and are normally between 1.8 and 2.2.

Calculate Single Family and Multi-Family Populations for Base Year

BASE YEAR RESIDENTIAL POPULATION				2004	
Base Year for DSS Model:					
Category	Base Year Accounts	Dwelling Units per Account	Household Size	User Population	
Single Family	35,589	1.0	2.58	91,966	
Multi-Family	3,268	5.4	2.62	46,324	
Total Residential Population in Base Year				138,291	

MODEL INPUT: These results are used as the base year Single Family and Multi-Family Residential populations in the DSS model.



Weighted-Average Census Data

Project:
 Project Number:
 Prepared By:
 Date Prepared:
 Revised By:
 Date Revised:
 Reviewed By:

Percent of Tract in Service Area	GEO_NAME Geography	P001001	H001001	SACOG
		Total population: Total	Housing units: Total	Employees
30%	Census Tract 54.04, Sacramento County, California	1,663	909	1,554
70%	Census Tract 55.02, Sacramento County, California	3,928	1,530	6,641
60%	Census Tract 55.05, Sacramento County, California	2,603	1,233	
80%	Census Tract 55.07, Sacramento County, California	5,010	2,823	
90%	Census Tract 55.08, Sacramento County, California	2,748	1,758	
75%	Census Tract 56.01, Sacramento County, California	3,590	1,668	6,833
50%	Census Tract 56.05, Sacramento County, California	1,839	735	1,027
75%	Census Tract 56.06, Sacramento County, California	2,981	1,394	575
60%	Census Tract 57.01, Sacramento County, California	1,816	805	868
50%	Census Tract 58.01, Sacramento County, California	2,637	1,161	363
95%	Census Tract 58.03, Sacramento County, California	3,316	1,392	554
100%	Census Tract 58.04, Sacramento County, California	2,659	1,141	211
100%	Census Tract 59.01, Sacramento County, California	5,707	2,388	1,874
80%	Census Tract 59.02, Sacramento County, California	5,842	2,582	718
30%	Census Tract 60.02, Sacramento County, California	1,330	661	2,123
100%	Census Tract 60.03, Sacramento County, California	4,687	1,951	
100%	Census Tract 60.04, Sacramento County, California	2,418	1,104	
100%	Census Tract 61.01, Sacramento County, California	4,851	2,354	
100%	Census Tract 61.02, Sacramento County, California	3,476	1,971	
100%	Census Tract 62.01, Sacramento County, California	6,720	2,940	1,812
70%	Census Tract 62.02, Sacramento County, California	2,738	1,179	825
15%	Census Tract 72.04, Sacramento County, California	643	215	300
100%	Census Tract 73, Sacramento County, California	606	161	8,252
100%	Census Tract 74.02, Sacramento County, California	6,244	2,078	818
100%	Census Tract 74.03, Sacramento County, California	4,594	1,436	722
100%	Census Tract 74.04, Sacramento County, California	4,073	1,414	640
80%	Census Tract 74.06, Sacramento County, California	5,585	1,889	1,264
60%	Census Tract 74.13, Sacramento County, California	3,799	1,501	3,170
100%	Census Tract 74.14, Sacramento County, California	4,338	1,465	
65%	Census Tract 74.15, Sacramento County, California	2,004	754	
100%	Census Tract 74.16, Sacramento County, California	4,123	1,564	
5%	Census Tract 74.18, Sacramento County, California	541	173	
50%	Census Tract 74.19, Sacramento County, California	5,061	1,735	
40%	Census Tract 74.20, Sacramento County, California	3,266	1,134	
80%	Census Tract 74.21, Sacramento County, California	3,334	1,048	
4.7%	Census Tract 74.22, Sacramento County, California	114	43	
100%	Census Tract 74.23, Sacramento County, California	5,019	2,128	
100%	Census Tract 74.24, Sacramento County, California	3,760	1,375	
80%	Census Tract 74.25, Sacramento County, California	6,482	2,510	
60%	Census Tract 75.01, Sacramento County, California	3,781	1,571	1,873
100%	Census Tract 75.03, Sacramento County, California	5,185	2,235	
90%	Census Tract 75.04, Sacramento County, California	1,939	747	
100%	Census Tract 76.01, Sacramento County, California	6,553	3,026	1,314
25%	Census Tract 76.02, Sacramento County, California	1,118	489	395
100%	Census Tract 81.17, Sacramento County, California	2,107	809	1,372
75%	Census Tract 81.31, Sacramento County, California	3,816	1,889	
100%	Census Tract 81.33, Sacramento County, California	2,778	1,266	
100%	Census Tract 81.34, Sacramento County, California	4,708	2,058	

SACRAMENTO SUBURBAN WATER DISTRICT
CONSERVATION PARAMETERS

BMP Number ^a		BMP Description	Affected Account Category ^{3,4}	Affected End Use(s)	Percent Reduction in Water Use ⁵	Water Forum			
CUWCC MOU	Water Forum					Annual Market Penetration (%)	Program Length (years)	Water Savings Life (years)	Affected Units
1	1	Residential Water Audits	RSF	Internal	5%	Indefinitely	4	dwelling unit	
1	1	Residential Water Audits	RMF	Internal	5%	Indefinitely	4	dwelling unit	
1	1	Residential Water Audits	RSF	External	19%	Indefinitely	4	dwelling unit	
1	1	Residential Water Audits	RMF	External	10%	Indefinitely	4	dwelling unit	
2	2	Plumbing Retrofit	RSF	Toilets	10.0%	Indefinitely	4	1992 and older dwelling units	
2	2	Plumbing Retrofit	RSF	Showers	21.0%	Indefinitely	4	1992 and older dwelling units	
2	2	Plumbing Retrofit	RSF	Faucets	10.0%	Indefinitely	4	1992 and older dwelling units	
2	2	Plumbing Retrofit	RMF	Toilets	10.0%	Indefinitely	4	1992 and older dwelling units	
2	2	Plumbing Retrofit	RMF	Showers	21.0%	Indefinitely	4	1992 and older dwelling units	
2	2	Plumbing Retrofit	RMF	Faucets	10.0%	Indefinitely	4	1992 and older dwelling units	
3	3	Distribution System Water Audits, Leak Detector	UAW/						
4	4	Water Retrofit	FRR	All	20.0%	30	Permanent	unmetered accounts	
4	4	Water Retrofit	FRC	All	20.0%	30	Permanent	unmetered accounts	
4	4	Water Retrofit	FRC	All	10.0%	10	Permanent	unmetered accounts	
4	4	Water Retrofit	FRI	All	20.0%	10	Permanent	unmetered accounts	
4	4	Water Retrofit	FRN	All	20.0%	10	Permanent	unmetered accounts	
4	4	Water Retrofit	FRU	All	20.0%	10	Permanent	unmetered accounts	
5	5	Large Landscape Water Audits	COM	Irrigation	15.0%	Indefinitely	4	large landscape accounts	
5	5	Large Landscape Water Audits	IND	Irrigation	15.0%	Indefinitely	4	large landscape accounts	
5	5	Large Landscape Water Audits	INS	Irrigation	15.0%	Indefinitely	4	large landscape accounts	
5	5	Large Landscape Water Audits	IRR	Irrigation	15.0%	Indefinitely	4	large landscape accounts	
5	5	Large Landscape Water Audits	LND	External	15.0%	Indefinitely	4	large landscape accounts	
NA	6	Landscape Water Conservation Requirements	RMF	Irrigation					
NA	6	Landscape Water Conservation Requirements	COM	Irrigation					
NA	6	Landscape Water Conservation Requirements	IND	Irrigation					
NA	6	Landscape Water Conservation Requirements	INS	Irrigation					
NA	6	Landscape Water Conservation Requirements	MUN	Irrigation					
6	NA	Clothes Washer Pellets	RSF	Laundry	34.0%				
6	NA	Clothes Washer Pellets	RMF	Laundry	34.0%				
7	7	Public Education	ALL	Per capita					
8	8	School Education	ALL	Per capita					
9	9	Water Audits	COM	All	12%	Indefinitely	4	unmetered accounts	
9	9	Water Audits	IND	All	15%	Indefinitely	4	unmetered accounts	
9	9	Water Audits	INS	All	12%	Indefinitely	4	unmetered accounts	
9	9	Water Audits	MUN	All	12%	Indefinitely	4	unmetered accounts	
9	16	ULFT Fixtures	COM	Toilets	Fixture Model	10	Permanent	future	
9	16	ULFT Fixtures	IND	Toilets	Fixture Model	10	Permanent	future	
9	16	ULFT Fixtures	INS	Toilets	Fixture Model	10	Permanent	future	
9	16	ULFT Fixtures	MUN	Toilets	Fixture Model	10	Permanent	future	
11	11	Conservation Pricing for Metered Accounts	MET	All					
NA	12	Residential Landscape Conservation	RSF	External	1%	Indefinitely	1	dwelling unit	
13	13	Water Waste Prohibition	ALL	All					
14	16	ULFT Fixtures	RSF	Toilets	Fixture Model			future	
14	16	ULFT Fixtures	RMF	Toilets	Fixture Model			future	

SACRAMENTO SUBURBAN WATER DISTRICT
CONSERVATION PARAMETERS

Sacramento Regional Water Conservation Master Plan
Project Number: 127844

BMP Number ¹		Water Forum	BMP Description	Affected Account Category ^{2,3}	Affected End Use(s) ⁴	Percent Reduction in Water Use ⁵	Annual Market Penetration (%)	Water Savings Life (Years)	Affected Units
CUWCC MOU									
1	1		Residential Water Audits	RSF	Internal	5%	1.5%	4	dwelling unit
1	1		Residential Water Audits	RMF	Internal	5%	1.5%	4	dwelling unit
1	1		Residential Water Audits	RSF	External	10%	1.5%	4	dwelling unit
1	1		Residential Water Audits	RMF	External	10%	1.5%	4	dwelling unit
2	2		Plumbing Repairs	RSF	Toilets	10.0%	10.0%	4	1992 and older dwelling units
2	2		Plumbing Repairs	RSF	Showers	21.0%	10.0%	4	1992 and older dwelling units
2	2		Plumbing Repairs	RSF	Faucets	10.0%	10.0%	4	1992 and older dwelling units
2	2		Plumbing Repairs	RMF	Toilets	10.0%	10.0%	4	1992 and older dwelling units
2	2		Plumbing Repairs	RMF	Showers	21.0%	10.0%	4	1992 and older dwelling units
2	2		Plumbing Repairs	RMF	Faucets	10.0%	10.0%	4	1992 and older dwelling units
3	3		Distribution System Water Audits, Leak Detector	UAW	-	-	-	-	-
4	4		Water Retrofit	FRR	All	20.0%	10.0%	Permanent	unmetered accounts
4	4		Water Retrofit	FRM	All	20.0%	10.0%	Permanent	unmetered accounts
4	4		Water Retrofit	FRC	All	20.0%	10.0%	Permanent	unmetered accounts
4	4		Water Retrofit	FRI	All	20.0%	10.0%	Permanent	unmetered accounts
4	4		Water Retrofit	FRN	All	20.0%	10.0%	Permanent	unmetered accounts
4	4		Water Retrofit	FRU	All	20.0%	10.0%	Permanent	unmetered accounts
5	5		Large Landscape Water Audits	COM	Irrigation	15.0%	1.5%	4	large landscape accounts
5	5		Large Landscape Water Audits	IND	Irrigation	15.0%	1.5%	4	large landscape accounts
5	5		Large Landscape Water Audits	INS	Irrigation	15.0%	1.5%	4	large landscape accounts
5	5		Large Landscape Water Audits	MUN	Irrigation	15.0%	1.5%	4	large landscape accounts
5	5		Large Landscape Water Audits	IRR	External	15.0%	1.5%	4	large landscape accounts
5	5		Large Landscape Water Audits	LND	External	15.0%	1.5%	4	large landscape accounts
NA	NA		Landscape Water Conservation Requirements	RMF	Irrigation	-	-	-	-
NA	NA		Landscape Water Conservation Requirements	COM	Irrigation	-	-	-	-
NA	NA		Landscape Water Conservation Requirements	IND	Irrigation	-	-	-	-
NA	NA		Landscape Water Conservation Requirements	INS	Irrigation	-	-	-	-
NA	NA		Landscape Water Conservation Requirements	MUN	Irrigation	-	-	-	-
6	NA		Curtains Washer Repairs	RSF	Laundry	34.0%	-	Permanent	per dwelling unit
6	NA		Curtains Washer Repairs	RMF	Laundry	34.0%	-	Permanent	per dwelling unit
7	7		Public Information	ALL	Per capita	-	-	-	-
8	8		School Education	ALL	Per capita	-	-	-	-
9	9		Water Audits	COM	All	12%	1.0%	4	accounts
9	9		Water Audits	IND	All	15%	1.0%	4	accounts
9	9		Water Audits	INS	All	12%	1.0%	4	accounts
9	9		Water Audits	MUN	All	12%	1.0%	4	accounts
9	16		LEFT Rebates	COM	Toilets	Fixture Model	0.0%	Permanent	future/potential savings
9	16		LEFT Rebates	IND	Toilets	Fixture Model	0.0%	Permanent	future/potential savings
9	16		LEFT Rebates	INS	Toilets	Fixture Model	0.0%	Permanent	future/potential savings
9	16		LEFT Rebates	MUN	Toilets	Fixture Model	0.0%	Permanent	future/potential savings
11	11		Conservation Pricing for Metered Accounts	MET	All	-	-	-	-
NA	12		Residential Landscape Conservation	RSF	External	1%	-	-	-
13	13		Water Waste Prohibition	ALL	All	-	-	-	-
14	16		LEFT Rebates	RSF	Toilets	Fixture Model	5.6%	Permanent	future
14	16		LEFT Rebates	RMF	Toilets	Fixture Model	3.5%	Permanent	future

Water Forum Conservation Costs
 Cost Assumption Worksheets
 Water Forum Conservation Plan - Baseline Input

BMP	Annual fixed	Intervention
	Costs, \$	Unit Costs, \$
1	\$6,250	
SF audits		\$80
MF audits		\$80
Institutional audits		\$680
2	\$3,000	
retrofit kits		\$31
toilet leak test kits		
3	\$1,471,200	
4 Non-Resid	\$2,000	
2004 non-residential unmetered accts		600
4 Resid	\$0	
residential meters		\$900
5	\$4,000	
CII large landscape audits		\$1,500
CII incentives		\$0
Irrigation accounts large landscape audits		\$1,500
Irrigation accounts incentives		\$0
6	\$1,600	
7	\$8,000	
8	\$4,000	
9	\$5,500	
Commercial customer audits		\$680
Commercial incentives		\$0
Industrial customers audits		\$1,680
Industrial incentives		\$0
11	\$10,400	
12	\$8,250	
13	\$54,500	
14	\$75,000	
16 Non-Resid	\$4,000	
Non residential ULFT		\$75
16 Resid		
Residential ULFT		
Total	\$1,657,700	

^aassumed incurred in year of implementation

CUWCC ConservationCosts2
 Cost Assumption Worksheets
 - Baseline Input

BMP	Annual fixed	Intervention
	Costs, \$	Unit Costs, \$
1	\$6,250	
SF audits		\$80
MF audits		\$80
2	\$3,000	
retrofit kits		\$31
3	\$1,471,200	
4	\$2,000	
meters		\$900
5	\$4,000	
ETO budgets for dedicated meter accounts		
Irrigation water use surveys for CII mixed use accounts		\$1,500
6	\$5,000	
High efficiency washing machine rebates		\$50
7	\$8,000	
8	\$4,000	
9	\$9,500	
Commercial customer audits		\$680
Industrial customers audits		\$1,680
Instituional customer audits		\$680
CII ULFT rebates		\$75
10		
11	\$10,400	
12	\$75,000	
13	\$54,500	
14	\$4,000	
Residential ULFT		\$75
Total		

^a assumed incurred in first year of implementation

Large Landscape Estimates Sacramento Suburban Water District

Project: Sacramento Regional Water Conservation Master Plan
 127844
 Prepared By: NHF
 Date Prepared: July 20, 2005
 Revised By: NHF
 Date Revised: August 3, 2005
 Reviewed By: ---

LEGEND

- - Billing Data
- - Census
- - User Input
- - Calculated
- - Result (DSS Input in blue text)

Accounts with > 1 acre Landscaping			
Description	No. of Accounts	Average Area (acres)	Total Area (acres)
Single Family	0	0.00	0.0
Multi-Family	0	0.00	0.0
Commercial	90	6.26	563.2
Industrial	0	0.00	0.0
Institutional	0	0.00	0.0
Irrigation	0	0.00	0.0
Fleet Rate	0	0.00	0.0
	0	0.00	0.0
	0	0.00	0.0
	0	0.00	0.0

- 1 - Large landscapes (> 1 ac) have dedicated landscape meters and are all included in the "Landscape" account category.
- 2 - Number of accounts greater than 1 acre and average area per large landscape account was provided by agency.

Irrigation Application Rate	
Reference Evapotranspiration (ET _o) for Zone 14 ¹ (in/yr)	57
Assumed Application Rate as a Percentage of ET _o	85%
Annual Application Rate of Irrigation (in/yr)	48.45
Annual Application Rate of Irrigation (ft/yr)	4.0

1 - Jones, D.W., 1999. California Irrigation Management Information System: Reference Evapotranspiration. * California Department of Water Resources.



Conservation Impacts Sacramento Suburban Water District

Project: Sacramento Regional Water Conservation Master Plan
 Project Number: 127844
 Prepared By: NHF
 Date Prepared: March 31, 2005
 Revised By: NHF
 Date Revised: March 31, 2005
 Reviewed By: ----

- LEGEND**
- Billing Data
 - Census
 - User Input
 - Calculated
 - Result (DSS Input in blue text)

Water Production	
Peak Day to Average Day Ratio:	2.1

Wastewater Flows	
Design Wet to Dry Ratio:	3.0

Default Internal Residential Water Usage Breakdown	
Toilets	27.7%
Baths	1.6%
Showers	17.3%
Faucets	15.3%
Dishwashers	1.3%
Laundry	20.9%
Other	2.1%
Int. Leakage	13.8%
	100.0%

Default External Residential Water Usage Breakdown	
Irrigation	80.0%
Pools/Fountains	5.0%
Wash-Down	5.0%
Car Washing	5.0%
Ext. Leakage	5.0%
	100.0%

Default Internal CII Water Usage Breakdown	
Process	40.0%
Toilets	25.0%
Showers	5.0%
Faucets	5.0%
Dishwashers	5.0%
Laundry	10.0%
Int. Leakage	10.0%
	100.0%

Default External CII Water Usage Breakdown	
Irrigation	80.0%
Pools/Fountains	5.0%
Wash-Down	5.0%
Car Washing	5.0%
Ext. Leakage	5.0%
	100.0%

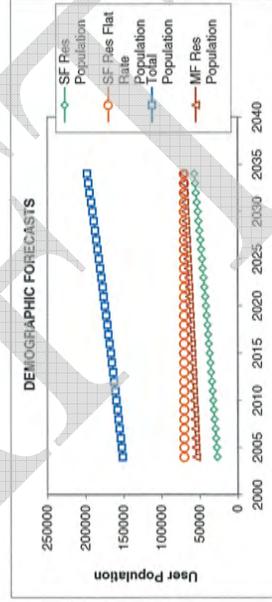
Nominal Interest Rate: 6.1%

Assumed Inflation Rate: 3.0%

Average Number of Fixtures per Household	
Toilets per SF Dwelling Unit	2.00
Toilets per MF Dwelling Unit	1.50

Percent Freeboarders	
Toilet Replacement (RMF)	31.7%
Toilet Replacement (RSF)	20.6%

Indoor/Outdoor Water Use Assumptions		
Customer Category	Indoor %	Outdoor %
Single Family	30.0%	70.0%
Multi-Family	80.0%	20.0%
Commercial	60.0%	40.0%
Industrial	70.0%	30.0%
Institutional	30.0%	70.0%
Irrigation	0.0%	100.0%
Flat Rate Residential	30.0%	70.0%



SACRAMENTO SUBURBAN WATER DISTRICT WATER FORUM WATER CONSERVATION PLAN

BMP 1 INTERIOR AND EXTERIOR WATER AUDITS AND INCENTIVE PROGRAMS FOR SINGLE FAMILY RESIDENTIAL, MULTI-FAMILY RESIDENTIAL, AND INSTITUTIONAL CUSTOMERS

- A. Within three years of agreement signing, Sacramento Suburban Water District's will:
1. contract for trained water auditors;
 2. prepare and make available, as needed, multi-lingual interior and exterior water audit materials for customers;
 3. prepare and make available to customers seasonal climate-appropriate irrigation information; and
 4. investigate opportunities for community based organizations (CBOs) to receive the training and financial incentives necessary for them to implement this BMP for their constituents.
- B. Sacramento Suburban Water District's contractor will annually:
1. offer audits to all SF, MF and Institutional customers beginning metered billing;
 2. offer, through bill inserts or other means, water-use reviews to all customers receiving a meter; and
 3. survey past program participants to determine if audit recommendations were implemented.
- C. The water-use review program contractor will:
1. provide audits conducted by trained auditors;
 2. provide audits that may include device installation by contractor or customer (showerheads, faucet aerators, etc.), identification of water-use problems, recommend repairs, instruction in landscape principles (hydrozones, ET, etc.), irrigation timer use and, when appropriate, meter reading;
 3. provide program participants with seasonal irrigation schedules by hydrozone and/or station; and
 4. provide incentives to achieve 12% annual participation of the targeted 20% of customers.
- D. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 2 PLUMBING RETROFIT OF EXISTING RESIDENTIAL ACCOUNTS

- A. Within three years of agreement signing, Sacramento Suburban Water District will:
1. provide high quality low-flow showerheads, faucet aerators and toilet leak detection tablets, as appropriate at time of audit, to customers without efficient fixtures;
 2. offer toilet leak test kits to all change of account customers who visit the signatory's office;
 3. work with the local "Welcome Wagon" or equivalent organization to provide water conservation materials to new residents;
 4. work with local hardware/home stores to offer free water conservation information and toilet leak test kits at the check-out counters; and
 5. investigate partnership programs with local energy utilities to provide water conservation audits, materials and devices.
- B. Sacramento Suburban Water District and its contractor will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 3 DISTRIBUTION SYSTEM WATER AUDITS, LEAK DETECTION AND REPAIR

- A. Within three years of agreement signing, Sacramento Suburban Water District will complete and be maintaining:
1. an annually updated 'system map' of type, size and age of pipes; pressures; leak history; and historic data;
 2. installation, where appropriate, of devices (such as pressure recorders) or use of other methods designed to identify area with greater than 10% losses;
 3. an ongoing meter calibration and replacement program for all production and distribution meters;
 4. an ongoing leak detection & repair program (as defined in the manual) focused on high probability leak areas identified by the system map; and
 5. a complete system-wide leak detection program when Sacramento Suburban Water District is completely metered.
- B. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 4 NON-RESIDENTIAL METER RETROFIT

- A. Within three years of agreement signing, Sacramento Suburban Water District will:
1. identify all non-residential unmetered customers;
 2. provisionally identify any non-residential unmetered customers whom may be very difficult and expensive to retrofit;

3. adopt a plan to meter at least 20 percent of unmetered non-residential accounts yearly so that within five years of becoming a signatory 85-90 percent of non-residential customers are metered; and
 4. begin installation of meters at non-residential unmetered customer locations, with consideration of separate landscape meters.
- B. Within 60 days of meter installation, Sacramento Suburban Water District will provide newly metered non-residential customers with:
1. information on how to read their meter and a consumption-based water bill; and
 2. information on Sacramento Suburban Water District-provided water conservation programs and services.
- C. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 4 RESIDENTIAL METER RETROFIT

- A. In the first two years after the *Water Forum Agreement* is signed, the Sacramento Suburban Water District would plan for, budget, and prepare the public for a residential meter retrofit program. Beginning no later than the start of the fourth year after the *Water Forum Agreement* is signed, the Sacramento Suburban Water District would annually retrofit at least 3.3% - 5% of their total number of unmetered residential connections as of the date of the *Water Forum Agreement*.

BMP 5 LARGE LANDSCAPE WATER AUDITS AND INCENTIVES FOR COMMERCIAL, INDUSTRIAL, INSTITUTIONAL (CII), AND IRRIGATION ACCOUNTS

- A. Within three years of agreement signing, Sacramento Suburban Water District's will:
1. identify all Irrigation accounts and CII accounts with landscapes of one acre and larger and record that information in the customer database;
 2. contract for certified and/or trained landscape water auditors;
 3. prepare and distribute multi-lingual (as appropriate) irrigation system materials, seasonal climate-appropriate information on irrigation scheduling and offer training for customers and landscape workers;
 4. develop seasonal climate-appropriate information to determine irrigation schedules, for the three basic hydrozones identified in the *DWR Landscape Water Management Handbook*, and provided that information to the customers with one acre or larger landscapes; and
 5. begin installation of climate appropriate water efficient landscaping at landscaped Sacramento Suburban Water District facilities, phased in over the five years following agreement signing.

- B. Sacramento Suburban Water District's contractor will annually:
1. directly contact all Irrigation accounts and CII accounts with one acre and larger landscapes, not previously audited, and offer them landscape water-use reviews (audits);
 2. offer, through bill inserts or other means, landscape water-use reviews to all customers;
 3. survey past program participants to determine if audit recommendations were implemented; and
 4. offer program participants with separate irrigation meters information showing the relationship between actual consumption and their ET-based water demand.
- C. The Sacramento Suburban Water District landscape water-use review program contractor will:
1. provide audits conducted by certified landscape water auditors;
 2. provide audits that consist of a system review, to identify necessary irrigation system repairs, and, once repairs have been completed, a water-use review including measurement of landscaped area;
 3. provide program participants with seasonal irrigation schedules by hydrozone and/or station;
 4. provide program participants with regular reminders to adjust irrigation timer settings; and
 5. provide incentives to achieve at least 12 percent annual participation of targeted customers.
- D. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 6 LANDSCAPE WATER CONSERVATION REQUIREMENTS FOR NEW AND EXISTING COMMERCIAL, INDUSTRIAL, INSTITUTIONAL AND MULTI-FAMILY DEVELOPMENTS

- A. Sacramento Suburban Water District will:
1. attend a landscape task force with other local governments and water purveyors, the building and green industries and environmental / public interest groups to review the existing ordinance to determine if it is at least as effective as the Model Water Efficient Landscape Ordinance, and to monitor, and revise, when applicable, the ordinance;
 2. participate in the landscape task force's review of the implementation of the ordinance, including the landscape plan review and final inspection/certification process; and
 3. participate in the landscape task force's determination if program effectiveness is diminished by city/county staff time constraints, budget or lack of landscape knowledge/expertise.

- B. Sacramento Suburban Water District will publicly support the county's actions to enact and/or revise and then fully implement a landscape water efficiency ordinance.
- C. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 7 PUBLIC INFORMATION

- A. Within three years of agreement signing, Sacramento Suburban Water District's program will include:
 - 1. a combination of a Sacramento Suburban Water District specific program in conjunction with full participation by the Sacramento Suburban Water District in the Sacramento Area Water Works Association (SAWWA) Conservation Committee's Public Outreach Program or other equivalent regional program. This program includes programs such as: media advertising campaigns, commercial consumer outreach, promotional materials, community events and fairs, evapotranspiration data availability, a Web site, and allied organizations outreach;
 - 2. elements implemented directly by the Sacramento Suburban Water District will include:
 - a. using utility bill inserts or messages on payment notices; and
 - b. providing information on residential metered customers' bills showing use in gallons per day for the last billing period compared to the same period the year before.

BMP 8 SCHOOL EDUCATION

- A. Within three years of agreement signing, Sacramento Suburban Water District's program will include:
 - 1. A combination of a Sacramento Suburban Water District specific program in conjunction with full participation by the Sacramento Suburban Water District in the Sacramento Area Water Works Association (SAWWA) Conservation Committee's Public Outreach Program or other equivalent regional program. This program includes programs such as: school outreach, promotional materials, community events and fairs, a Web site, and allied organizations outreach;
 - 2. Elements implemented directly by the Sacramento Suburban Water District include:
 - a. offering tours of Sacramento Suburban Water District xeriscape gardens to elementary schools in the Sacramento Suburban Water District service area; and
 - b. working with schools served by the Sacramento Suburban Water District to promote school audits, reduced water bills, and innovative funding for equipment upgrades.

BMP 9 COMMERCIAL AND INDUSTRIAL (CI) WATER CONSERVATION

- A. Within three years of agreement signing, Sacramento Suburban Water District's will have:
 1. contracted for trained commercial/industrial water auditors;
 2. the DWR Commercial / Industrial (CI) water-use materials available for CI customers;
 3. established, if possible, cooperative CI audit programs with other utilities; and
 4. a list of available CI water-use consultants.

- B. Sacramento Suburban Water District's contractor will annually:
 1. identify the top 10% of commercial water users and top 10% of industrial water users, not previously audited, and directly contact them or the appropriate customer's representative and offer them water-use reviews (audits). Provide these customers with data on their current water-related costs (supply, wastewater, energy, on-site treatment, etc.);
 - a. (for metered customers) annually determine the top 10% of commercial customers and of industrial customers based on water use, and when appropriate, special water-use factors (high water use, high wastewater flows, poor quality wastewater, high-energy use, etc.); and
 - b. (for unmetered customers) annually determine the top 10% of commercial customers and of industrial customers based on special water-use factors such as wastewater flows, poor quality wastewater, and high-energy use. etc.
 2. offer, through bill inserts or other means, CI water-use reviews to all CI customers; and
 3. survey past program participants to determine if audit recommendations were implemented

- C. The Sacramento Suburban Water District water-use review program contractor will:
 1. provide audits conducted by trained commercial/industrial water auditors;
 2. provide incentives to achieve at least 20% annual participation of the targeted 10% of existing customers; and
 3. contact past program participants for a follow-up audit at least every fifth year.

- D. Within three years of agreement signing, Sacramento Suburban Water District will:
 1. promote the use of efficient water-use technologies by commercial and industrial customers by offering incentives related to the benefits gained by the water and sewer service providers;
 2. coordinate with the city or county during the permitting of new, modified or change-of-water-use CI projects within the Sacramento Suburban Water District's service area to ensure that the submitted findings are reviewed by the Sacramento Suburban Water District to identify incentive program opportunities;
 3. consider separate landscape water meter(s) when the combined service would require a 1 1/2" or larger meter; and
 4. require efficient cooling systems, recirculating pumps for fountains and ponds, and water recycling systems for vehicle washing as a condition of service.

E. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 11 CONSERVATION PRICING FOR METERED ACCOUNTS

- A. Within three years of agreement signing, Sacramento Suburban Water District will:
1. identify all metered customers by account type (single family, multi-residential, commercial, industrial, institutional, landscape irrigation, reclaimed, wholesale);
 2. establish quantity-based rates for each account type;
 3. begin educating all customers about the quantity-based rate structure; and
 4. provide metered customers with monthly or bi-monthly information which shows current flat-rate charges, actual water use in ccf (hundred cubic feet), and what charges would have been if based on actual use.
- B. Sacramento Suburban Water District will, within six years of agreement signing, bill all metered customers utilizing rates designed to recover the cost of providing service as well as on quantity of water used.

BMP 12 LANDSCAPE WATER CONSERVATION FOR NEW/EXISTING SINGLE FAMILY HOMES

- A. Sacramento Suburban Water District's contractor will implement a program, which includes:
1. information on climate-appropriate landscape design, plants and efficient irrigation equipment/management provided to change-of-customer accounts and, in cooperation with the Building Industry Association of Superior California, to new customers. The availability of this information will be publicized to all existing Single Family Homes in the Sacramento Suburban Water District's service area on an annual basis;
 2. landscape audit/water-use survey program actively marketed to all SF customers at the beginning of metered billing; and
 3. annual pre-irrigation season notification to Single Family Homes served by the Sacramento Suburban Water District of Sacramento Suburban Water District-provided landscape assistance (audits/surveys, materials, special offers, etc.).
- B. Sacramento Suburban Water District's on-going program, in cooperation with the California Landscape Contractors Association, Sacramento Area Water Works Association, other purveyors, etc., will include:
1. participation in the development/maintenance of a local demonstration garden within five years following agreement signing (does not have to be located within Sacramento Suburban Water District's service area but should be convenient to the Sacramento Suburban Water District's customers);
 2. annual participation at local and regional landscape fairs and garden shows;
 3. annual cooperative education and marketing campaigns with local nurseries;
 4. annual irrigation season landscape media campaign; and
 5. annual post-irrigation season notification, to all customers, of the importance of timer resets/ sprinkler shut-offs.

C. Sacramento Suburban Water District will:

1. attend a landscape task force with other local governments and water purveyors, the building and green industries and environmental / public interest groups to review the existing ordinance to determine if it is at least as effective as the Model Water Efficient Landscape Ordinance as pertains to single family homes, and to monitor, and revise, when applicable, the ordinance;
2. participate in the landscape task force's review of the implementation of the ordinance, including builder compliance, landscape plan review, and final inspection/certification process; and
3. participate in the landscape task force's determination if program effectiveness is diminished by city/county staff time constraints, budget or lack of landscape knowledge/expertise.

D. Sacramento Suburban Water District will publicly support the county's actions to enact and/or revise and fully implement a landscape water efficiency ordinance.

E. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 13 WATER WASTE PROHIBITION

Sacramento Suburban Water District has a water waste prohibition ordinance which includes measures and enforcement mechanisms.

A. The water waste prohibition measures include:

1. irrigation water shall not be allowed to run off to adjoining property or to a roadside ditch or gutter;
2. leaking pipes, fixtures, or sprinklers shall be repaired promptly;
3. open hoses not permitted - automatic shut-off nozzles are required; and
4. swimming pools, ponds and fountains shall be equipped with recirculating pumps. Pool draining and refilling only for health, maintenance or structural reasons - requires agency approval.

B. Other measures, such as the following, will be considered and may be permanent, seasonal or related to water shortage:

1. restricting irrigation hours or days;
2. use of a hose to clean sidewalks, driveways, patios, streets and commercial parking lots is not permitted, except for health and safety;
3. restaurants serving water only on request;
4. restricting the use of potable water for compaction, dust control or other construction purposes when non-potable water is available; and
5. limiting the flushing of sewers or fire hydrants, except for health and safety (may be permanent, seasonal or related to water shortage).

- C. The waste prohibition enforcement mechanisms are a graduated series of responses, which include: personal notification, monetary fees, and service termination.
- D. Within three years of agreement signing Sacramento Suburban Water District will:
 - 1. notify all customers at least annually of the waste prohibitions (by newspaper, public notice, mailings, utility billings or a combination of such) prior to the irrigation season;
 - 2. have staff will respond to reports of water waste in a timely manner;
 - 3. will have water waste patrols at least during water shortages; and
 - 4. will cooperate with the city or county in their program enforcement efforts.

BMP 14 WATER CONSERVATION COORDINATOR

Sacramento Suburban Water District's water conservation coordinator is Warren Jung, who will be responsible for preparing, implementing and monitoring the Plan.

Within three years of agreement signing, at least one Sacramento Suburban Water District staff member or employee of the Sacramento Suburban Water District's conservation program contractor will be an AWWA Certified Water Conservation Practitioner (Level II), if the program becomes an industry standard, or will pass equivalent training.

BMP 16. ULTRA-LOW FLUSH TOILET REPLACEMENT PROGRAM FOR NON-RESIDENTIAL CUSTOMERS

- A. Within three years of agreement signing, Sacramento Suburban Water District's contractor will:
 - 1. identify all non-residential customers, estimate the approximate number of non-ULF toilets at each account, and rank them by high, medium or low use (e.g., restaurant toilets are high use, warehouse toilets are low use); and
 - 2. if possible, established a cooperative district / sanitation district ULF rebate program.
- B. If a regional program is established, Sacramento Suburban Water District's contractor will annually:
 - 1. offer, through direct mail or other direct communication, ULF rebates to all non-residential accounts which do not yet have ULF toilets, with special focus on those with the highest number of high-use non ULF-toilets.
- C. The regional retrofit program will:
 - 1. offer the necessary incentive (which may include rebates, no interest loans, vouchers, billing surcharges/rebates, etc.) to insure that at least 10 percent of non-residential non-ULF toilets are replaced with ULF toilets each year, with a final installation target of 90 percent of all non-residential toilets being ULFs within ten years;
 - 2. consider larger rebates for the more expensive high-use flushometer-type ULF installations;

3. investigate opportunities for community based organizations (CBOs) to receive the training and financial incentives necessary for them to implement this BMP for their constituents; and
4. consider monitoring the change in water use at metered-accounts that install ULF toilets.

D. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

CITIZEN INVOLVEMENT PROGRAM

The Sacramento Suburban Water District is investigating ways to implement this aspect of the *Water Forum Agreement* by using existing citizen groups such as perhaps the various CPAC's (County Planning Advisory Committees such as the North Highlands – Foothill Farms Area CPAC, the Carmichael CPAC, and the Antelope CPAC) in their service area.

**Sacramento Suburban Water District
Water Conservation Master Plan
Benefit Cost Analysis by BMP**

**(Supporting DSS Conservation Model results presented in Water Conservation Master Plan
Technical Memorandum)**

End Use Reductions and Participants

Number End Use Identifier Consumer Category

Cumulative Number of Participating Accounts by Year

			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	RSF Toilets	Single Family	0	0	148	297	445	594	594	594	594	594	594	594
2	RSF Baths	Single Family	0	0	148	297	445	594	594	594	594	594	594	594
3	RSF Showers	Single Family	0	0	148	297	445	594	594	594	594	594	594	594
4	RSF Faucets	Single Family	0	0	148	297	445	594	594	594	594	594	594	594
5	RSF Dishwashers	Single Family	0	0	148	297	445	594	594	594	594	594	594	594
6	RSF Laundry	Single Family	0	0	148	297	445	594	594	594	594	594	594	594
7	RSF Other	Single Family	0	0	148	297	445	594	594	594	594	594	594	594
8	RSF Int. Leakage	Single Family	0	0	148	297	445	594	594	594	594	594	594	594
9	RMF Toilets	Multi-Family	0	0	48	97	145	194	194	194	194	194	194	194
10	RMF Baths	Multi-Family	0	0	48	97	145	194	194	194	194	194	194	194
11	RMF Showers	Multi-Family	0	0	48	97	145	194	194	194	194	194	194	194
12	RMF Faucets	Multi-Family	0	0	48	97	145	194	194	194	194	194	194	194
13	RMF Dishwashers	Multi-Family	0	0	48	97	145	194	194	194	194	194	194	194
14	RMF Laundry	Multi-Family	0	0	48	97	145	194	194	194	194	194	194	194
15	RMF Other	Multi-Family	0	0	48	97	145	194	194	194	194	194	194	194
16														
17														
18														
19														
20														

Percent Saturation (RSF): 0% 0% 1% 3% 4% 5% 5% 5% 5% 4% 4% 4%
 Percent Saturation (RMF): 0% 0% 1% 3% 4% 6% 6% 6% 6% 5% 5% 5%

Measure Impact Factors

Number End Use Identifier Consumer Category

			Measure Impact Factor by Year											
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	RSF Toilets	Single Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2	RSF Baths	Single Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3	RSF Showers	Single Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4	RSF Faucets	Single Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
5	RSF Dishwashers	Single Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
6	RSF Laundry	Single Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
7	RSF Other	Single Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
8	RSF Int. Leakage	Single Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
9	RMF Toilets	Multi-Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10	RMF Baths	Multi-Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
11	RMF Showers	Multi-Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
12	RMF Faucets	Multi-Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
13	RMF Dishwashers	Multi-Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
14	RMF Laundry	Multi-Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
15	RMF Other	Multi-Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
16														
17														
18														
19														
20														

Total Water Production Savings

Number	End Use Identifier	Consumer Category	Water Savings by Year (mgd)												
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
1	RSF Toilets	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	RSF Baths	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	RSF Showers	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	RSF Faucets	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	RSF Dishwashers	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	RSF Laundry	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	RSF Other	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	RSF Int. Leakage	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	RMF Toilets	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	RMF Baths	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	RMF Showers	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	RMF Faucets	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	RMF Dishwashers	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	RMF Laundry	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	RMF Other	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16															
17															
18															
19															
20															
Total Water Savings (mgd):			0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
% Savings of Total Baseline Production:			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Total External Water Savings

Number	End Use Identifier	Consumer Category	External Water Savings by Year (mgd)												
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
1	RSF Toilets	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	RSF Baths	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	RSF Showers	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	RSF Faucets	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	RSF Dishwashers	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	RSF Laundry	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	RSF Other	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	RSF Int. Leakage	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	RMF Toilets	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	RMF Baths	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	RMF Showers	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	RMF Faucets	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	RMF Dishwashers	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	RMF Laundry	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	RMF Other	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16															
17															
18															
19															
20															
Total External Water Savings (mgd):			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Total Internal Water Savings

Number	End Use Identifier	Consumer Category	Wastewater Savings by Year (mgd)												
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
1	RSF Toilets	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	RSF Baths	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	RSF Showers	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	RSF Faucets	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	RSF Dishwashers	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	RSF Laundry	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	RSF Other	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	RSF Int. Leakage	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	RMF Toilets	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	RMF Baths	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	RMF Showers	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	RMF Faucets	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	RMF Dishwashers	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	RMF Laundry	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	RMF Other	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16															
17															
18															
19															
20															

Total Internal Savings (mgd):

0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
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Modified Forecasts

Total Water Production (mgd):
 External Consumption (mgd):
 Peak Day Water Production (mgd):
 Dry Weather Wastewater (mgd):
 Design Wet Weather Wastewater: (mgd):

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Water Production (mgd):	41.4	41.7	41.9	42.1	42.3	42.5	42.7	42.9	43.2	43.4	43.6	43.8
External Consumption (mgd):	20.6	20.8	20.9	21.1	21.3	21.5	21.7	21.9	22.0	22.2	22.4	22.6
Peak Day Water Production (mgd):	87.0	87.6	88.2	88.9	89.5	90.1	90.7	91.3	91.9	92.6	93.2	93.9
Dry Weather Wastewater (mgd):	16.7	16.7	16.7	16.7	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
Design Wet Weather Wastewater: (mgd):	50.1	50.4	50.7	51.0	51.3	51.6	51.9	52.2	52.5	52.8	53.1	53.5

Operating Cost Savings

Modified Operating Costs Per mg

Type	Baseline Year Costs		
	Transfer	Treatment	Total
Water	\$767	\$0	\$767
Wastewater	\$0	\$0	\$0

	Modified Unit Costs by Year											
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Modified Total Operating Costs

Item	Baseline NPV	Modified NPV	NPV Savings	Modified Total Costs by Year											
				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water	\$256,352,104	\$256,279,301	\$72,803	\$11,611,959	\$11,675,784	\$11,736,020	\$11,797,555	\$11,860,751	\$11,915,786	\$11,972,721	\$12,031,470	\$12,092,071	\$12,154,482	\$12,218,654	\$12,284,540
Dry Weather Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total			\$72,803	\$11,611,959	\$11,675,784	\$11,736,020	\$11,797,555	\$11,860,751	\$11,915,786	\$11,972,721	\$12,031,470	\$12,092,071	\$12,154,482	\$12,218,654	\$12,284,540

Hot Water Savings

Number	End Use Identifier	Consumer Category	Temperature of Use (oF) (Blank if not heated)	Cost Per Degree Change Per Gallon	Hot Water Savings by Year (\$)											
					2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	RSF Toilets	Single Family														
2	RSF Baths	Single Family	100.0	\$1.50E-04	\$0	\$0	\$113	\$227	\$340	\$453	\$453	\$453	\$453	\$453	\$453	\$453
3	RSF Showers	Single Family	105.0	\$1.50E-04	\$0	\$0	\$561	\$1,104	\$1,632	\$2,147	\$2,119	\$2,094	\$2,070	\$2,048	\$2,028	\$2,009
4	RSF Faucets	Single Family	75.0	\$1.50E-04	\$0	\$0	\$186	\$373	\$559	\$745	\$745	\$745	\$745	\$745	\$745	\$745
5	RSF Dishwashers	Single Family	140.0	\$1.50E-04	\$0	\$0	\$84	\$168	\$252	\$336	\$336	\$336	\$336	\$336	\$336	\$336
6	RSF Laundry	Single Family	100.0	\$1.50E-04	\$0	\$0	\$595	\$1,189	\$1,784	\$2,329	\$2,283	\$2,240	\$2,200	\$2,163	\$2,128	\$2,095
7	RSF Other	Single Family														
8	RSF Int. Leakage	Single Family														
9	RMF Toilets	Multi-Family														
10	RMF Baths	Multi-Family	100.0	\$1.50E-04	\$0	\$0	\$79	\$157	\$236	\$315	\$315	\$315	\$315	\$315	\$315	\$315
11	RMF Showers	Multi-Family	105.0	\$1.50E-04	\$0	\$0	\$940	\$1,859	\$2,758	\$3,639	\$3,601	\$3,566	\$3,533	\$3,501	\$3,470	\$3,441
12	RMF Faucets	Multi-Family	75.0	\$1.50E-04	\$0	\$0	\$258	\$515	\$773	\$1,030	\$1,030	\$1,030	\$1,030	\$1,030	\$1,030	\$1,030
13	RMF Dishwashers	Multi-Family	140.0	\$1.50E-04	\$0	\$0	\$131	\$263	\$394	\$525	\$525	\$525	\$525	\$525	\$525	\$525
14	RMF Laundry	Multi-Family	100.0	\$1.50E-04	\$0	\$0	\$1,029	\$2,059	\$3,088	\$4,048	\$3,982	\$3,919	\$3,859	\$3,802	\$3,747	\$3,694
15	RMF Other	Multi-Family														
16																
17																
18																
19																
20																
Total Hot Water Savings:			(NPV):	\$299,758	\$0	\$0	\$3,977	\$7,914	\$11,817	\$15,568	\$15,391	\$15,224	\$15,067	\$14,918	\$14,778	\$14,645

0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	
44.1	44.3	44.6	44.8	45.1	45.4	45.6	45.9	46.2	46.5	46.8	47.1	47.4	47.7	48.0	48.4	48.7	49.0	49.4	
22.8	23.0	23.2	23.4	23.6	23.8	24.0	24.2	24.4	24.6	24.8	25.0	25.2	25.5	25.7	25.9	26.1	26.3	26.6	
94.5	95.2	95.9	96.6	97.3	98.0	98.7	99.5	100.2	101.0	101.7	102.5	103.3	104.1	104.9	105.7	106.5	107.3	108.2	
16.9	16.9	16.9	16.9	17.0	17.0	17.1	17.1	17.2	17.2	17.3	17.3	17.4	17.5	17.6	17.6	17.7	17.8	17.9	
53.8	54.1	54.5	54.8	55.2	55.6	55.9	56.3	56.7	57.1	57.5	57.9	58.3	58.7	59.1	59.6	60.0	60.4	60.9	

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$12,351,865	\$12,420,804	\$12,491,321	\$12,563,379	\$12,637,169	\$12,712,448	\$12,789,463	\$12,868,202	\$12,948,626	\$13,030,697	\$13,114,381	\$13,199,645	\$13,286,457	\$13,374,789	\$13,464,615	\$13,555,910	\$13,648,650	\$13,742,815	\$13,838,386
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$12,351,865	\$12,420,804	\$12,491,321	\$12,563,379	\$12,637,169	\$12,712,448	\$12,789,463	\$12,868,202	\$12,948,626	\$13,030,697	\$13,114,381	\$13,199,645	\$13,286,457	\$13,374,789	\$13,464,615	\$13,555,910	\$13,648,650	\$13,742,815	\$13,838,386

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$505	\$561	\$621	\$685	\$702	\$718	\$735	\$752	\$770	\$787	\$805	\$822	\$840	\$858	\$876	\$895	\$913	\$932	\$951
\$2,219	\$2,443	\$2,684	\$2,940	\$2,990	\$3,042	\$3,095	\$3,149	\$3,204	\$3,260	\$3,317	\$3,376	\$3,435	\$3,495	\$3,556	\$3,618	\$3,681	\$3,744	\$3,809
\$830	\$922	\$1,020	\$1,126	\$1,153	\$1,181	\$1,209	\$1,237	\$1,265	\$1,294	\$1,323	\$1,352	\$1,381	\$1,411	\$1,441	\$1,471	\$1,501	\$1,532	\$1,563
\$374	\$416	\$460	\$508	\$520	\$532	\$545	\$558	\$570	\$583	\$596	\$609	\$623	\$636	\$650	\$663	\$677	\$691	\$705
\$2,299	\$2,517	\$2,748	\$2,992	\$3,026	\$3,060	\$3,096	\$3,135	\$3,176	\$3,220	\$3,265	\$3,312	\$3,361	\$3,411	\$3,464	\$3,518	\$3,573	\$3,630	\$3,689
\$325	\$336	\$347	\$360	\$363	\$366	\$370	\$373	\$376	\$380	\$383	\$387	\$390	\$394	\$397	\$401	\$404	\$408	\$412
\$3,522	\$3,611	\$3,708	\$3,814	\$3,822	\$3,832	\$3,843	\$3,854	\$3,867	\$3,881	\$3,896	\$3,912	\$3,928	\$3,946	\$3,964	\$3,983	\$4,003	\$4,024	\$4,046
\$1,063	\$1,098	\$1,136	\$1,177	\$1,188	\$1,198	\$1,209	\$1,220	\$1,231	\$1,242	\$1,253	\$1,265	\$1,276	\$1,288	\$1,299	\$1,311	\$1,323	\$1,335	\$1,347
\$542	\$560	\$579	\$600	\$605	\$611	\$616	\$622	\$628	\$633	\$639	\$645	\$651	\$657	\$662	\$668	\$674	\$681	\$687
\$3,760	\$3,833	\$3,914	\$4,003	\$3,990	\$3,978	\$3,969	\$3,963	\$3,959	\$3,958	\$3,960	\$3,964	\$3,970	\$3,978	\$3,988	\$4,000	\$4,014	\$4,029	\$4,046
\$15,439	\$16,297	\$17,219	\$18,204	\$18,359	\$18,519	\$18,687	\$18,864	\$19,048	\$19,239	\$19,437	\$19,643	\$19,855	\$20,073	\$20,297	\$20,528	\$20,764	\$21,006	\$21,254

End Use Reductions and Participants

Number End Use Identifier Consumer Category

Cumulative Number of Participating Accounts by Year

			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	RSF Irrigation	Single Family	0	0	148	297	445	594	594	594	594	594	594	594
2	RSF Pools	Single Family	0	0	148	297	445	594	594	594	594	594	594	594
3	RSF Wash-Down	Single Family	0	0	148	297	445	594	594	594	594	594	594	594
4	RSF Car Washing	Single Family	0	0	148	297	445	594	594	594	594	594	594	594
5	RSF Ext. Leakage	Single Family	0	0	148	297	445	594	594	594	594	594	594	594
6	RMF Irrigation	Multi-Family	0	0	48	97	145	194	194	194	194	194	194	194
7	RMF Pools/Fountains	Multi-Family	0	0	48	97	145	194	194	194	194	194	194	194
8	RMF Wash-Down	Multi-Family	0	0	48	97	145	194	194	194	194	194	194	194
9	RMF Car Washing	Multi-Family	0	0	48	97	145	194	194	194	194	194	194	194
10	RMF Ext. Leakage	Multi-Family	0	0	48	97	145	194	194	194	194	194	194	194
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Percent Saturation (RSF): 0% 0% 1% 3% 4% 5% 5% 5% 5% 5% 4% 4% 4%
 Percent Saturation (RMF): 0% 0% 1% 3% 4% 6% 6% 6% 6% 6% 5% 5% 5%

Measure Impact Factors

Number End Use Identifier Consumer Category

Measure Impact Factor by Year

			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	RSF Irrigation	Single Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2	RSF Pools	Single Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3	RSF Wash-Down	Single Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4	RSF Car Washing	Single Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
5	RSF Ext. Leakage	Single Family	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
6	RMF Irrigation	Multi-Family	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99
7	RMF Pools/Fountains	Multi-Family	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99
8	RMF Wash-Down	Multi-Family	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99
9	RMF Car Washing	Multi-Family	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99
10	RMF Ext. Leakage	Multi-Family	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Total Water Production Savings

Number End Use Identifier Consumer Category

Water Savings by Year (mgd)

			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	RSF Irrigation	Single Family	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
2	RSF Pools	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	RSF Wash-Down	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	RSF Car Washing	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	RSF Ext. Leakage	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	RMF Irrigation	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	RMF Pools/Fountains	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	RMF Wash-Down	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	RMF Car Washing	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	RMF Ext. Leakage	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Total	\$215,997	\$11,611,959	\$11,675,784	\$11,734,686	\$11,794,868	\$11,856,694	\$11,910,328	\$11,967,217	\$12,025,921	\$12,086,481	\$12,148,853	\$12,212,987	\$12,278,839
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Hot Water Savings

Number	End Use Identifier	Consumer Category	Temperature of Use (oF) (Blank if not heated)	Cost Per Degree Change Per Gallon	Hot Water Savings by Year (\$)														
					2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015			
1	RSF Irrigation	Single Family																	
2	RSF Pools	Single Family																	
3	RSF Wash-Down	Single Family																	
4	RSF Car Washing	Single Family																	
5	RSF Ext. Leakage	Single Family																	
6	RMF Irrigation	Multi-Family																	
7	RMF Pools/Fountains	Multi-Family																	
8	RMF Wash-Down	Multi-Family																	
9	RMF Car Washing	Multi-Family																	
10	RMF Ext. Leakage	Multi-Family																	
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			
Total Hot Water Savings:			(NPV):		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

End Use Reductions and Participants

Number End Use Identifier Consumer Category

Cumulative Number of Participating Accounts by Year

			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	FRR Toilets	Flat Rate Residential	0	0	362	723	1,085	1,447	1,447	1,447	1,447	1,447	1,447	1,447
2	FRR Baths	Flat Rate Residential	0	0	362	723	1,085	1,447	1,447	1,447	1,447	1,447	1,447	1,447
3	FRR Showers	Flat Rate Residential	0	0	362	723	1,085	1,447	1,447	1,447	1,447	1,447	1,447	1,447
4	FRR Faucets	Flat Rate Residential	0	0	362	723	1,085	1,447	1,447	1,447	1,447	1,447	1,447	1,447
5	FRR Dishwashers	Flat Rate Residential	0	0	362	723	1,085	1,447	1,447	1,447	1,447	1,447	1,447	1,447
6	FRR Laundry	Flat Rate Residential	0	0	362	723	1,085	1,447	1,447	1,447	1,447	1,447	1,447	1,447
7	FRR Other	Flat Rate Residential	0	0	362	723	1,085	1,447	1,447	1,447	1,447	1,447	1,447	1,447
8	FRR Int. Leakage	Flat Rate Residential	0	0	362	723	1,085	1,447	1,447	1,447	1,447	1,447	1,447	1,447
9	FRR Irrigation	Flat Rate Residential	0	0	362	723	1,085	1,447	1,447	1,447	1,447	1,447	1,447	1,447
10	FRR Pools	Flat Rate Residential	0	0	362	723	1,085	1,447	1,447	1,447	1,447	1,447	1,447	1,447
11	FRR Wash-Down	Flat Rate Residential	0	0	362	723	1,085	1,447	1,447	1,447	1,447	1,447	1,447	1,447
12	FRR Car Washing	Flat Rate Residential	0	0	362	723	1,085	1,447	1,447	1,447	1,447	1,447	1,447	1,447
13	FRR Ext. Leakage	Flat Rate Residential	0	0	362	723	1,085	1,447	1,447	1,447	1,447	1,447	1,447	1,447
14														
15														
16														
17														
18														
19														
20														

Percent Saturation (FRR): 0% 0% 1% 3% 4% 6% 6% 6% 6% 6% 6% 6%

Measure Impact Factors

Number End Use Identifier Consumer Category

Measure Impact Factor by Year

			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	FRR Toilets	Flat Rate Residential	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2	FRR Baths	Flat Rate Residential	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3	FRR Showers	Flat Rate Residential	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4	FRR Faucets	Flat Rate Residential	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
5	FRR Dishwashers	Flat Rate Residential	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
6	FRR Laundry	Flat Rate Residential	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
7	FRR Other	Flat Rate Residential	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
8	FRR Int. Leakage	Flat Rate Residential	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
9	FRR Irrigation	Flat Rate Residential	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99
10	FRR Pools	Flat Rate Residential	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99
11	FRR Wash-Down	Flat Rate Residential	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99
12	FRR Car Washing	Flat Rate Residential	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99
13	FRR Ext. Leakage	Flat Rate Residential	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99
14														
15														
16														
17														
18														
19														
20														

Total Water Production Savings

Number End Use Identifier Consumer Category

Water Savings by Year (mgd)

			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	FRR Toilets	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	FRR Baths	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	FRR Showers	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	FRR Faucets	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	FRR Dishwashers	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	FRR Laundry	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	FRR Other	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	FRR Int. Leakage	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	FRR Irrigation	Flat Rate Residential	0.00	0.00	0.01	0.02	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.05
10	FRR Pools	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	FRR Wash-Down	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	FRR Car Washing	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	FRR Ext. Leakage	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14														
15														
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Total Water Savings (mgd): 0.00 0.00 0.02 0.04 0.05 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07
 % Savings of Total Baseline Production: 0.0% 0.0% 0.0% 0.1% 0.1% 0.2% 0.2% 0.2% 0.2% 0.2% 0.2% 0.2% 0.2% 0.2% 0.2%

Total External Water Savings

Number	End Use Identifier	Consumer Category	External Water Savings by Year (mgd)													
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
1	FRR Toilets	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	FRR Baths	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	FRR Showers	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	FRR Faucets	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	FRR Dishwashers	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	FRR Laundry	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	FRR Other	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	FRR Int. Leakage	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	FRR Irrigation	Flat Rate Residential	0.00	0.00	0.01	0.02	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
10	FRR Pools	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	FRR Wash-Down	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	FRR Car Washing	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	FRR Ext. Leakage	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14																
15																
16																
17																
18																
19																
20																
Total External Water Savings (mgd):			0.00	0.00	0.01	0.03	0.04	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06

Total Internal Water Savings

Number	End Use Identifier	Consumer Category	Wastewater Savings by Year (mgd)													
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
1	FRR Toilets	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	FRR Baths	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	FRR Showers	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	FRR Faucets	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	FRR Dishwashers	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	FRR Laundry	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	FRR Other	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	FRR Int. Leakage	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	FRR Irrigation	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	FRR Pools	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	FRR Wash-Down	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	FRR Car Washing	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	FRR Ext. Leakage	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14																
15																
16																
17																
18																
19																
20																
Total Internal Savings (mgd):			0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Modified Forecasts

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Water Production (mgd):	41.4	41.7	41.9	42.1	42.3	42.7	42.9	42.9	43.1	43.3	43.5	43.8
External Consumption (mgd):	20.6	20.8	20.9	21.1	21.3	21.4	21.6	21.8	22.0	22.2	22.4	22.5
Peak Day Water Production (mgd):	87.0	87.6	88.2	88.8	89.3	89.9	90.5	91.1	91.7	92.4	93.0	93.7
Dry Weather Wastewater (mgd):	16.7	16.7	16.7	16.7	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
Design Wet Weather Wastewater: (mgd):	50.1	50.4	50.7	51.0	51.3	51.6	51.9	52.2	52.5	52.8	53.1	53.5

Operating Cost Savings

Modified Operating Costs Per mg

Type	Baseline Year Costs			Modified Unit Costs by Year											
	Transfer	Treatment	Total	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water	\$767	\$0	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Modified Total Operating Costs

Item	Baseline NPV	Modified NPV	NPV Savings	Modified Total Costs by Year											
				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water	\$256,352,104	\$256,008,880	\$343,224	\$11,611,959	\$11,675,784	\$11,732,053	\$11,789,613	\$11,848,829	\$11,899,874	\$11,956,794	\$12,015,529	\$12,076,118	\$12,138,517	\$12,202,679	\$12,268,558
Dry Weather Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total			\$343,224	\$11,611,959	\$11,675,784	\$11,732,053	\$11,789,613	\$11,848,829	\$11,899,874	\$11,956,794	\$12,015,529	\$12,076,118	\$12,138,517	\$12,202,679	\$12,268,558

Hot Water Savings

Number	End Use Identifier	Consumer Category	Temperature of Use (oF) (Blank if not heated)	Cost Per Degree Change Per Gallon	Hot Water Savings by Year (\$)												
					2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
1	FRR Toilets	Flat Rate Residential															
2	FRR Baths	Flat Rate Residential	100.0	\$1.50E-04	\$0	\$0	\$104	\$208	\$312	\$416	\$416	\$416	\$416	\$416	\$416	\$416	
3	FRR Showers	Flat Rate Residential	105.0	\$1.50E-04	\$0	\$0	\$1,247	\$2,469	\$3,670	\$4,849	\$4,807	\$4,727	\$4,690	\$4,654	\$4,620		
4	FRR Faucets	Flat Rate Residential	75.0	\$1.50E-04	\$0	\$0	\$340	\$680	\$1,020	\$1,360	\$1,360	\$1,360	\$1,360	\$1,360	\$1,360		
5	FRR Dishwashers	Flat Rate Residential	140.0	\$1.50E-04	\$0	\$0	\$173	\$347	\$520	\$693	\$693	\$693	\$693	\$693	\$693		
6	FRR Laundry	Flat Rate Residential	100.0	\$1.50E-04	\$0	\$0	\$1,357	\$2,715	\$4,072	\$5,348	\$5,270	\$5,195	\$5,122	\$5,053	\$4,986		
7	FRR Other	Flat Rate Residential															
8	FRR Int. Leakage	Flat Rate Residential															
9	FRR Irrigation	Flat Rate Residential															
10	FRR Pools	Flat Rate Residential															
11	FRR Wash-Down	Flat Rate Residential															
12	FRR Car Washing	Flat Rate Residential															
13	FRR Ext. Leakage	Flat Rate Residential															
14																	
15																	
16																	
17																	
18																	
19																	
20																	
Total Hot Water Savings:			(NPV):		\$207,474	\$0	\$0	\$3,221	\$6,419	\$9,594	\$12,666	\$12,546	\$12,430	\$12,319	\$12,213	\$12,110	\$12,011

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
44.0	44.3	44.5	44.8	45.0	45.3	45.6	45.9	46.2	46.4	46.7	47.0	47.4	47.7	48.0	48.3	48.7	49.0	49.3
22.7	22.9	23.1	23.3	23.5	23.7	23.9	24.1	24.3	24.5	24.8	25.0	25.2	25.4	25.6	25.8	26.1	26.3	26.5
94.4	95.0	95.7	96.4	97.1	97.8	98.5	99.3	100.0	100.8	101.5	102.3	103.1	103.9	104.7	105.5	106.3	107.1	108.0
16.9	16.9	16.9	16.9	17.0	17.0	17.1	17.1	17.2	17.2	17.3	17.4	17.4	17.5	17.6	17.6	17.7	17.8	17.9
53.8	54.1	54.5	54.8	55.2	55.6	55.9	56.3	56.7	57.1	57.5	57.9	58.3	58.7	59.2	59.6	60.0	60.5	60.9

Total Water Production Savings

Number	End Use Identifier	Consumer Category
1	RSF Toilets	Single Family
2	RSF Showers	Single Family
3	RSF Faucets	Single Family
4	RMF Toilets	Multi-Family
5	RMF Showers	Multi-Family
6	RMF Faucets	Multi-Family
7	RSF Toilets	Flat Rate Residential
8	RSF Showers	Flat Rate Residential
9	RSF Faucets	Flat Rate Residential
10		
11		
12		
13		
14		
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16		
17		
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19		
20		

Water Savings by Year (mgd)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
2	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
8	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
9	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
10												
11												
12												
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19												
20												
Total Water Savings (mgd):	0.00	0.00	0.02	0.04	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07
% Savings of Total Baseline Production:	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%

Total External Water Savings

Number	End Use Identifier	Consumer Category
1	RSF Toilets	Single Family
2	RSF Showers	Single Family
3	RSF Faucets	Single Family
4	RMF Toilets	Multi-Family
5	RMF Showers	Multi-Family
6	RMF Faucets	Multi-Family
7	RSF Toilets	Flat Rate Residential
8	RSF Showers	Flat Rate Residential
9	RSF Faucets	Flat Rate Residential
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

External Water Savings by Year (mgd)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
Total External Water Savings (mgd):	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Total Internal Water Savings

Number	End Use Identifier	Consumer Category	Wastewater Savings by Year (mgd)												
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
1	RSF Toilets	Single Family	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
2	RSF Showers	Single Family	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
3	RSF Faucets	Single Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	RMF Toilets	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	RMF Showers	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	RMF Faucets	Multi-Family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	RSF Toilets	Flat Rate Residential	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
8	RSF Showers	Flat Rate Residential	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
9	RSF Faucets	Flat Rate Residential	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
Total Internal Savings (mgd):			0.00	0.00	0.02	0.04	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07

Modified Forecasts

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Water Production (mgd):	41.4	41.7	41.9	42.1	42.3	42.5	42.7	42.9	43.1	43.3	43.5	43.8
External Consumption (mgd):	20.6	20.8	20.9	21.1	21.3	21.5	21.7	21.9	22.0	22.2	22.4	22.6
Peak Day Water Production (mgd):	87.0	87.6	88.2	88.8	89.4	90.0	90.6	91.2	91.9	92.5	93.2	93.8
Dry Weather Wastewater (mgd):	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.8	16.8
Design Wet Weather Wastewater (mgd):	50.1	50.4	50.7	51.0	51.3	51.5	51.8	52.1	52.4	52.8	53.1	53.4

Operating Cost Savings

Modified Operating Costs Per mg

Type	Baseline Year Costs		
	Transfer	Treatment	Total
Water	\$767	\$0	\$767
Wastewater	\$0	\$0	\$0

	Modified Unit Costs by Year											
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Modified Total Operating Costs

Item	Baseline NPV	Modified NPV	NPV Savings	Modified Total Costs by Year											
				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water	\$256,352,104	\$256,191,705	\$160,399	\$11,611,959	\$11,675,784	\$11,731,514	\$11,788,706	\$11,847,703	\$11,898,651	\$11,955,829	\$12,014,803	\$12,075,614	\$12,138,218	\$12,202,570	\$12,268,624
Dry Weather Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total			\$160,399	\$11,611,959	\$11,675,784	\$11,731,514	\$11,788,706	\$11,847,703	\$11,898,651	\$11,955,829	\$12,014,803	\$12,075,614	\$12,138,218	\$12,202,570	\$12,268,624

Hot Water Savings

Number	End Use Identifier	Consumer Category	Temperature of Use (oF)	Cost Per Degree Change Per Gallon	Hot Water Savings by Year (\$)												
					2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
1	RSF Toilets	Single Family															
2	RSF Showers	Single Family	105.0	\$1.50E-04	\$0	\$0	\$5,364	\$10,562	\$15,614	\$20,534	\$20,272	\$20,028	\$19,802	\$19,592	\$19,397	\$19,216	
3	RSF Faucets	Single Family	75.0	\$1.50E-04	\$0	\$0	\$848	\$1,697	\$2,545	\$3,394	\$3,394	\$3,394	\$3,394	\$3,394	\$3,394	\$3,394	
4	RMF Toilets	Multi-Family															
5	RMF Showers	Multi-Family	105.0	\$1.50E-04	\$0	\$0	\$2,370	\$4,686	\$6,952	\$9,171	\$9,077	\$8,989	\$8,823	\$8,747	\$8,674		
6	RMF Faucets	Multi-Family	75.0	\$1.50E-04	\$0	\$0	\$309	\$618	\$928	\$1,237	\$1,237	\$1,237	\$1,237	\$1,237	\$1,237	\$1,237	
7	RSF Toilets	Flat Rate Residential															
8	RSF Showers	Flat Rate Residential	105.0	\$1.50E-04	\$0	\$0	\$13,066	\$25,728	\$38,033	\$50,020	\$49,380	\$48,786	\$48,236	\$47,724	\$47,249	\$46,808	
9	RSF Faucets	Flat Rate Residential	75.0	\$1.50E-04	\$0	\$0	\$2,067	\$4,133	\$6,200	\$8,267	\$8,267	\$8,267	\$8,267	\$8,267	\$8,267	\$8,267	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	
Total Hot Water Savings:			(NPV):		\$715,795	\$0	\$0	\$24,025	\$47,426	\$70,272	\$92,623	\$91,626	\$90,700	\$89,839	\$89,038	\$88,291	\$87,595

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
44.0	44.3	44.6	44.8	45.1	45.4	45.7	45.9	46.2	46.5	46.8	47.1	47.4	47.7	48.1	48.4	48.7	49.1	49.4
22.8	23.0	23.2	23.4	23.6	23.8	24.0	24.2	24.4	24.6	24.8	25.0	25.2	25.5	25.7	25.9	26.1	26.3	26.6
94.5	95.2	95.9	96.6	97.3	98.0	98.8	99.5	100.2	101.0	101.7	102.5	103.3	104.1	104.9	105.7	106.5	107.4	108.2
16.8	16.9	16.9	17.0	17.0	17.0	17.1	17.1	17.2	17.2	17.3	17.4	17.4	17.5	17.6	17.6	17.7	17.8	17.9
53.8	54.1	54.5	54.9	55.2	55.6	56.0	56.3	56.7	57.1	57.5	57.9	58.3	58.7	59.2	59.6	60.0	60.5	60.9

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$12,341,152	\$12,415,211	\$12,490,772	\$12,567,807	\$12,641,637	\$12,716,956	\$12,794,014	\$12,872,796	\$12,953,266	\$13,035,385	\$13,119,118	\$13,204,432	\$13,291,297	\$13,379,683	\$13,469,564	\$13,560,915	\$13,653,714	\$13,747,938	\$13,843,569
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$12,341,152	\$12,415,211	\$12,490,772	\$12,567,807	\$12,641,637	\$12,716,956	\$12,794,014	\$12,872,796	\$12,953,266	\$13,035,385	\$13,119,118	\$13,204,432	\$13,291,297	\$13,379,683	\$13,469,564	\$13,560,915	\$13,653,714	\$13,747,938	\$13,843,569

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$14,285	\$9,445	\$4,686	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$2,545	\$1,697	\$848	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$6,454	\$4,269	\$2,119	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$928	\$618	\$309	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$34,797	\$23,007	\$11,414	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$6,200	\$4,133	\$2,067	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$65,209	\$43,170	\$21,444	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

End Use Reductions and Participants

Number	End Use Identifier	Consumer Category	Cumulative Number of Participating Accounts by Year											
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	FRR Toilets	Flat Rate Residential	0	0	2,523	5,046	7,569	10,092	12,616	15,139	17,662	20,185	22,708	25,231
2	FRR Baths	Flat Rate Residential	0	0	2,523	5,046	7,569	10,092	12,616	15,139	17,662	20,185	22,708	25,231
3	FRR Showers	Flat Rate Residential	0	0	2,523	5,046	7,569	10,092	12,616	15,139	17,662	20,185	22,708	25,231
4	FRR Faucets	Flat Rate Residential	0	0	2,523	5,046	7,569	10,092	12,616	15,139	17,662	20,185	22,708	25,231
5	FRR Dishwashers	Flat Rate Residential	0	0	2,523	5,046	7,569	10,092	12,616	15,139	17,662	20,185	22,708	25,231
6	FRR Laundry	Flat Rate Residential	0	0	2,523	5,046	7,569	10,092	12,616	15,139	17,662	20,185	22,708	25,231
7	FRR Other	Flat Rate Residential	0	0	2,523	5,046	7,569	10,092	12,616	15,139	17,662	20,185	22,708	25,231
8	FRR Int. Leakage	Flat Rate Residential	0	0	2,523	5,046	7,569	10,092	12,616	15,139	17,662	20,185	22,708	25,231
9	FRR Irrigation	Flat Rate Residential	0	0	2,523	5,046	7,569	10,092	12,616	15,139	17,662	20,185	22,708	25,231
10	FRR Pools	Flat Rate Residential	0	0	2,523	5,046	7,569	10,092	12,616	15,139	17,662	20,185	22,708	25,231
11	FRR Wash-Down	Flat Rate Residential	0	0	2,523	5,046	7,569	10,092	12,616	15,139	17,662	20,185	22,708	25,231
12	FRR Car Washing	Flat Rate Residential	0	0	2,523	5,046	7,569	10,092	12,616	15,139	17,662	20,185	22,708	25,231
13	FRR Ext. Leakage	Flat Rate Residential	0	0	2,523	5,046	7,569	10,092	12,616	15,139	17,662	20,185	22,708	25,231
14														
15														
16														
17														
18														
19														
20														
Percent Saturation (FRR):			0%	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Measure Impact Factors

Number	End Use Identifier	Consumer Category	Measure Impact Factor by Year											
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	FRR Toilets	Flat Rate Residential	1.00	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80
2	FRR Baths	Flat Rate Residential	1.00	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80
3	FRR Showers	Flat Rate Residential	1.00	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80
4	FRR Faucets	Flat Rate Residential	1.00	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80
5	FRR Dishwashers	Flat Rate Residential	1.00	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80
6	FRR Laundry	Flat Rate Residential	1.00	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80
7	FRR Other	Flat Rate Residential	1.00	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80
8	FRR Int. Leakage	Flat Rate Residential	1.00	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80
9	FRR Irrigation	Flat Rate Residential	1.00	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80
10	FRR Pools	Flat Rate Residential	1.00	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80
11	FRR Wash-Down	Flat Rate Residential	1.00	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80
12	FRR Car Washing	Flat Rate Residential	1.00	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80
13	FRR Ext. Leakage	Flat Rate Residential	1.00	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80
14														
15														
16														
17														
18														
19														
20														

Total Water Production Savings

Number	End Use Identifier	Consumer Category	Water Savings by Year (mgd)											
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	FRR Toilets	Flat Rate Residential	0.00	0.00	0.02	0.05	0.07	0.09	0.11	0.13	0.14	0.16	0.18	0.20
2	FRR Baths	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
3	FRR Showers	Flat Rate Residential	0.00	0.00	0.01	0.03	0.04	0.06	0.07	0.08	0.10	0.11	0.12	0.14
4	FRR Faucets	Flat Rate Residential	0.00	0.00	0.01	0.03	0.04	0.05	0.07	0.08	0.09	0.11	0.12	0.13
5	FRR Dishwashers	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
6	FRR Laundry	Flat Rate Residential	0.00	0.00	0.02	0.04	0.05	0.07	0.09	0.10	0.12	0.14	0.15	0.16
7	FRR Other	Flat Rate Residential	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02
8	FRR Int. Leakage	Flat Rate Residential	0.00	0.00	0.01	0.02	0.04	0.05	0.06	0.07	0.08	0.10	0.11	0.12
9	FRR Irrigation	Flat Rate Residential	0.00	0.00	0.16	0.32	0.49	0.65	0.81	0.97	1.14	1.30	1.46	1.62
10	FRR Pools	Flat Rate Residential	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10
11	FRR Wash-Down	Flat Rate Residential	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10
12	FRR Car Washing	Flat Rate Residential	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10
13	FRR Ext. Leakage	Flat Rate Residential	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10
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20														
Total Water Savings (mgd):			0.00	0.00	0.29	0.58	0.86	1.15	1.43	1.71	1.99	2.27	2.55	2.83
% Savings of Total Baseline Production:			0.0%	0.0%	0.7%	1.4%	2.0%	2.7%	3.3%	4.0%	4.6%	5.2%	5.8%	6.4%

Total External Water Savings

Number	End Use Identifier	Consumer Category	External Water Savings by Year (mgd)													
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
1	FRR Toilets	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	FRR Baths	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	FRR Showers	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	FRR Faucets	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	FRR Dishwashers	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	FRR Laundry	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	FRR Other	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	FRR Int. Leakage	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	FRR Irrigation	Flat Rate Residential	0.00	0.00	0.16	0.32	0.49	0.65	0.81	0.97	1.14	1.30	1.46	1.62	1.78	1.94
10	FRR Pools	Flat Rate Residential	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12
11	FRR Wash-Down	Flat Rate Residential	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12
12	FRR Car Washing	Flat Rate Residential	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12
13	FRR Ext. Leakage	Flat Rate Residential	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12
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20																
Total External Water Savings (mgd):			0.00	0.00	0.20	0.41	0.61	0.81	1.02	1.22	1.42	1.62	1.83	2.03	2.23	2.43

Total Internal Water Savings

Number	End Use Identifier	Consumer Category	Wastewater Savings by Year (mgd)													
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
1	FRR Toilets	Flat Rate Residential	0.00	0.00	0.02	0.05	0.07	0.09	0.11	0.13	0.14	0.16	0.18	0.20	0.21	0.22
2	FRR Baths	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
3	FRR Showers	Flat Rate Residential	0.00	0.00	0.01	0.03	0.04	0.06	0.07	0.08	0.10	0.11	0.12	0.14	0.15	0.16
4	FRR Faucets	Flat Rate Residential	0.00	0.00	0.01	0.03	0.04	0.05	0.07	0.08	0.09	0.11	0.12	0.13	0.14	0.15
5	FRR Dishwashers	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
6	FRR Laundry	Flat Rate Residential	0.00	0.00	0.02	0.04	0.05	0.07	0.09	0.10	0.12	0.14	0.15	0.16	0.17	0.18
7	FRR Other	Flat Rate Residential	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
8	FRR Int. Leakage	Flat Rate Residential	0.00	0.00	0.01	0.02	0.04	0.05	0.06	0.07	0.08	0.10	0.11	0.12	0.13	0.14
9	FRR Irrigation	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	FRR Pools	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	FRR Wash-Down	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	FRR Car Washing	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	FRR Ext. Leakage	Flat Rate Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14																
15																
16																
17																
18																
19																
20																
Total Internal Savings (mgd):			0.00	0.00	0.09	0.17	0.25	0.34	0.42	0.49	0.57	0.65	0.72	0.80	0.88	0.96

Modified Forecasts

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Water Production (mgd):	41.4	41.7	41.6	41.5	41.5	41.4	41.3	41.2	41.2	41.1	41.1	41.0
External Consumption (mgd):	20.6	20.8	20.7	20.7	20.7	20.7	20.7	20.6	20.6	20.6	20.6	20.6
Peak Day Water Production (mgd):	87.0	87.6	87.5	87.4	87.3	87.1	87.0	86.9	86.8	86.7	86.6	86.6
Dry Weather Wastewater (mgd):	16.7	16.7	16.6	16.6	16.5	16.4	16.4	16.3	16.2	16.2	16.1	16.0
Design Wet Weather Wastewater (mgd):	50.1	50.4	50.6	50.8	51.1	51.3	51.5	51.7	51.9	52.2	52.4	52.7

Operating Cost Savings

Modified Operating Costs Per mg

Type	Baseline Year Costs			Modified Unit Costs by Year											
	Transfer	Treatment	Total	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water	\$767	\$0	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Modified Total Operating Costs

Item	Baseline NPV	Modified NPV	NPV Savings	Modified Total Costs by Year											
				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water	\$256,352,104	\$244,829,454	\$11,522,650	\$11,611,959	\$11,675,784	\$11,656,039	\$11,637,905	\$11,621,725	\$11,597,952	\$11,575,538	\$11,555,327	\$11,537,334	\$11,521,494	\$11,507,737	\$11,496,000
Dry Weather Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total				\$11,522,650	\$11,611,959	\$11,675,784	\$11,656,039	\$11,637,905	\$11,621,725	\$11,597,952	\$11,575,538	\$11,555,327	\$11,537,334	\$11,521,494	\$11,507,737

Hot Water Savings

Number	End Use Identifier	Consumer Category	Temperature of Use (oF) (Blank if not heated)	Cost Per Degree Change Per Gallon	Hot Water Savings by Year (\$)													
					2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
1	FRR Toilets	Flat Rate Residential																
2	FRR Baths	Flat Rate Residential																
3	FRR Showers	Flat Rate Residential																
4	FRR Faucets	Flat Rate Residential																
5	FRR Dishwashers	Flat Rate Residential																
6	FRR Laundry	Flat Rate Residential																
7	FRR Other	Flat Rate Residential																
8	FRR Int. Leakage	Flat Rate Residential																
9	FRR Irrigation	Flat Rate Residential																
10	FRR Pools	Flat Rate Residential																
11	FRR Wash-Down	Flat Rate Residential																
12	FRR Car Washing	Flat Rate Residential																
13	FRR Ext. Leakage	Flat Rate Residential																
14																		
15																		
16																		
17																		
18																		
19																		
20																		
Total Hot Water Savings:			(NPV):		\$11,903,353	\$0	\$0	\$89,892	\$179,120	\$267,724	\$353,461	\$437,626	\$520,314	\$601,613	\$681,604	\$760,363	\$837,958	

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62
0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
0.19	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.14	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.12	0.12	0.12
0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.79	0.78	0.78	0.77	0.77	0.76	0.76	0.75	0.75	0.74	0.74	0.74	0.73	0.73	0.73	0.72	0.72	0.72	0.71

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
41.3	41.5	41.8	42.0	42.3	42.6	42.9	43.2	43.4	43.7	44.0	44.4	44.7	45.0	45.3	45.6	46.0	46.3	46.7
20.8	21.0	21.2	21.4	21.6	21.8	22.0	22.2	22.4	22.6	22.8	23.0	23.2	23.4	23.6	23.9	24.1	24.3	24.5
87.2	87.9	88.6	89.3	90.0	90.7	91.5	92.2	93.0	93.7	94.5	95.3	96.0	96.8	97.6	98.5	99.3	100.1	101.0
16.1	16.1	16.1	16.2	16.2	16.3	16.3	16.4	16.4	16.5	16.6	16.6	16.7	16.8	16.8	16.9	17.0	17.1	17.2
53.0	53.4	53.7	54.1	54.4	54.8	55.2	55.6	56.0	56.4	56.8	57.2	57.6	58.0	58.4	58.9	59.3	59.8	60.2

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$11,565,253	\$11,636,073	\$11,708,424	\$11,782,272	\$11,857,586	\$11,934,336	\$12,012,754	\$12,092,830	\$12,174,530	\$12,257,819	\$12,342,666	\$12,429,039	\$12,516,912	\$12,606,258	\$12,697,052	\$12,789,274	\$12,882,901	\$12,977,915	\$13,074,298
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$11,565,253	\$11,636,073	\$11,708,424	\$11,782,272	\$11,857,586	\$11,934,336	\$12,012,754	\$12,092,830	\$12,174,530	\$12,257,819	\$12,342,666	\$12,429,039	\$12,516,912	\$12,606,258	\$12,697,052	\$12,789,274	\$12,882,901	\$12,977,915	\$13,074,298

End Use Reductions and Participants

Number	End Use Identifier	Consumer Category
1	COM Irrigation	Commercial
2	IND Irrigation	Industrial
3	INS Irrigation	Institutional
4	IRR Outdoor	Irrigation
5		
6		
7		
8		
9		
10		
11		
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19		
20		

Cumulative Number of Participating Accounts by Year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0	0	1	3	4	5	5	5	5	5	6	6
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5												
6												
7												
8												
9												
10												
11												
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17												
18												
19												
20												

Percent Saturation (COM): 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%
 Percent Saturation (IND): 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%

Measure Impact Factors

Number	End Use Identifier	Consumer Category
1	COM Irrigation	Commercial
2	IND Irrigation	Industrial
3	INS Irrigation	Institutional
4	IRR Outdoor	Irrigation
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
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19		
20		

Measure Impact Factor by Year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99
2	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												

Total Water Production Savings

Number	End Use Identifier	Consumer Category
1	COM Irrigation	Commercial
2	IND Irrigation	Industrial
3	INS Irrigation	Institutional
4	IRR Outdoor	Irrigation
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Total Water Savings (mgd):
 % Savings of Total Baseline Production:

Water Savings by Year (mgd)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
Total	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02
% Savings	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Total External Water Savings

Number	End Use Identifier	Consumer Category
1	COM Irrigation	Commercial
2	IND Irrigation	Industrial
3	INS Irrigation	Institutional
4	IRR Outdoor	Irrigation
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Total External Water Savings (mgd):

External Water Savings by Year (mgd)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
Total	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02

Total Internal Water Savings

Number	End Use Identifier	Consumer Category
1	COM Irrigation	Commercial
2	IND Irrigation	Industrial
3	INS Irrigation	Institutional
4	IRR Outdoor	Irrigation
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Total Internal Savings (mgd):

Wastewater Savings by Year (mgd)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Modified Forecasts

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Water Production (mgd):	41.4	41.7	41.9	42.1	42.3	42.5	42.7	42.9	43.1	43.4	43.6	43.8
External Consumption (mgd):	20.6	20.8	20.9	21.1	21.3	21.5	21.7	21.8	22.0	22.2	22.4	22.6
Peak Day Water Production (mgd):	87.0	87.6	88.2	88.8	89.4	90.0	90.6	91.3	91.9	92.5	93.2	93.8
Dry Weather Wastewater (mgd):	16.7	16.7	16.7	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
Design Wet Weather Wastewater: (mgd):	50.1	50.4	50.7	51.0	51.3	51.6	51.9	52.2	52.5	52.8	53.1	53.5

Operating Cost Savings

Modified Operating Costs Per mg

Type	Baseline Year Costs			Modified Unit Costs by Year											
	Transfer	Treatment	Total	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water	\$767	\$0	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Modified Total Operating Costs

Item	Baseline NPV	Modified NPV	NPV Savings	Modified Total Costs by Year											
				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water	\$256,352,104	\$256,260,841	\$91,263	\$11,611,959	\$11,675,784	\$11,735,713	\$11,796,919	\$11,859,764	\$11,914,414	\$11,971,287	\$12,029,976	\$12,090,520	\$12,152,876	\$12,216,995	\$12,282,832
Dry Weather Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total			\$91,263	\$11,611,959	\$11,675,784	\$11,735,713	\$11,796,919	\$11,859,764	\$11,914,414	\$11,971,287	\$12,029,976	\$12,090,520	\$12,152,876	\$12,216,995	\$12,282,832

Hot Water Savings

Number	End Use Identifier	Consumer Category	Temperature of Use (oF) (Blank if not heated)	Cost Per Degree Change Per Gallon	Hot Water Savings by Year (\$)											
					2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	COM Irrigation	Commercial														
2	IND Irrigation	Industrial														
3	INS Irrigation	Institutional														
4	IRR Outdoor	Irrigation														
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
Total Hot Water Savings:			(NPV):	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

By End Use Consumption				Large Landscape Data					
Irrigation (gpd/acc)	Irrigation (gpd)	Appl. Rate* (ft/yr)	Area (acres)	Number of Accounts > 1 ac	Avg Area (acres/site)	Area (acres)	Appl. Rate* (ft/yr)	Irrigation (gpd)	Irrigation (gpd/acc)
844	3,458,935	4.0	960	90	6.3	563	4.0	2,030,170	22,557
748	180,981	4.0	50	0	0.0	0	4.0	0	0
1,191	70,298	4.0	20	0	0.0	0	4.0	0	0
801	76,922	4.0	21	0	0.0	0	4.0	0	0
322	8,124,382	4.0	2,254	0	0.0	0	4.0	0	0
			3,305			563			

Acres Audited Per Year = 826.2

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$6,087	\$6,093	\$6,099	\$6,106	\$6,112	\$6,118	\$6,125	\$6,131	\$6,137	\$6,144	\$6,150	\$6,157	\$6,163	\$6,170	\$6,176	\$6,183	\$6,189	\$6,196	\$6,202
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

End Use Reductions and Participants

Number	End Use Identifier	Consumer Category
1	COM Process	Commercial
2	COM Toilets	Commercial
3	COM Showers	Commercial
4	COM Faucets	Commercial
5	COM Dishwashers	Commercial
6	COM Laundry	Commercial
7	COM Int. Leakage	Commercial
8	COM Irrigation	Commercial
9	COM Pools/Fountains	Commercial
10	COM Wash-Down	Commercial
11	COM Car Washing	Commercial
12	COM Ext. Leakage	Commercial
13		
14		
15		
16		
17		
18		
19		
20		

Cumulative Number of Participating Accounts by Year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0	0	60	119	179	238	238	238	238	238	238	238
2	0	0	60	119	179	238	238	238	238	238	238	238
3	0	0	60	119	179	238	238	238	238	238	238	238
4	0	0	60	119	179	238	238	238	238	238	238	238
5	0	0	60	119	179	238	238	238	238	238	238	238
6	0	0	60	119	179	238	238	238	238	238	238	238
7	0	0	60	119	179	238	238	238	238	238	238	238
8	0	0	60	119	179	238	238	238	238	238	238	238
9	0	0	60	119	179	238	238	238	238	238	238	238
10	0	0	60	119	179	238	238	238	238	238	238	238
11	0	0	60	119	179	238	238	238	238	238	238	238
12	0	0	60	119	179	238	238	238	238	238	238	238
13												
14												
15												
16												
17												
18												
19												
20												
Percent Saturation (COM):	0%	0%	1%	3%	4%	6%	6%	6%	6%	6%	6%	6%

Measure Impact Factors

Number	End Use Identifier	Consumer Category
1	COM Process	Commercial
2	COM Toilets	Commercial
3	COM Showers	Commercial
4	COM Faucets	Commercial
5	COM Dishwashers	Commercial
6	COM Laundry	Commercial
7	COM Int. Leakage	Commercial
8	COM Irrigation	Commercial
9	COM Pools/Fountains	Commercial
10	COM Wash-Down	Commercial
11	COM Car Washing	Commercial
12	COM Ext. Leakage	Commercial
13		
14		
15		
16		
17		
18		
19		
20		

Measure Impact Factor by Year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
2	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
3	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
4	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
5	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
6	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
7	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
8	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
9	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
10	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
11	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
12	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
13												
14												
15												
16												
17												
18												
19												
20												

Total Water Production Savings

Number	End Use Identifier	Consumer Category
1	COM Process	Commercial
2	COM Toilets	Commercial
3	COM Showers	Commercial
4	COM Faucets	Commercial
5	COM Dishwashers	Commercial
6	COM Laundry	Commercial
7	COM Int. Leakage	Commercial
8	COM Irrigation	Commercial
9	COM Pools/Fountains	Commercial
10	COM Wash-Down	Commercial
11	COM Car Washing	Commercial
12	COM Ext. Leakage	Commercial
13		
14		
15		
16		
17		
18		
19		
20		

Water Savings by Year (mgd)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0.00	0.00	0.01	0.01	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13												
14												
15												
16												
17												
18												
19												
20												
Total Water Savings (mgd):	0.00	0.00	0.02	0.04	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07
% Savings of Total Baseline Production:	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%

Total External Water Savings

Number	End Use Identifier	Consumer Category
1	COM Process	Commercial
2	COM Toilets	Commercial
3	COM Showers	Commercial
4	COM Faucets	Commercial
5	COM Dishwashers	Commercial
6	COM Laundry	Commercial
7	COM Int. Leakage	Commercial
8	COM Irrigation	Commercial
9	COM Pools/Fountains	Commercial
10	COM Wash-Down	Commercial
11	COM Car Washing	Commercial
12	COM Ext. Leakage	Commercial
13		
14		
15		
16		
17		
18		
19		
20		

External Water Savings by Year (mgd)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13												
14												
15												
16												
17												
18												
19												
20												
Total External Water Savings (mgd):	0.00	0.00	0.01	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03

Total Internal Water Savings

Number	End Use Identifier	Consumer Category	Wastewater Savings by Year (mgd)												
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
1	COM Process	Commercial	0.00	0.00	0.01	0.01	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
2	COM Toilets	Commercial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	COM Showers	Commercial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	COM Faucets	Commercial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	COM Dishwashers	Commercial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	COM Laundry	Commercial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	COM Int. Leakage	Commercial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	COM Irrigation	Commercial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	COM Pools/Fountains	Commercial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	COM Wash-Down	Commercial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	COM Car Washing	Commercial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	COM Ext. Leakage	Commercial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13															
14															
15															
16															
17															
18															
19															
20															
Total Internal Savings (mgd):			0.00	0.00	0.01	0.02	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04

Modified Forecasts

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Water Production (mgd):	41.4	41.7	41.9	42.1	42.3	42.5	42.7	42.9	43.1	43.3	43.5	43.8
External Consumption (mgd):	20.6	20.8	20.9	21.1	21.3	21.5	21.6	21.8	22.0	22.2	22.4	22.6
Peak Day Water Production (mgd):	87.0	87.6	88.2	88.8	89.4	89.9	90.6	91.2	91.8	92.4	93.1	93.7
Dry Weather Wastewater (mgd):	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.8	16.8	16.8
Design Wet Weather Wastewater (mgd):	50.1	50.4	50.7	51.0	51.3	51.6	51.9	52.2	52.5	52.8	53.1	53.4

Operating Cost Savings

Modified Operating Costs Per mg

Type	Baseline Year Costs		
	Transfer	Treatment	Total
Water	\$767	\$0	\$767
Wastewater	\$0	\$0	\$0

Modified Unit Costs by Year												
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Modified Total Operating Costs

Item	Baseline NPV	Modified NPV	NPV Savings	Modified Total Costs by Year											
				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water	\$256,352,104	\$256,045,718	\$306,386	\$11,611,959	\$11,675,784	\$11,731,724	\$11,788,958	\$11,847,849	\$11,898,560	\$11,955,473	\$12,014,201	\$12,074,783	\$12,137,175	\$12,201,331	\$12,267,202
Dry Weather Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total			\$306,386	\$11,611,959	\$11,675,784	\$11,731,724	\$11,788,958	\$11,847,849	\$11,898,560	\$11,955,473	\$12,014,201	\$12,074,783	\$12,137,175	\$12,201,331	\$12,267,202

Hot Water Savings

Number	End Use Identifier	Consumer Category	Temperature of Use (oF) (Blank if not heated)	Cost Per Degree Change Per Gallon	Hot Water Savings by Year (\$)											
					2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	COM Process	Commercial														
2	COM Toilets	Commercial														
3	COM Showers	Commercial	105.0	\$1.50E-04	\$0	\$0	\$1,333	\$2,666	\$3,999	\$5,333	\$5,333	\$5,333	\$5,333	\$5,333	\$5,333	\$5,333
4	COM Faucets	Commercial	75.0	\$1.50E-04	\$0	\$0	\$403	\$806	\$1,209	\$1,612	\$1,612	\$1,612	\$1,612	\$1,612	\$1,612	\$1,612
5	COM Dishwashers	Commercial	140.0	\$1.50E-04	\$0	\$0	\$1,451	\$2,902	\$4,353	\$5,804	\$5,804	\$5,804	\$5,804	\$5,804	\$5,804	\$5,804
6	COM Laundry	Commercial	100.0	\$1.50E-04	\$0	\$0	\$2,356	\$4,713	\$7,069	\$9,425	\$9,425	\$9,425	\$9,425	\$9,425	\$9,425	\$9,425
7	COM Int. Leakage	Commercial														
8	COM Irrigation	Commercial														
9	COM Pools/Fountains	Commercial														
10	COM Wash-Down	Commercial														
11	COM Car Washing	Commercial														
12	COM Ext. Leakage	Commercial														
13																
14																
15																
16																
17																
18																
19																
20																
Total Hot Water Savings:			(NPV):		\$326,042	\$0	\$0	\$5,543	\$11,087	\$16,630	\$22,174	\$22,174	\$22,174	\$22,174	\$22,174	\$22,174

End Use Reductions and Participants

Number	End Use Identifier	Consumer Category
1	IND Process	Industrial
2	IND Toilets	Industrial
3	IND Showers	Industrial
4	IND Faucets	Industrial
5	IND Dishwashers	Industrial
6	IND Laundry	Industrial
7	IND Int. Leakage	Industrial
8	IND Irrigation	Industrial
9	IND Pools/Fountains	Industrial
10	IND Wash-Down	Industrial
11	IND Car Washing	Industrial
12	IND Ext. Leakage	Industrial
13		
14		
15		
16		
17		
18		
19		
20		

Cumulative Number of Participating Accounts by Year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0	0	4	7	11	15	15	15	15	15	15	15
2	0	0	4	7	11	15	15	15	15	15	15	15
3	0	0	4	7	11	15	15	15	15	15	15	15
4	0	0	4	7	11	15	15	15	15	15	15	15
5	0	0	4	7	11	15	15	15	15	15	15	15
6	0	0	4	7	11	15	15	15	15	15	15	15
7	0	0	4	7	11	15	15	15	15	15	15	15
8	0	0	4	7	11	15	15	15	15	15	15	15
9	0	0	4	7	11	15	15	15	15	15	15	15
10	0	0	4	7	11	15	15	15	15	15	15	15
11	0	0	4	7	11	15	15	15	15	15	15	15
12	0	0	4	7	11	15	15	15	15	15	15	15
13												
14												
15												
16												
17												
18												
19												
20												
Percent Saturation (IND):	0%	0%	1%	3%	4%	6%	6%	6%	6%	6%	6%	6%

Measure Impact Factors

Number	End Use Identifier	Consumer Category
1	IND Process	Industrial
2	IND Toilets	Industrial
3	IND Showers	Industrial
4	IND Faucets	Industrial
5	IND Dishwashers	Industrial
6	IND Laundry	Industrial
7	IND Int. Leakage	Industrial
8	IND Irrigation	Industrial
9	IND Pools/Fountains	Industrial
10	IND Wash-Down	Industrial
11	IND Car Washing	Industrial
12	IND Ext. Leakage	Industrial
13		
14		
15		
16		
17		
18		
19		
20		

Measure Impact Factor by Year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
2	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
3	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
4	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
5	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
6	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
7	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
8	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
9	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
10	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
11	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
12	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
13												
14												
15												
16												
17												
18												
19												
20												

Total Water Production Savings

Number	End Use Identifier	Consumer Category
1	IND Process	Industrial
2	IND Toilets	Industrial
3	IND Showers	Industrial
4	IND Faucets	Industrial
5	IND Dishwashers	Industrial
6	IND Laundry	Industrial
7	IND Int. Leakage	Industrial
8	IND Irrigation	Industrial
9	IND Pools/Fountains	Industrial
10	IND Wash-Down	Industrial
11	IND Car Washing	Industrial
12	IND Ext. Leakage	Industrial
13		
14		
15		
16		
17		
18		
19		
20		

Water Savings by Year (mgd)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13												
14												
15												
16												
17												
18												
19												
20												
Total Water Savings (mgd):	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
% Savings of Total Baseline Production:	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Total External Water Savings

Number	End Use Identifier	Consumer Category
1	IND Process	Industrial
2	IND Toilets	Industrial
3	IND Showers	Industrial
4	IND Faucets	Industrial
5	IND Dishwashers	Industrial
6	IND Laundry	Industrial
7	IND Int. Leakage	Industrial
8	IND Irrigation	Industrial
9	IND Pools/Fountains	Industrial
10	IND Wash-Down	Industrial
11	IND Car Washing	Industrial
12	IND Ext. Leakage	Industrial
13		
14		
15		
16		
17		
18		
19		
20		
Total External Water Savings (mgd):		

External Water Savings by Year (mgd)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13												
14												
15												
16												
17												
18												
19												
20												
Total External Water Savings (mgd):												

Total Internal Water Savings

Number	End Use Identifier	Consumer Category
1	IND Process	Industrial
2	IND Toilets	Industrial
3	IND Showers	Industrial
4	IND Faucets	Industrial
5	IND Dishwashers	Industrial
6	IND Laundry	Industrial
7	IND Int. Leakage	Industrial
8	IND Irrigation	Industrial
9	IND Pools/Fountains	Industrial
10	IND Wash-Down	Industrial
11	IND Car Washing	Industrial
12	IND Ext. Leakage	Industrial
13		
14		
15		
16		
17		
18		
19		
20		
Total Internal Savings (mgd):		

Wastewater Savings by Year (mgd)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13												
14												
15												
16												
17												
18												
19												
20												
Total Internal Savings (mgd):												

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
44.1	44.3	44.6	44.8	45.1	45.4	45.7	45.9	46.2	46.5	46.8	47.1	47.4	47.7	48.1	48.4	48.7	49.1	49.4
22.8	23.0	23.2	23.4	23.6	23.8	24.0	24.2	24.4	24.6	24.8	25.0	25.2	25.5	25.7	25.9	26.1	26.3	26.6
94.5	95.2	95.9	96.6	97.3	98.0	98.7	99.5	100.2	101.0	101.7	102.5	103.3	104.1	104.9	105.7	106.5	107.3	108.2
16.9	16.9	16.9	17.0	17.0	17.0	17.1	17.1	17.2	17.2	17.3	17.4	17.4	17.5	17.6	17.6	17.7	17.8	17.9
53.8	54.2	54.5	54.9	55.2	55.6	56.0	56.3	56.7	57.1	57.5	57.9	58.3	58.7	59.2	59.6	60.0	60.5	60.9

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$12,353,838	\$12,423,141	\$12,494,036	\$12,566,487	\$12,640,312	\$12,715,628	\$12,792,682	\$12,871,460	\$12,951,926	\$13,034,041	\$13,117,770	\$13,203,080	\$13,289,940	\$13,378,322	\$13,468,199	\$13,559,546	\$13,652,341	\$13,746,561	\$13,842,188
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$12,353,838	\$12,423,141	\$12,494,036	\$12,566,487	\$12,640,312	\$12,715,628	\$12,792,682	\$12,871,460	\$12,951,926	\$13,034,041	\$13,117,770	\$13,203,080	\$13,289,940	\$13,378,322	\$13,468,199	\$13,559,546	\$13,652,341	\$13,746,561	\$13,842,188

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$517	\$474	\$431	\$389	\$390	\$391	\$392	\$393	\$395	\$396	\$397	\$398	\$399	\$400	\$402	\$403	\$404	\$405	\$407
\$156	\$143	\$130	\$117	\$118	\$118	\$119	\$119	\$119	\$120	\$120	\$120	\$121	\$121	\$121	\$122	\$122	\$123	\$123
\$937	\$859	\$782	\$705	\$707	\$709	\$711	\$713	\$716	\$718	\$720	\$722	\$724	\$726	\$729	\$731	\$733	\$735	\$737
\$913	\$837	\$762	\$687	\$689	\$691	\$693	\$695	\$697	\$699	\$701	\$704	\$706	\$708	\$710	\$712	\$714	\$716	\$719
\$2,523	\$2,313	\$2,105	\$1,898	\$1,904	\$1,909	\$1,915	\$1,921	\$1,927	\$1,933	\$1,938	\$1,944	\$1,950	\$1,956	\$1,962	\$1,968	\$1,974	\$1,979	\$1,985

End Use Reductions and Participants

Number	End Use Identifier	Consumer Category
1	INS Process	Institutional
2	INS Toilets	Institutional
3	INS Showers	Institutional
4	INS Faucets	Institutional
5	INS Dishwashers	Institutional
6	INS Int. Leakage	Institutional
7	INS Irrigation	Institutional
8	INS Pools/Fountains	Institutional
9	INS Wash-Down	Institutional
10	INS Car Washing	Institutional
11	INS Ext. Leakage	Institutional
12		
13		
14		
15		
16		
17		
18		
19		
20		

Cumulative Number of Participating Accounts by Year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0	0	1	2	3	4	4	4	4	4	4	4
2	0	0	1	2	3	4	4	4	4	4	4	4
3	0	0	1	2	3	4	4	4	4	4	4	4
4	0	0	1	2	3	4	4	4	4	4	4	4
5	0	0	1	2	3	4	4	4	4	4	4	4
6	0	0	1	2	3	4	4	4	4	4	4	4
7	0	0	1	2	3	4	4	4	4	4	4	4
8	0	0	1	2	3	4	4	4	4	4	4	4
9	0	0	1	2	3	4	4	4	4	4	4	4
10	0	0	1	2	3	4	4	4	4	4	4	4
11	0	0	1	2	3	4	4	4	4	4	4	4
12												
13												
14												
15												
16												
17												
18												
19												
20												
Percent Saturation (IND):	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%

Measure Impact Factors

Number	End Use Identifier	Consumer Category
1	INS Process	Institutional
2	INS Toilets	Institutional
3	INS Showers	Institutional
4	INS Faucets	Institutional
5	INS Dishwashers	Institutional
6	INS Int. Leakage	Institutional
7	INS Irrigation	Institutional
8	INS Pools/Fountains	Institutional
9	INS Wash-Down	Institutional
10	INS Car Washing	Institutional
11	INS Ext. Leakage	Institutional
12		
13		
14		
15		
16		
17		
18		
19		
20		

Measure Impact Factor by Year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
2	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
3	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
4	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
5	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
6	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
7	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
8	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
9	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
10	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
11	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
12												
13												
14												
15												
16												
17												
18												
19												
20												

Total Internal Water Savings

Number	End Use Identifier	Consumer Category	Wastewater Savings by Year (mgd)												
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
1	INS Process	Institutional	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	INS Toilets	Institutional	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	INS Showers	Institutional	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	INS Faucets	Institutional	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	INS Dishwashers	Institutional	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	INS Int. Leakage	Institutional	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	INS Irrigation	Institutional	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	INS Pools/Fountains	Institutional	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	INS Wash-Down	Institutional	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	INS Car Washing	Institutional	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	INS Ext. Leakage	Institutional	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12															
13															
14															
15															
16															
17															
18															
19															
20															
Total Internal Savings (mgd):			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Modified Forecasts

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Water Production (mgd):	41.4	41.7	41.9	42.1	42.3	42.5	42.7	42.9	43.2	43.4	43.6	43.8
External Consumption (mgd):	20.6	20.8	20.9	21.1	21.3	21.5	21.7	21.9	22.0	22.2	22.4	22.6
Peak Day Water Production (mgd):	87.0	87.6	88.2	88.9	89.5	90.1	90.7	91.3	91.9	92.6	93.2	93.9
Dry Weather Wastewater (mgd):	16.7	16.7	16.7	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
Design Wet Weather Wastewater (mgd):	50.1	50.4	50.7	51.0	51.3	51.6	51.9	52.2	52.5	52.8	53.1	53.5

Operating Cost Savings

Modified Operating Costs Per mg

Type	Baseline Year Costs		
	Transfer	Treatment	Total
Water	\$767	\$0	\$767
Wastewater	\$0	\$0	\$0

Modified Unit Costs by Year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Modified Total Operating Costs

Item	Baseline NPV	Modified NPV	NPV Savings	Modified Total Costs by Year											
				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water	\$256,352,104	\$256,348,224	\$3,880	\$11,611,959	\$11,675,784	\$11,736,930	\$11,799,356	\$11,863,426	\$11,919,304	\$11,976,192	\$12,034,897	\$12,095,457	\$12,157,828	\$12,221,963	\$12,287,815
Dry Weather Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total			\$3,880	\$11,611,959	\$11,675,784	\$11,736,930	\$11,799,356	\$11,863,426	\$11,919,304	\$11,976,192	\$12,034,897	\$12,095,457	\$12,157,828	\$12,221,963	\$12,287,815

Hot Water Savings

Number	End Use Identifier	Consumer Category	Temperature of Use (oF) (Blank if not heated)	Cost Per Degree Change Per Gallon	Hot Water Savings by Year (\$)										
					2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1	INS Process	Institutional													
2	INS Toilets	Institutional													
3	INS Showers	Institutional	105.0	\$1.50E-04	\$0	\$0	\$16	\$32	\$48	\$64	\$64	\$64	\$64	\$64	\$64
4	INS Faucets	Institutional	75.0	\$1.50E-04	\$0	\$0	\$5	\$10	\$14	\$19	\$19	\$19	\$19	\$19	\$19
5	INS Dishwashers	Institutional	140.0	\$1.50E-04	\$0	\$0	\$14	\$29	\$43	\$58	\$58	\$58	\$58	\$58	\$58
6	INS Int. Leakage	Institutional													
7	INS Irrigation	Institutional													
8	INS Pools/Fountains	Institutional													
9	INS Wash-Down	Institutional													
10	INS Car Washing	Institutional													
11	INS Ext. Leakage	Institutional													
12															
13															
14															
15															
16															
17															
18															
19															
20															
Total Hot Water Savings:			(NPV):		\$2,163	\$0	\$0	\$35	\$71	\$106	\$141	\$141	\$141	\$141	\$141

Demand Management Least Cost Planning Decision Support System
Fixture Model - Retrofit and Code Measures

CUWCC #14 - RSF Toilet Replacement

Results Summary

Present Value of Water Utility Benefits:	\$170,673
Present Value of Total Community Benefits:	\$170,673
Present Value of Water Utility Costs:	\$416,765
Present Value of Total Community Costs:	\$449,872
Water Utility Benefit Cost Ratio:	0.41
Total Community Benefit Cost Ratio:	0.38
Average Water Savings (mgd):	0.03
Cost of Savings per Unit Volume (\$/mg):	\$1,172.90

Model Setup Data

End Use Identifier:	RSF Toilets
Consumer Category:	Single Family
Account User Forecast:	RSF Household Size
Starting Year for Forecasts:	2004
Internal or External End Use?:	Internal
Temperature of Use (oF) (Blank if not heated):	
Cost Per Degree Change Per Gallon:	

Model Parameters

Appliance Data

Type	Name	Volume per Use (Gallons)	Initial Proportions
New	Ultra Low Flush	1.8	32.5%
Intermediate	Low Flush	3.5	21.3%
Old	High Flush	5	46.1%
Total			100.0%

End Use Data

Baseline Mean No. of Uses Per User Per Day:	5,350	<i>AWWARF average is 5.05 (range: 4.5 to 5.6)</i>
Fixture Model Initial Consumption Estimate (gal/d/account):	50.3	
Baseline Model Initial Consumption Estimate (gal/d/account):	50.3	
Difference (gal/d/account):	0.0	
% Dependent on Users per Account:	100%	

Replacement Data

Item	
Annual Replacement of Ultra Low Flush Stock (%):	3.0%
Annual Replacement of Low Flush Stock (%):	4.0%
Annual Replacement of High Flush Stock (%):	4.0%

Replacement Appliance Market Shares

Year	Ultra Low Flush	Low Flush	High Flush	Total	Messages
1992	100.0%	0.0%	0.0%	100.0%	
2001	100.0%	0.0%	0.0%	100.0%	
2006	100.0%	0.0%	0.0%	100.0%	
2011	100.0%	0.0%	0.0%	100.0%	
2050	100.0%	0.0%	0.0%	100.0%	

New Appliance Market Shares

Year	Ultra Low Flush	Low Flush	High Flush	Total	Messages
1992	100.0%	0.0%	0.0%	100.0%	
2001	100.0%	0.0%	0.0%	100.0%	
2006	100.0%	0.0%	0.0%	100.0%	
2011	100.0%	0.0%	0.0%	100.0%	
2050	100.0%	0.0%	0.0%	100.0%	

MEASURE PARAMETER LOOKUP	CUWCC_RSFToilet
Account Category	RSF
Affected End Uses	Toilets
Percent Reduction in Water Use	Fixture Model
Sign-on Year	2006
Evaluation Start Year	2006
Required No. of Interventions	-
Annual Market Penetration (%)	6%
Program Length (years)	10
Measure Life (years)	Permanent
Initial Cost	\$0
Annual Base Cost	\$4,000
Unit Cost	\$75
Affected Units	fixture

Sum Water Utility Costs = \$498,921

Appliance Code Data

Code Influenced Replacement Appliance Market Shares

Year	Ultra Low Flush	Low Flush	High Flush	Total	Messages
1992	100.0%	0.0%	0.0%	100.0%	
2001	100.0%	0.0%	0.0%	100.0%	
2006	100.0%	0.0%	0.0%	100.0%	
2011	100.0%	0.0%	0.0%	100.0%	
2050	100.0%	0.0%	0.0%	100.0%	

Code Influenced New Appliance Market Shares

Year	Ultra Low Flush	Low Flush	High Flush	Total	Messages
1992	100.0%	0.0%	0.0%	100.0%	
2001	100.0%	0.0%	0.0%	100.0%	
2006	100.0%	0.0%	0.0%	100.0%	
2011	100.0%	0.0%	0.0%	100.0%	
2050	100.0%	0.0%	0.0%	100.0%	

Code Implementation Costs By Year:

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	0	0	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Retrofit Details

% Freeloaders: **31.7%** Assumption
 Mean No. of Appliances Per Account: **2.0**

Type	Number of Accounts by Year					Cost Per Unit	% Cost to Utility	% Cost to Customer	Cost to Utility	Cost to Customer	
	2006	2013	2015	2006	2013	2015					
Convert High Flush to Ultra Low Flush	1.0%	0.6%	0.6%	115	86	80	\$75	100%	0%	\$75	\$0
Convert Low Flush to Ultra Low Flush	2.3%	1.4%	1.2%	248	187	172	\$75	100%	0%	\$75	\$0
Convert High Flush to Low Flush	0.0%	0.0%	0.0%	0	0	0	\$0	100%	0%	\$0	\$0
Mean Water Savings Per Person (gal/d):				12	12	12					

Model Calculations

Parameter	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Account Details																					
Users per Account:		2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58
Number of Accounts:		10,358	10,680	11,004	11,332	11,663	11,996	12,333	12,672	13,015	13,361	13,710	14,062	14,417	14,775	15,137	15,502	15,870	16,242	16,617	16,995
Data for Next Years Calcs																					
No. of New Accounts:		322	325	328	331	334	337	340	343	346	349	352	355	358	362	365	368	372	375	378	382
Replacement Market Shares																					
Ultra Low Flush Market Share		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
New Unit Market Shares																					
Ultra Low Flush Market Share		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Account Totals																					
Total Ultra Low Flush		3,371.5	3,972.7	4,565.7	5,150.8	5,728.6	6,299.5	6,863.9	7,422.3	7,974.9	8,522.3	9,064.7	9,602.6	10,136.2	10,665.8	11,191.9	11,714.6	12,234.4	12,751.4	13,265.9	13,778.3
Total Low Flush		2,208.9	2,120.5	2,035.7	1,954.3	1,876.1	1,801.0	1,729.0	1,659.8	1,593.5	1,529.7	1,468.5	1,409.8	1,353.4	1,299.3	1,247.3	1,197.4	1,149.5	1,103.5	1,059.4	1,017.0
Total High Flush		4,777.6	4,586.5	4,403.1	4,226.9	4,057.9	3,895.5	3,739.7	3,590.1	3,446.5	3,308.7	3,176.3	3,049.3	2,927.3	2,810.2	2,697.8	2,589.9	2,486.3	2,386.8	2,291.4	2,199.7
% Ultra Low Flush		32.5%	37.2%	41.5%	45.5%	49.1%	52.5%	55.7%	58.6%	61.3%	63.8%	66.1%	68.3%	70.3%	72.2%	73.9%	75.6%	77.1%	78.5%	79.8%	81.1%
% Low Flush		21.3%	19.9%	18.5%	17.2%	16.1%	15.0%	14.0%	13.1%	12.2%	11.4%	10.7%	10.0%	9.4%	8.8%	8.2%	7.7%	7.2%	6.8%	6.4%	6.0%
% High Flush		46.1%	42.9%	40.0%	37.3%	34.8%	32.5%	30.3%	28.3%	26.5%	24.8%	23.2%	21.7%	20.3%	19.0%	17.8%	16.7%	15.7%	14.7%	13.8%	12.9%
% Total Check		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Daily End Use Volume per Account (gal/d):		50.3	48.6	46.9	45.4	44.1	42.8	41.6	40.5	39.5	38.5	37.7	36.8	36.1	35.4	34.7	34.1	33.5	33.0	32.5	32.0
Managed Demand Case																					
Code Influenced Replacement Market Shares																					
Ultra Low Flush Market Share		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Code Influenced New Unit Market Shares																					
Ultra Low Flush Market Share		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Account Totals																					
Total Ultra Low Flush		3,371.5	3,972.7	4,565.7	5,399.0	6,206.2	6,988.5	7,747.1	8,483.0	9,197.4	9,891.1	10,565.3	11,223.3	11,863.0	12,323.6	12,783.3	13,242.4	13,701.0	14,159.4	14,617.6	15,075.9
Total Low Flush		2,208.9	2,120.5	2,035.7	1,784.6	1,549.5	1,329.9	1,125.0	934.4	757.5	593.6	442.4	302.1	172.5	165.6	159.0	152.7	146.5	140.7	135.1	129.7
Total High Flush		4,777.6	4,586.5	4,403.1	4,148.5	3,906.9	3,677.7	3,460.5	3,254.8	3,060.0	2,875.9	2,701.9	2,537.2	2,381.3	2,286.1	2,194.7	2,106.9	2,022.6	1,941.7	1,864.0	1,789.5
% Ultra Low Flush		32.5%	37.2%	41.5%	47.6%	53.2%	58.3%	62.8%	66.9%	70.7%	74.0%	77.1%	79.8%	82.3%	83.4%	84.5%	85.4%	86.3%	87.2%	88.0%	88.7%
% Low Flush		21.3%	19.9%	18.5%	15.7%	13.3%	11.1%	9.1%	7.4%	5.8%	4.4%	3.2%	2.1%	1.2%	1.1%	1.0%	0.9%	0.8%	0.8%	0.8%	
% High Flush		46.1%	42.9%	40.0%	36.6%	33.5%	30.7%	28.1%	25.7%	23.5%	21.5%	19.7%	18.0%	16.5%	15.5%	14.5%	13.6%	12.7%	12.0%	11.2%	10.5%
% Total Check		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Daily End Use Volume per Account (gal/d):		50.3	48.6	46.9	44.8	42.8	41.1	39.4	38.0	36.7	35.5	34.4	33.4	32.5	32.0	31.5	31.1	30.7	30.4	30.0	29.7
Retrofit Data for Next Year's Calculations																					
Accounts Retrofitting High Flush to Ultra Low Flush		0.0	0.0	78.5	75.7	72.9	70.1	67.3	64.5	61.7	59.0	56.6	54.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Accounts Retrofitting Low Flush to Ultra Low Flush		0.0	0.0	169.7	163.7	157.7	151.6	145.6	139.6	133.5	127.5	122.5	117.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Accounts Retrofitting High Flush to Low Flush		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Number of Interventions:		0	0	727	701	675	649	623	598	572	546	525	503	0	0	0	0	0	0	0	0

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Water Savings																				
Measure Impact Factor:	1.000	1.000	1.000	0.986	0.972	0.960	0.948	0.938	0.928	0.920	0.913	0.906	0.900	0.905	0.909	0.913	0.917	0.921	0.925	0.928
Water Savings Per Account (gal/d):	0.0	0.0	0.0	0.7	1.2	1.7	2.2	2.5	2.8	3.1	3.3	3.5	3.6	3.4	3.2	3.0	2.8	2.6	2.4	2.3
Total Water Savings (mgd):	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total External Water Savings (mgd):	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Internal Savings (mgd):	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Savings of Total Baseline Production:	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Modified Forecasts																				
Total Water Production (mgd):	41.4	41.7	41.9	42.1	42.3	42.5	42.7	42.9	43.1	43.3	43.6	43.8	44.0	44.3	44.5	44.8	45.1	45.3	45.6	45.9
External Consumption (mgd):	20.6	20.8	20.9	21.1	21.3	21.5	21.7	21.9	22.0	22.2	22.4	22.6	22.8	23.0	23.2	23.4	23.6	23.8	24.0	24.2
Peak Day Water Production (mgd):	87.0	87.6	88.2	88.9	89.5	90.1	90.7	91.3	91.9	92.5	93.2	93.8	94.5	95.2	95.9	96.6	97.3	98.0	98.7	99.4
Dry Weather Wastewater (mgd):	16.7	16.7	16.7	16.7	16.8	16.8	16.8	16.7	16.8	16.8	16.8	16.8	16.8	16.8	16.9	16.9	17.0	17.0	17.0	17.1
Design Wet Weather Wastewater: (mgd):	50.1	50.4	50.7	51.0	51.3	51.6	51.9	52.2	52.5	52.8	53.1	53.4	53.8	54.1	54.5	54.8	55.2	55.5	55.9	56.3

Operating Cost Savings

Modified Operating Costs Per mg

Type	Baseline Year Costs			Modified Unit Costs by Year																			
	Transfer	Treatment	Total	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Water	\$767	\$0	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Modified Total Operating Costs

Item	Baseline NPV		Modified NPV	NPV Savings	Modified Total Costs by Year																		
	2004	2005			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Water	\$256,352,104	\$256,181,431	\$170,673	\$11,611,959	\$11,675,784	\$11,736,993	\$11,797,392	\$11,859,593	\$11,913,753	\$11,969,006	\$12,026,215	\$12,085,413	\$12,146,551	\$12,209,577	\$12,274,425	\$12,341,048	\$12,410,787	\$12,482,095	\$12,554,938	\$12,629,282	\$12,705,096	\$12,782,628	\$12,861,866
Dry Weather Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total			\$170,673	\$11,611,959	\$11,675,784	\$11,736,993	\$11,797,392	\$11,859,593	\$11,913,753	\$11,969,006	\$12,026,215	\$12,085,413	\$12,146,551	\$12,209,577	\$12,274,425	\$12,341,048	\$12,410,787	\$12,482,095	\$12,554,938	\$12,629,282	\$12,705,096	\$12,782,628	\$12,861,866

Hot Water Savings

NPV Savings	Hot Water Savings by Year (\$)																					
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58
17,377	17,762	18,151	18,543	18,939	19,338	19,741	20,147	20,558	20,972	21,389
385	389	392	396	399	403	407	410	414	418	
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

14,288.7	14,797.4	15,304.7	15,810.7	16,315.8	16,820.0	17,323.7	17,826.9	18,330.0	18,833.0	19,336.3
976.3	937.3	899.8	863.8	829.2	796.1	764.2	733.7	704.3	676.1	649.1
2,111.7	2,027.3	1,946.2	1,868.3	1,793.6	1,721.8	1,653.0	1,586.8	1,523.4	1,462.4	1,403.9
82.2%	83.3%	84.3%	85.3%	86.2%	87.0%	87.8%	88.5%	89.2%	89.8%	90.4%
5.6%	5.3%	5.0%	4.7%	4.4%	4.1%	3.9%	3.6%	3.4%	3.2%	3.0%
12.2%	11.4%	10.7%	10.1%	9.5%	8.9%	8.4%	7.9%	7.4%	7.0%	6.6%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
31.6	31.2	30.8	30.4	30.1	29.8	29.5	29.2	29.0	28.7	28.5

100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

15,534.4	15,993.3	16,452.7	16,912.9	17,373.8	17,835.7	18,298.7	18,763.0	19,228.6	19,695.7	20,164.5
124.5	119.5	114.7	110.1	105.7	101.5	97.4	93.5	89.8	86.2	82.7
1,717.9	1,649.2	1,583.2	1,519.9	1,459.1	1,400.7	1,344.7	1,290.9	1,239.3	1,189.7	1,142.1
89.4%	90.0%	90.6%	91.2%	91.7%	92.2%	92.7%	93.1%	93.5%	93.9%	94.3%
0.7%	0.7%	0.6%	0.6%	0.6%	0.5%	0.5%	0.5%	0.4%	0.4%	0.4%
9.9%	9.3%	8.7%	8.2%	7.7%	7.2%	6.8%	6.4%	6.0%	5.7%	5.3%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
29.4	29.2	28.9	28.7	28.4	28.2	28.0	27.8	27.7	27.5	27.3

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
0.932	0.935	0.938	0.941	0.944	0.947	0.950	0.952	0.955	0.957	0.959
2.2	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%

2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
46.2	46.5	46.8	47.1	47.4	47.7	48.0	48.4	48.7	49.0	49.4
24.4	24.6	24.8	25.0	25.2	25.5	25.7	25.9	26.1	26.3	26.6
100.2	100.9	101.7	102.5	103.3	104.1	104.9	105.7	106.5	107.3	108.2
17.1	17.2	17.3	17.3	17.4	17.5	17.5	17.6	17.7	17.8	17.9
56.7	57.1	57.5	57.9	58.3	58.7	59.1	59.6	60.0	60.4	60.9

2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$12,942,773	\$13,025,312	\$13,109,448	\$13,195,149	\$13,282,385	\$13,371,127	\$13,461,350	\$13,553,030	\$13,646,144	\$13,740,671	\$13,836,593
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$12,942,773	\$13,025,312	\$13,109,448	\$13,195,149	\$13,282,385	\$13,371,127	\$13,461,350	\$13,553,030	\$13,646,144	\$13,740,671	\$13,836,593

2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Demand Management Least Cost Planning Decision Support System

Fixture Model - Retrofit and Code Measures

CUWCC #14 - FRR Toilet Replacement

Results Summary

Present Value of Water Utility Benefits:	\$394,761
Present Value of Total Community Benefits:	\$394,761
Present Value of Water Utility Costs:	\$934,549
Present Value of Total Community Costs:	\$934,549
Water Utility Benefit Cost Ratio:	0.42
Total Community Benefit Cost Ratio:	0.42
Average Water Savings (mgd):	0.07
Cost of Savings per Unit Volume (\$/mg):	\$1,137.11

Model Setup Data

End Use Identifier:	FRR Toilets
Consumer Category:	Flat Rate Residential
Account User Forecast:	FRR Household Size
Starting Year for Forecasts:	2004
Internal or External End Use?:	Internal
Temperature of Use (oF) (Blank if not heated):	
Cost Per Degree Change Per Gallon:	

Model Parameters

Appliance Data

Type	Name	Volume per Use (Gallons)	Initial Proportions
New	Ultra Low Flush	1.8	32.5%
Intermediate	Low Flush	3.5	21.3%
Old	High Flush	5	46.1%
Total			100.0%

End Use Data

Baseline Mean No. Of Uses Per User Per Day:	5.080	<i>AWWARF average is 5.05 (range: 4.5 to 5.6)</i>
Fixture Model Initial Consumption Estimate (gal/d/account):	47.8	
Baseline Model Initial Consumption Estimate (gal/d/account):	47.8	
Difference (gal/d/account):	0.0	
% Dependent on Users per Account:	100%	

Replacement Data

Item	
Annual Replacement of Ultra Low Flush Stock (%):	3.0%
Annual Replacement of Low Flush Stock (%):	4.0%
Annual Replacement of High Flush Stock (%):	4.0%

Replacement Appliance Market Shares

Year	Ultra Low Flush	Low Flush	High Flush	Total	Messages
1992	100.0%	0.0%	0.0%	100.0%	
2001	100.0%	0.0%	0.0%	100.0%	
2006	100.0%	0.0%	0.0%	100.0%	
2011	100.0%	0.0%	0.0%	100.0%	
2050	100.0%	0.0%	0.0%	100.0%	

New Appliance Market Shares

Year	Ultra Low Flush	Low Flush	High Flush	Total	Messages
1992	100.0%	0.0%	0.0%	100.0%	
2001	100.0%	0.0%	0.0%	100.0%	
2006	100.0%	0.0%	0.0%	100.0%	
2011	100.0%	0.0%	0.0%	100.0%	
2050	100.0%	0.0%	0.0%	100.0%	

MEASURE PARAMETER LOOKUP		14_16_RSF_Toilets
Account Category		RSF
Affected End Uses		Toilets
Percent Reduction in Water Use		Fixture Model
Sign-on Year		2006
Evaluation Start Year		2006
Required No. of Interventions		-
Annual Market Penetration (%)		6%
Program Length (years)		10
Measure Life (years)		Permanent
Initial Cost		\$0
Annual Base Cost		\$4,000
Unit Cost		\$75
Affected Units		fixture

Sum Water Utility Costs =	\$1,117,882
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Appliance Code Data

Code Influenced Replacement Appliance Market Shares

Year	Ultra Low Flush	Low Flush	High Flush	Total	Messages
1992	100.0%	0.0%	0.0%	100.0%	
2001	100.0%	0.0%	0.0%	100.0%	
2006	100.0%	0.0%	0.0%	100.0%	
2011	100.0%	0.0%	0.0%	100.0%	
2050	100.0%	0.0%	0.0%	100.0%	

Code Influenced New Appliance Market Shares

Year	Ultra Low Flush	Low Flush	High Flush	Total	Messages
1992	100.0%	0.0%	0.0%	100.0%	
2001	100.0%	0.0%	0.0%	100.0%	
2006	100.0%	0.0%	0.0%	100.0%	
2011	100.0%	0.0%	0.0%	100.0%	
2050	100.0%	0.0%	0.0%	100.0%	

Code Implementation Costs By Year:

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Retrofit Details

% Freeloaders
 Mean No. of Appliances Per Account:

31.7%
2.00

Type

Type	% of Accounts by Year			Number of Accounts by Year			Cost Per Unit	% Cost to Utility	% Cost to Customer	Cost to Utility	Cost to Customer
	2006	2013	2015	2006	2013	2015					
Convert High Flush to Ultra Low Flush	1.1%	0.8%	0.8%	280	210	194	\$75	100%	0%	\$75	\$0
Convert Low Flush to Ultra Low Flush	2.4%	1.8%	1.7%	605	455	419	\$75	100%	0%	\$75	\$0
Convert High Flush to Low Flush	0.0%	0.0%	0.0%	0	0	0	\$0	100%	0%	\$0	\$0
Mean Water Savings Per Person (gal/d):				11	11	11					

Model Calculations

Parameter

Parameter	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Account Details															
Users per Account:		2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58
Number of Accounts:		25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231
Data for Next Years Calcs															
No. of New Accounts		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Replacement Market Shares															
Ultra Low Flush Market Share		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
New Unit Market Shares															
Ultra Low Flush Market Share		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
No Retrofit (Base Case)															
Account Totals															
Total Ultra Low Flush		8,212.6	8,893.4	9,546.9	10,174.3	10,776.5	11,354.7	11,909.8	12,442.6	12,954.1	13,445.2	13,916.6	14,369.2	14,803.7	15,220.8
Total Low Flush		5,380.6	5,165.3	4,958.7	4,760.4	4,570.0	4,387.2	4,211.7	4,043.2	3,881.5	3,726.2	3,577.2	3,434.1	3,296.7	3,164.9
Total High Flush		11,637.8	11,172.3	10,725.4	10,296.4	9,884.5	9,489.1	9,109.6	8,745.2	8,395.4	8,059.6	7,737.2	7,427.7	7,130.6	6,845.4
% Ultra Low Flush		32.5%	35.2%	37.8%	40.3%	42.7%	45.0%	47.2%	49.3%	51.3%	53.3%	55.2%	57.0%	58.7%	60.3%
% Low Flush		21.3%	20.5%	19.7%	18.9%	18.1%	17.4%	16.7%	16.0%	15.4%	14.8%	14.2%	13.6%	13.1%	12.5%
% High Flush		46.1%	44.3%	42.5%	40.8%	39.2%	37.6%	36.1%	34.7%	33.3%	31.9%	30.7%	29.4%	28.3%	27.1%
% Total Check		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Daily End Use Volume per Account (gal/d):		47.8	46.8	45.9	45.0	44.1	43.3	42.5	41.8	41.0	40.3	39.7	39.0	38.4	37.8
Managed Demand Case															
Code Influenced Replacement Market Shares															
Ultra Low Flush Market Share		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Code Influenced New Unit Market Shares															
Ultra Low Flush Market Share		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High Flush Market Share		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Account Totals

Total Ultra Low Flush	8,212.6	8,893.4	9,546.9	10,778.8	11,939.9	13,033.1	14,061.1	15,026.6	15,931.9	16,779.6	17,571.9	18,314.7	19,010.0	19,258.8
Total Low Flush	5,380.6	5,165.3	4,958.7	4,347.0	3,774.4	3,239.4	2,740.5	2,276.2	1,845.2	1,446.0	1,077.6	736.0	420.3	403.5
Total High Flush	11,637.8	11,172.3	10,725.4	10,105.3	9,516.7	8,958.5	8,429.4	7,928.2	7,453.9	7,005.4	6,581.5	6,180.3	5,800.7	5,568.7
% Ultra Low Flush	32.5%	35.2%	37.8%	42.7%	47.3%	51.7%	55.7%	59.6%	63.1%	66.5%	69.6%	72.6%	75.3%	76.3%
% Low Flush	21.3%	20.5%	19.7%	17.2%	15.0%	12.8%	10.9%	9.0%	7.3%	5.7%	4.3%	2.9%	1.7%	1.6%
% High Flush	46.1%	44.3%	42.5%	40.1%	37.7%	35.5%	33.4%	31.4%	29.5%	27.8%	26.1%	24.5%	23.0%	22.1%
% Total Check	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Daily End Use Volume per Account (gal/d):	47.8	46.8	45.9	44.3	42.8	41.4	40.1	38.8	37.7	36.6	35.5	34.6	33.7	33.3

Retrofit Data for Next Year's Calculations

Accounts Retrofitting High Flush to Ultra Low Flush	0.0	0.0	191.1	184.3	177.5	170.8	164.0	157.2	150.4	143.6	138.0	132.4	0.0	0.0
Accounts Retrofitting Low Flush to Ultra Low Flush	0.0	0.0	413.4	398.7	384.0	369.3	354.7	340.0	325.3	310.6	298.5	286.3	0.0	0.0
Accounts Retrofitting High Flush to Low Flush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Number of Interventions:

Water Savings	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Measure Impact Factor:	1.000	1.000	1.000	0.985	0.970	0.956	0.943	0.930	0.918	0.907	0.896	0.886	0.876	0.879
Water Savings Per Account (gal/d):	0.0	0.0	0.0	0.7	1.3	1.9	2.4	2.9	3.4	3.8	4.1	4.5	4.8	4.6
Total Water Savings (mgd):	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total External Water Savings (mgd):	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Internal Savings (mgd):	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
% Savings of Total Baseline Production:	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%

Modified Forecasts

Total Water Production (mgd):	41.4	41.7	41.9	42.1	42.3	42.5	42.7	42.9	43.1	43.3	43.5	43.7	44.0	44.2
External Consumption (mgd):	20.6	20.8	20.9	21.1	21.3	21.5	21.7	21.9	22.0	22.2	22.4	22.6	22.8	23.0
Peak Day Water Production (mgd):	87.0	87.6	88.2	88.8	89.5	90.0	90.6	91.2	91.9	92.5	93.1	93.8	94.4	95.1
Dry Weather Wastewater (mgd):	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.8
Design Wet Weather Wastewater: (mgd):	50.1	50.4	50.7	51.0	51.3	51.6	51.8	52.1	52.4	52.7	53.0	53.4	53.7	54.0

Operating Cost Savings

Modified Operating Costs Per mg

Type	Baseline Year Costs			Modified Unit Costs by Year													
	Transfer	Treatment	Total	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Water	\$767	\$0	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Modified Total Operating Costs

Item	Baseline NPV	Modified NPV	NPV Savings	Modified Total Costs by Year													
				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Water	\$256,352,104	\$255,957,343	\$394,761	\$11,611,959	\$11,675,784	\$11,736,993	\$11,794,648	\$11,854,311	\$11,906,133	\$11,959,238	\$12,014,483	\$12,071,893	\$12,131,412	\$12,192,981	\$12,256,511	\$12,321,950	\$12,392,453
Dry Weather Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total			\$394,761	\$11,611,959	\$11,675,784	\$11,736,993	\$11,794,648	\$11,854,311	\$11,906,133	\$11,959,238	\$12,014,483	\$12,071,893	\$12,131,412	\$12,192,981	\$12,256,511	\$12,321,950	\$12,392,453

Hot Water Savings

NPV Savings	Hot Water Savings by Year (\$)														
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	

2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58
25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231	25,231

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

15,621.2	16,005.6	16,374.6	16,728.9	17,068.9	17,395.4	17,708.8	18,009.7	18,298.6	18,575.9	18,842.1	19,097.6	19,343.0	19,578.5	19,804.6	20,021.7	20,230.0
3,038.3	2,916.7	2,800.1	2,688.1	2,580.5	2,477.3	2,378.2	2,283.1	2,191.8	2,104.1	2,019.9	1,939.1	1,861.6	1,787.1	1,715.6	1,647.0	1,581.1
6,571.6	6,308.7	6,056.3	5,814.1	5,581.5	5,358.3	5,143.9	4,938.2	4,740.6	4,551.0	4,369.0	4,194.2	4,026.5	3,865.4	3,710.8	3,562.3	3,419.9
61.9%	63.4%	64.9%	66.3%	67.7%	68.9%	70.2%	71.4%	72.5%	73.6%	74.7%	75.7%	76.7%	77.6%	78.5%	79.4%	80.2%
12.0%	11.6%	11.1%	10.7%	10.2%	9.8%	9.4%	9.0%	8.7%	8.3%	8.0%	7.7%	7.4%	7.1%	6.8%	6.5%	6.3%
26.0%	25.0%	24.0%	23.0%	22.1%	21.2%	20.4%	19.6%	18.8%	18.0%	17.3%	16.6%	16.0%	15.3%	14.7%	14.1%	13.6%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
37.3	36.7	36.2	35.7	35.2	34.7	34.3	33.9	33.5	33.1	32.7	32.3	32.0	31.6	31.3	31.0	30.7

100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

19,497.7	19,727.1	19,947.2	20,158.6	20,361.5	20,556.2	20,743.2	20,922.7	21,095.1	21,260.5	21,419.3	21,571.8	21,718.2	21,858.7	21,993.6	22,123.1	22,247.4
387.3	371.8	357.0	342.7	329.0	315.8	303.2	291.1	279.4	268.2	257.5	247.2	237.3	227.8	218.7	210.0	201.6
5,345.9	5,132.1	4,926.8	4,729.7	4,540.6	4,358.9	4,184.6	4,017.2	3,856.5	3,702.2	3,554.2	3,412.0	3,275.5	3,144.5	3,018.7	2,898.0	2,782.0
77.3%	78.2%	79.1%	79.9%	80.7%	81.5%	82.2%	82.9%	83.6%	84.3%	84.9%	85.5%	86.1%	86.6%	87.2%	87.7%	88.2%
1.5%	1.5%	1.4%	1.4%	1.3%	1.3%	1.2%	1.2%	1.1%	1.1%	1.0%	1.0%	0.9%	0.9%	0.9%	0.8%	0.8%
21.2%	20.3%	19.5%	18.7%	18.0%	17.3%	16.6%	15.9%	15.3%	14.7%	14.1%	13.5%	13.0%	12.5%	12.0%	11.5%	11.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
32.9	32.5	32.1	31.8	31.5	31.2	30.9	30.6	30.3	30.0	29.8	29.5	29.3	29.1	28.8	28.6	

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
0.882	0.885	0.888	0.891	0.894	0.897	0.900	0.903	0.905	0.908	0.911	0.913	0.916	0.918	0.921	0.923	0.926
4.4	4.2	4.0	3.9	3.7	3.6	3.4	3.3	3.2	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.3
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%

2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
44.5	44.7	45.0	45.3	45.6	45.8	46.1	46.4	46.7	47.0	47.4	47.7	48.0	48.3	48.7	49.0	49.3
23.2	23.4	23.6	23.8	24.0	24.2	24.4	24.6	24.8	25.0	25.2	25.5	25.7	25.9	26.1	26.3	26.6
95.8	96.5	97.2	97.9	98.7	99.4	100.1	100.9	101.7	102.4	103.2	104.0	104.8	105.6	106.5	107.3	108.1
16.8	16.9	16.9	16.9	17.0	17.0	17.1	17.2	17.2	17.3	17.4	17.4	17.5	17.6	17.7	17.7	17.8
54.4	54.7	55.1	55.5	55.9	56.2	56.6	57.0	57.4	57.8	58.3	58.7	59.1	59.5	60.0	60.4	60.9

2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$12,464,495	\$12,538,042	\$12,613,062	\$12,689,524	\$12,767,679	\$12,847,515	\$12,928,996	\$13,012,086	\$13,096,751	\$13,182,960	\$13,270,683	\$13,359,894	\$13,450,566	\$13,542,677	\$13,636,205	\$13,731,130	\$13,827,434
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$12,464,495	\$12,538,042	\$12,613,062	\$12,689,524	\$12,767,679	\$12,847,515	\$12,928,996	\$13,012,086	\$13,096,751	\$13,182,960	\$13,270,683	\$13,359,894	\$13,450,566	\$13,542,677	\$13,636,205	\$13,731,130	\$13,827,434

2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Demand Management Least Cost Planning Decision Support System

Fixture Model - Retrofit and Code Measures

CUWCC #14 - RMF Toilet Replacement

Results Summary

Present Value of Water Utility Benefits:	\$210,680
Present Value of Total Community Benefits:	\$210,680
Present Value of Water Utility Costs:	\$308,205
Present Value of Total Community Costs:	\$308,205
Water Utility Benefit Cost Ratio:	0.68
Total Community Benefit Cost Ratio:	0.68
Average Water Savings (mgd):	0.04
Cost of Savings per Unit Volume (\$/mg):	\$702.67

Model Setup Data

End Use Identifier:	RMF Toilets
Consumer Category:	Multi-Family
Account User Forecast:	RMF Household Size
Starting Year for Forecasts:	2004
Internal or External End Use?:	Internal
Temperature of Use (oF) (Blank if not heated):	
Cost Per Degree Change Per Gallon:	

Model Parameters

Appliance Data

Type	Name	Volume per Use (Gallons)	Initial Proportions
New	Ultra Low Flush	1.8	32.5%
Intermediate	Low Flush	3.5	21.3%
Old	High Flush	5	46.1%
Total			100.0%

End Use Data

Baseline Mean No. Of Uses Per User Per Day:	5.238	AWWARF average is 5.05 (range: 4.5 to 5.6)
Fixture Model Initial Consumption Estimate (gal/d/account):	270.2	
Baseline Model Initial Consumption Estimate (gal/d/account):	270.1	
Difference (gal/d/account):	0.0	
% Dependent on Users per Account:	100%	

Replacement Data

Item	
Annual Replacement of Ultra Low Flush Stock (%):	3.0%
Annual Replacement of Low Flush Stock (%):	4.0%
Annual Replacement of High Flush Stock (%):	4.0%

Replacement Appliance Market Shares

Year	Ultra Low Flush	Low Flush	High Flush	Total	Messages
1992	100.0%	0.0%	0.0%	100.0%	
2001	100.0%	0.0%	0.0%	100.0%	
2006	100.0%	0.0%	0.0%	100.0%	
2011	100.0%	0.0%	0.0%	100.0%	
2050	100.0%	0.0%	0.0%	100.0%	

New Appliance Market Shares

Year	Ultra Low Flush	Low Flush	High Flush	Total	Messages
1992	100.0%	0.0%	0.0%	100.0%	
2001	100.0%	0.0%	0.0%	100.0%	
2006	100.0%	0.0%	0.0%	100.0%	
2011	100.0%	0.0%	0.0%	100.0%	
2050	100.0%	0.0%	0.0%	100.0%	

MEASURE PARAMETER LOOKUP		14_14_RMFToilets
Account Category		RMF
Affected End Uses		Toilets
Percent Reduction in Water Use		Fixture Model
Sign-on Year		2006
Evaluation Start Year		2006
Required No. of Interventions		-
Annual Market Penetration (%)		4%
Program Length (years)		10
Measure Life (years)		Permanent
Initial Cost		\$0
Annual Base Cost		\$0
Unit Cost		\$75
Affected Units		fixture

Sum Water Utility Costs =

Appliance Code Data

Code Influenced Replacement Appliance Market Shares

Year	Ultra Low Flush	Low Flush	High Flush	Total	Messages
1992	100.0%	0.0%	0.0%	100.0%	
2001	100.0%	0.0%	0.0%	100.0%	
2006	100.0%	0.0%	0.0%	100.0%	
2011	100.0%	0.0%	0.0%	100.0%	
2050	100.0%	0.0%	0.0%	100.0%	

Code Influenced New Appliance Market Shares

Year	Ultra Low Flush	Low Flush	High Flush	Total	Messages
1992	100.0%	0.0%	0.0%	100.0%	
2001	100.0%	0.0%	0.0%	100.0%	
2006	100.0%	0.0%	0.0%	100.0%	
2011	100.0%	0.0%	0.0%	100.0%	
2050	100.0%	0.0%	0.0%	100.0%	

Code Implementation Costs By Year:

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Retrofit Details

% Freeloaders	20.6%
Mean No. Of Appliances Per Account:	8.13

Type	% of Accounts by Year			Number of Accounts by Year			Cost Per Unit	% Cost to Utility	% Cost to Customer	Cost to Utility	Cost to Customer
	2006	2013	2015	2006	2013	2015					
Convert High Flush to Ultra Low Flush	0.7%	0.5%	0.4%	23	17	16	\$75	100%	0%	\$75	\$0
Convert Low Flush to Ultra Low Flush	1.5%	1.0%	0.9%	49	37	34	\$75	100%	0%	\$75	\$0
Convert High Flush to Low Flush	0.0%	0.0%	0.0%	0	0	0	\$0	100%	0%	\$0	\$0
Mean Water Savings Per Person (gal/d):				11	11	11					

Model Calculations

Parameter

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Account Details													
Users per Account:	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18
Number of Accounts:	3,268	3,298	3,327	3,357	3,388	3,418	3,449	3,481	3,512	3,544	3,576	3,608	3,641
Data for Next Years Calcs													
No. Of New Accounts	30	30	30	30	31	31	31	31	32	32	32	33	33
Replacement Market Shares													
Ultra Low Flush Market Share	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Flush Market Share	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High Flush Market Share	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
New Unit Market Shares													
Ultra Low Flush Market Share	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Flush Market Share	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High Flush Market Share	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
No Retrofit (Base Case)													
Account Totals													
Total Ultra Low Flush	1,063.7	1,181.4	1,295.9	1,407.2	1,515.6	1,621.1	1,723.9	1,824.1	1,921.8	2,017.2	2,110.3	2,201.2	2,290.1
Total Low Flush	696.9	669.0	642.3	616.6	591.9	568.2	545.5	523.7	502.7	482.6	463.3	444.8	427.0
Total High Flush	1,507.4	1,447.1	1,389.2	1,333.6	1,280.3	1,229.1	1,179.9	1,132.7	1,087.4	1,043.9	1,002.1	962.1	923.6
% Ultra Low Flush	32.5%	35.8%	38.9%	41.9%	44.7%	47.4%	50.0%	52.4%	54.7%	56.9%	59.0%	61.0%	62.9%
% Low Flush	21.3%	20.3%	19.3%	18.4%	17.5%	16.6%	15.8%	15.0%	14.3%	13.6%	13.0%	12.3%	11.7%
% High Flush	46.1%	43.9%	41.8%	39.7%	37.8%	36.0%	34.2%	32.5%	31.0%	29.5%	28.0%	26.7%	25.4%
% Total Check	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Daily End Use Volume per Account (gal/d):	270.2	263.5	257.2	251.2	245.5	240.1	234.9	230.0	225.3	220.8	216.6	212.6	208.7
Managed Demand Case													
Code Influenced Replacement Market Shares													
Ultra Low Flush Market Share	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Flush Market Share	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High Flush Market Share	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Code Influenced New Unit Market Shares

Ultra Low Flush Market Share	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Flush Market Share	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High Flush Market Share	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Account Totals

Total Ultra Low Flush	1,063.7	1,181.4	1,295.9	1,464.3	1,625.4	1,779.5	1,926.9	2,067.9	2,202.8	2,331.8	2,455.2	2,573.5	2,687.0
Total Low Flush	696.9	669.0	642.3	577.6	516.9	459.9	406.7	357.0	310.6	267.5	227.5	190.2	155.6
Total High Flush	1,507.4	1,447.1	1,389.2	1,315.6	1,245.6	1,179.0	1,115.7	1,055.6	998.6	944.4	893.1	844.4	798.1
% Ultra Low Flush	32.5%	35.8%	38.9%	43.6%	48.0%	52.1%	55.9%	59.4%	62.7%	65.8%	68.7%	71.3%	73.8%
% Low Flush	21.3%	20.3%	19.3%	17.2%	15.3%	13.5%	11.8%	10.3%	8.8%	7.5%	6.4%	5.3%	4.3%
% High Flush	46.1%	43.9%	41.8%	39.2%	36.8%	34.5%	32.3%	30.3%	28.4%	26.7%	25.0%	23.4%	21.9%
% Total Check	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Daily End Use Volume per Account (gal/d):	270.2	263.5	257.2	248.5	240.3	232.6	225.4	218.7	212.4	206.5	201.0	195.9	191.1

Retrofit Data for Next Year's Calculations

Accounts Retrofitting High Flush to Ultra Low Flush	0.0	0.0	18.0	17.4	16.8	16.1	15.5	14.8	14.2	13.6	13.0	12.5	0.0
Accounts Retrofitting Low Flush to Ultra Low Flush	0.0	0.0	39.0	37.6	36.2	34.9	33.5	32.1	30.7	29.3	28.2	27.0	0.0
Accounts Retrofitting High Flush to Low Flush	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Number of Interventions:

Water Savings	2004	2005	584	563	542	522	501	480	459	439	421	404	0
Measure Impact Factor:	1.000	1.000	1.000	0.989	0.979	0.969	0.960	0.951	0.943	0.935	0.928	0.922	0.916
Water Savings Per Account (gal/d):	0.0	0.0	0.0	2.7	5.2	7.5	9.5	11.3	12.9	14.3	15.6	16.7	17.6
Total Water Savings (mgd):	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Total External Water Savings (mgd):	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Internal Savings (mgd):	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
% Savings of Total Baseline Production:	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%

Modified Forecasts

Total Water Production (mgd):	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
External Consumption (mgd):	41.4	41.7	41.9	42.1	42.3	42.5	42.7	42.9	43.1	43.3	43.6	43.8	44.0
Peak Day Water Production (mgd):	20.6	20.8	20.9	21.1	21.3	21.5	21.7	21.9	22.0	22.2	22.4	22.6	22.8
Dry Weather Wastewater (mgd):	87.0	87.6	88.2	88.9	89.5	90.1	90.7	91.3	91.9	92.5	93.2	93.8	94.5
Design Wet Weather Wastewater: (mgd):	16.7	16.7	16.7	16.7	16.8	16.8	16.7	16.7	16.7	16.8	16.8	16.8	16.8
	50.1	50.4	50.7	51.0	51.3	51.6	51.9	52.2	52.5	52.8	53.1	53.4	53.7

Operating Cost Savings

Modified Operating Costs Per mg

Type	Baseline Year Costs			Modified Unit Costs by Year												
	Transfer	Treatment	Total	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Water	\$767	\$0	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Modified Total Operating Costs

Item	Baseline NPV	Modified NPV	NPV Savings	Modified Total Costs by Year												
				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Water	\$256,352,104	\$256,141,424	\$210,680	\$11,611,959	\$11,675,784	\$11,736,993	\$11,796,902	\$11,858,650	\$11,912,393	\$11,967,262	\$12,024,121	\$12,082,999	\$12,143,848	\$12,206,614	\$12,271,227	\$12,337,638
Dry Weather Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total			\$210,680	\$11,611,959	\$11,675,784	\$11,736,993	\$11,796,902	\$11,858,650	\$11,912,393	\$11,967,262	\$12,024,121	\$12,082,999	\$12,143,848	\$12,206,614	\$12,271,227	\$12,337,638

Hot Water Savings

NPV Savings	Hot Water Savings by Year (\$)												
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

\$368,666

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18	14.18
3.674	3.707	3.740	3.774	3.808	3.843	3.877	3.913	3.948	3.984	4.020	4.056	4.093	4.130	4.167	4.205	4.243	4.281
33	34	34	34	34	35	35	35	36	36	36	37	37	37	38	38	38	
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

2,377.1	2,462.1	2,545.4	2,627.1	2,707.1	2,785.5	2,862.6	2,938.2	3,012.6	3,085.7	3,157.6	3,228.4	3,298.2	3,367.0	3,434.8	3,501.8	3,567.9	3,633.2
409.9	393.5	377.8	362.7	348.2	334.2	320.9	308.0	295.7	283.9	272.5	261.6	251.2	241.1	231.5	222.2	213.3	204.8
886.6	851.2	817.1	784.4	753.1	722.9	694.0	666.3	639.6	614.0	589.5	565.9	543.2	521.5	500.7	480.6	461.4	443.0
64.7%	66.4%	68.1%	69.6%	71.1%	72.5%	73.8%	75.1%	76.3%	77.5%	78.6%	79.6%	80.6%	81.5%	82.4%	83.3%	84.1%	84.9%
11.2%	10.6%	10.1%	9.6%	9.1%	8.7%	8.3%	7.9%	7.5%	7.1%	6.8%	6.5%	6.1%	5.8%	5.6%	5.3%	5.0%	4.8%
24.1%	23.0%	21.8%	20.8%	19.8%	18.8%	17.9%	17.0%	16.2%	15.4%	14.7%	14.0%	13.3%	12.6%	12.0%	11.4%	10.9%	10.3%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
205.1	201.6	198.3	195.2	192.2	189.3	186.6	184.0	181.6	179.3	177.1	174.9	172.9	171.0	169.2	167.5	165.8	164.3

100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2,758.1	2,827.9	2,896.6	2,964.2	3,030.7	3,096.2	3,160.8	3,224.5	3,287.4	3,349.5	3,410.9	3,471.6	3,531.6	3,591.1	3,649.9	3,708.3	3,766.2	3,823.6	3,881.0
149.4	143.4	137.7	132.2	126.9	121.8	116.9	112.2	107.8	103.4	99.3	95.3	91.5	87.9	84.3	81.0	77.7	74.6	71.5
766.2	735.5	706.1	677.9	650.7	624.7	599.7	575.7	552.7	530.6	509.4	489.0	469.4	450.7	432.6	415.3	398.7	382.8	367.4
75.1%	76.3%	77.4%	78.5%	79.6%	80.6%	81.5%	82.4%	83.3%	84.1%	84.9%	85.6%	86.3%	87.0%	87.6%	88.2%	88.8%	89.3%	89.9%
4.1%	3.9%	3.7%	3.5%	3.3%	3.2%	3.0%	2.9%	2.7%	2.6%	2.5%	2.4%	2.2%	2.1%	2.0%	1.9%	1.8%	1.7%	1.6%
20.9%	19.8%	18.9%	18.0%	17.1%	16.3%	15.5%	14.7%	14.0%	13.3%	12.7%	12.1%	11.5%	10.9%	10.4%	9.9%	9.4%	8.9%	8.4%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
188.3	185.7	183.1	180.7	178.5	176.3	174.2	172.2	170.4	168.6	166.9	165.3	163.7	162.3	160.9	159.5	158.3	157.1	155.9
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2034
0.918	0.921	0.924	0.926	0.929	0.931	0.933	0.936	0.938	0.940	0.943	0.945	0.947	0.949	0.951	0.953	0.955	0.956	0.956
16.7	15.9	15.2	14.4	13.7	13.1	12.4	11.8	11.2	10.7	10.2	9.7	9.2	8.8	8.3	7.9	7.5	7.2	6.9
0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2034
44.3	44.5	44.8	45.1	45.3	45.6	45.9	46.2	46.5	46.8	47.1	47.4	47.7	48.0	48.4	48.7	49.0	49.4	49.4
23.0	23.2	23.4	23.6	23.8	24.0	24.2	24.4	24.6	24.8	25.0	25.2	25.5	25.7	25.9	26.1	26.3	26.6	26.6
95.2	95.9	96.6	97.3	98.0	98.7	99.4	100.2	100.9	101.7	102.5	103.3	104.1	104.9	105.7	106.5	107.3	108.2	108.2
16.8	16.9	16.9	16.9	17.0	17.0	17.1	17.1	17.2	17.3	17.3	17.4	17.5	17.5	17.6	17.7	17.8	17.9	17.9
54.1	54.4	54.8	55.2	55.5	55.9	56.3	56.7	57.1	57.5	57.9	58.3	58.7	59.1	59.6	60.0	60.4	60.9	60.9
2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2034
\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767	\$767
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2034
\$12,407,513	\$12,478,953	\$12,551,922	\$12,626,386	\$12,702,316	\$12,779,959	\$12,859,304	\$12,940,313	\$13,022,951	\$13,107,181	\$13,192,973	\$13,280,295	\$13,369,122	\$13,459,425	\$13,551,182	\$13,644,370	\$13,738,968	\$13,834,958	\$13,834,958
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$12,407,513	\$12,478,953	\$12,551,922	\$12,626,386	\$12,702,316	\$12,779,959	\$12,859,304	\$12,940,313	\$13,022,951	\$13,107,181	\$13,192,973	\$13,280,295	\$13,369,122	\$13,459,425	\$13,551,182	\$13,644,370	\$13,738,968	\$13,834,958	\$13,834,958
2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2034
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

**Sacramento Suburban Water District
Meter Retrofit Plan**

WATER METER RETROFIT PLAN

Adopted February 2004
(Updated September 2007)



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EXECUTIVE SUMMARY

The Sacramento Suburban Water District (SSWD) Board of Director's adopted this report on February 23, 2004. This plan is an updated version of the 2004 adopted plan. This Meter Retrofit Plan provides a plan and strategy for retrofitting the District's existing flat rate residential customers with water meters. The purpose and goals of this plan are:

- To promote water conservation in compliance with Water Forum objectives.
- To comply with Water Forum requirements for Best Management Practices (BMP's), including BMP # 4 on residential meter retrofits.
- To prioritize areas to be metered based on objective and defensible ranking criteria.
- To develop a realistic and phased approach to meter retrofits.
- To coordinate with the District's long-term capital improvement program.
- To provide customer outreach on meter retrofits and conserving water use.

Through execution of the Water Forum Agreement in 2003, SSWD agreed to install meters on all remaining residential services by 2030, or over the next 27 years. Currently as of 2007, there are approximately 22,851 residential services that are not metered. A majority of the District's commercial and multi-family housing accounts are metered. The District in 2004 proposed to implement a 20-year installation program to complete meter retrofits in advance of the Water Forum commitment. The 20-year schedule also coincides with the expected life of a typical residential meter, allowing the meter retrofit program to smoothly transition into a meter replacement program over the long term. This 2007 plan revision updates the District's effort for the remaining 16 years of the program.

Obviously, with such a long program, there will be some customers metered well in advance of others. This plan provides a basis for prioritizing the sequence in which remaining residential services will be metered. However, some flat rate residential customers will receive meters for reasons other than this plan. Such reasons include: voluntary metering, when a customer

requests a new larger water service, and when the District completes service line repairs and/or replacement.

This plan also proposes that water meters be installed when backyard water mains (mostly located in the South service area) are replaced with new water mains located in the street or public right-of-way fronting the customer's homes. As part of installing these new mains, new water services will be installed which would include water meters. However, because of the large number of residential flat rate accounts (approximately 13,911) that are currently served by back yard water mains, and the length of time that it will take to replace these backyard mains, it is likely that water meters will need to be installed on back yard water services over the course of the proposed 20-year meter retrofit program. On November 21, 2005 SSWD adopted a Water Main Replacement Plan that prioritizes areas with backyard water mains receiving new water mains.

Several criteria were developed that are considered of importance in determining the priority for metering, including: (1) average water consumption, (2) front yard water mains, (3) back yard water mains, (4) size of lot, and (5) water main material type. To rank or prioritize the areas remaining to be metered, the areas with flat rate customers were divided up into 89 smaller regions, or service area "blocks," based on various commonalities (i.e., large percentage of larger lot sizes, etc.). The ranking criteria applied to the selected blocks were used to develop a ranking matrix for metering priority. As a result, a prioritization list was established for the blocks to be metered that is objective and defensible. Since dividing the flat rate customers into blocks, further division of the areas into smaller sub-blocks was required to obtain areas that equal the target number of customers to be metered each year. Based on the blocks and sub-blocks, the total regions now equal 126. As of January 1, 2007, 29 sub-regions have been metered.

The number of meters installed in any one year will be made up first of meters that are installed for reasons other than the meter retrofit plan (i.e., voluntary metering, etc). In addition, a certain number of meters will be installed each year as a result of planned main replacement projects. Finally, the remaining meters needed to meet the District's target will come from the prioritization list included in this report (see Figure 11). Due to uncertainties in the number of

services located within the main replacement projects, smaller blocks (sub-blocks) will be used to combine with service replacement totals to reach target counts for the annual meter retrofit program.

The total cost of the proposed 20-year meter retrofit project is estimated at \$26.9 million, including the cost of meter “drop-ins.” Drop-Ins are services that have been retrofitted for a water meter but a meter has not yet been installed. This does not include the cost of those meters that will be installed as part of planned main replacement projects. A significant portion (\$19.1 million) of this total cost is included in the District’s 15-year Capital Improvement Plan (CIP), adopted by the Board in March 2004.

INTRODUCTION / BACKGROUND

Prior to consolidation on February 1, 2002, the former Northridge Water District had executed the Water Forum Agreement, and began a program to meter residential customers. Northridge non-residential customers were already metered. The former Arcade Water District had not executed the Water Forum Agreement and, therefore, had not initiated a formal residential metering program. However, the Arcade Water District had metered all known non-residential customers (commercial and multi-family) prior to the consolidation.

On June 5, 2003, SSWD executed the Water Forum Agreement, which includes a Purveyor Specific Agreement (PSA) for SSWD. With this agreement, SSWD agreed to meter all remaining residential customers by 2030, or within 27 years, to comply with Best Management Practice (BMP) No. 4 in the Water Forum Agreement. This report outlines a strategic plan for the metering of all residential customers within the district's service area by 2023. All known commercial and multi-family accounts within the District are already metered.

With a long-term program, the District's residential customers will receive water meters at varying stages in the program. This Meter Retrofit Plan was prepared to allow for an objective prioritization of areas to be metered. By analyzing and prioritizing certain defined criteria and factors, Staff will be able to answer questions from customers as to why they are being metered in advance of others. The program considers such factors as ease of installation, average water consumption by system, front-yard versus back-yard water mains, lot size, etc. This Meter Retrofit Plan also includes a schedule/plan for completing meter installation and an estimated total cost.

CURRENT METERING COMMITMENTS

Water Forum Agreement

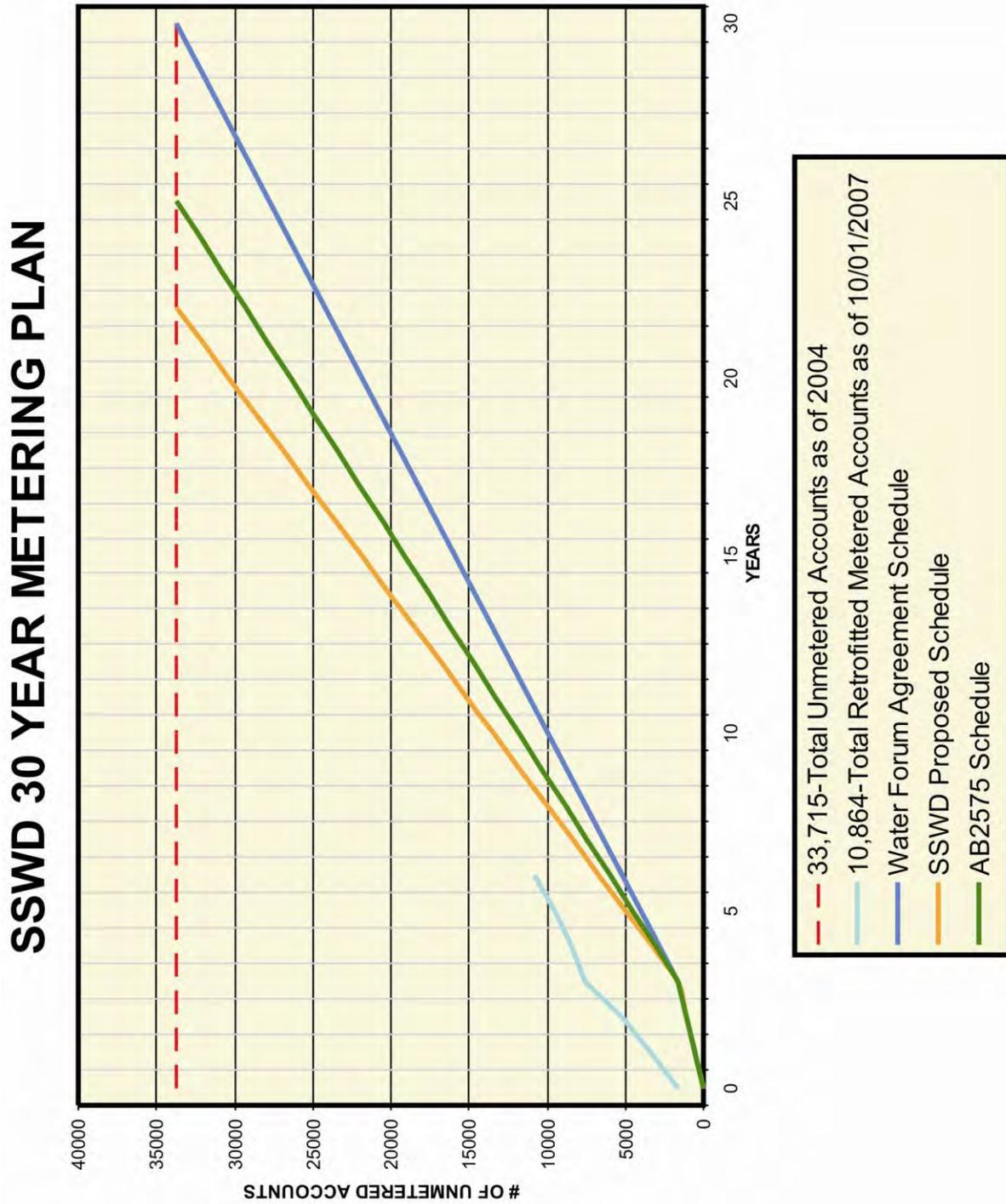
The District's Water Forum Purveyor Specific Agreement (PSA) is included in Appendix A of this report. This PSA includes a water conservation element that consists of the implementation of various BMP's. BMP No. 4 is a residential meter retrofit program that requires the District to retrofit existing residential services by the year 2030 (see Appendix B). Figure No. 1 below shows the current number of unmetered customers in the district at the signing of the Water Forum Agreement. As indicated, approximately 33,715 residential accounts were un-metered at signing of the Water Forum Agreement. . Accordingly the Water Forum Agreement mandated that a yearly progression of metering be no less than 3.3% of the total number of un-metered residential accounts at signing of the Water Forum Agreement. Figure 1 shows several bits of information. The figure shows:

- The rate of meters to be installed as per the Water Forum Agreement.
- The rate of meters to be installed per the District accelerated Meter Retrofit Plan.
- The rate and number of meters SSWD has installed to date.

Based on Figure 1 SSWD is comfortably ahead of the required 3.3% schedule per the Water Forum Agreement as well as the accelerated schedule for completion by 2023.

Per this plan, SSWD is targeting completion of residential meter retrofits in 20 years, or by 2023. This is seven years ahead of the Water Forum deadline. Providing a "safety factor", this schedule will assure that meters installed at the beginning of the meter retrofit program will continue to be in operation at the end of the program, as the life expectancy of a meter is typically 20 years. This self imposed, expedited deadline will prevent the district from having to replace meters installed in 2004 before the retrofits are completed in 2023.

Figure 1. Residential Metering Requirement per Water Forum Agreement



Legislation

Current State law requires that homes built after January 1, 1992, have a water meter installed on their service connection. It is also District's practice to bill these customers using a metered rate schedule. In 2005, Governor Arnold Schwarzenegger signed Assembly Bill 2572 requiring all cities in California to install water meters on all homes by 2025. A copy of AB 2572 is provided in Appendix C. SSWD's accelerated schedule meets this deadline.

TYPES OF METER RETROFITS AND COST FACTORS

The District's current standard detail for a ¾" or 1" residential meter is shown in Appendix D. The majority of the District's residential customers have either a ¾" or 1" service. As indicated, the detail shows a meter box, water meter location and a meter setter with a copper service line. On new developments, the district supplies water meters to the contractor for installation; however the developer pays a furnished only fee for the water meter. The district currently utilizes meters equipped with radio read transponders. These transponders, when activated by the receiving unit, wakes up the meter for reading the meter and records the current consumption total as the receiving unit moves past each meter. Appendix E are Technical Briefs for the meter equipment used in SSWD.

Since 2005 the District has found the existing water services in the South Service Area are of mixed sizes of 1-inch, 1-1/4-inch and 1-1/2-inch services lines. The plumbing systems were previously sized to handle the particular demands of the homes and the landscaping for each lot. To assure that ample pressures and flows are available for the plumbing systems the services were modified for water meters as the same sizes and not reduced to the standard ¾" or 1" size. On 1-1/4-inch water services, these are being replaced to a standard size of 1-1/2-inch. Meter sizes are being placed according to the billing for each house. For example if the found service size is 1-1/4-inch, a new 1-1/2-inch water service with a 1-1/2-inch meter setter was installed to replace the 1-1/4-inch service and a comparable size water meter is installed that matches the billing for that home. In most cases the house water system including the irrigation system was

design based on the larger service size. In these instances this smaller meter size has not provided the required flows and pressures to the home. On these occasions the meter would be replaced with a larger meter only after the District has discussed thoroughly with the owner on why the smaller water meter was installed and the difference in billing cost if the meter size is increased.

There are numerous ways a meter may be installed on a home other than outlined in this plan. These situations are described below.

- Voluntary Metering—the District has a voluntary metering program where any residential customer can request a meter and have it installed at their residence. It is noted that once the customer volunteers for a meter, the water service cannot return to a flat rate.
- New Water Service—when a customer requests a new water service, a meter is installed on that service.
- Remodels-when a customer remodels an existing home a meter is installed on the service.
- Water Waste—The District has a policy of installing a water meter on a customer’s service when there have been a high number of water waste complaints.
- Change of Size-when a customer requests a new larger or smaller water service a meter is installed on that service. When a customers request a larger service than what is presently located at the resident additional applicable connection fees will be applied and must be paid prior to upsizing the water service.

For the purpose of the Meter Retrofit Plan, there are three basic types of installation situations that will be encountered. These are described in the detail below.

Type A. Front Yard Meter “Drop-Ins”

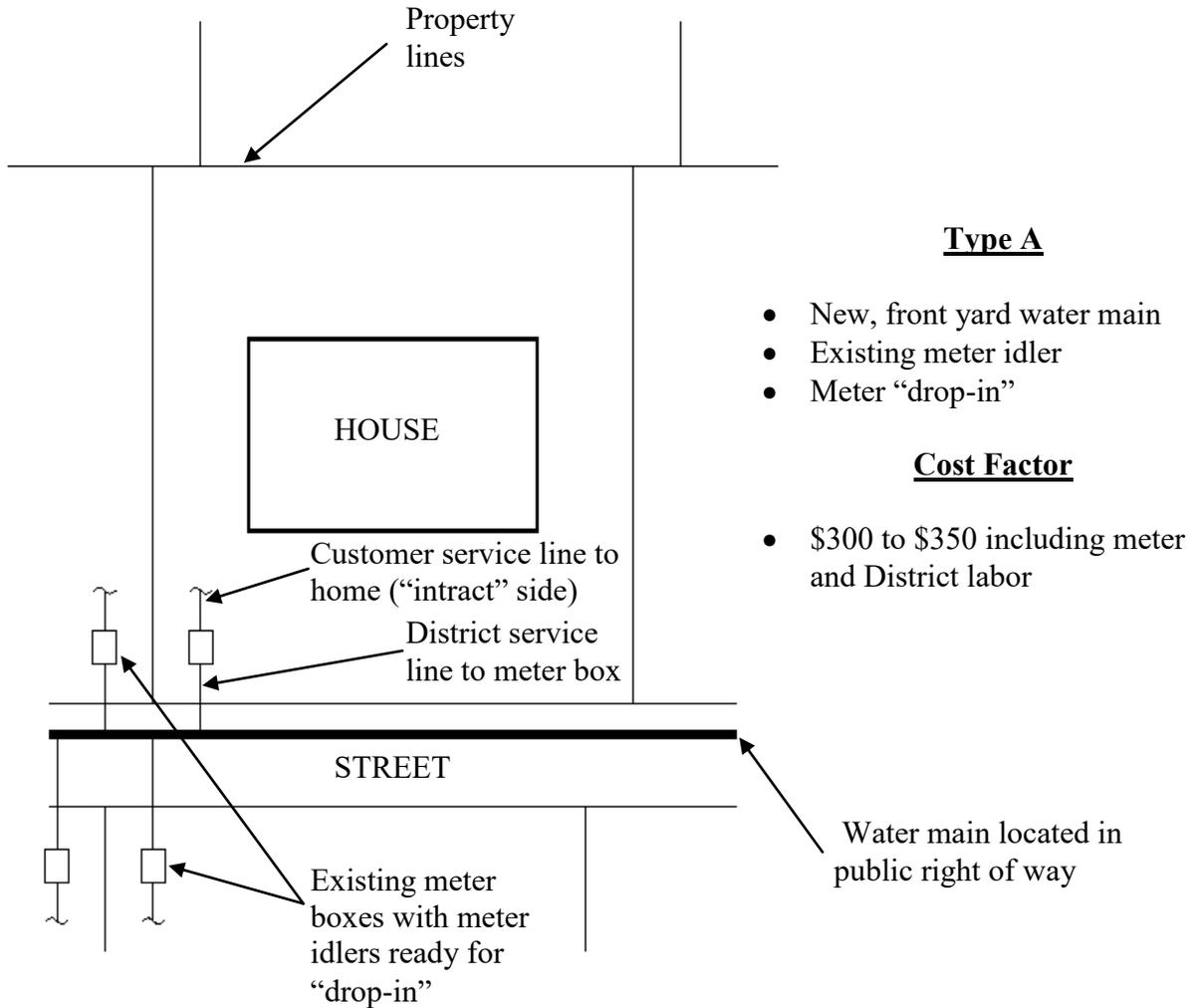
Since 1993, 23 of 169 miles of aging water mains located in back or side-yard easements in the South Service Area have been replaced. These mains were replaced by new water mains constructed in public right of ways fronting customer’s homes. When these new mains were installed, new District service lines, meter boxes and meter idlers were also installed to allow water meters to be added at a later date. These are called “drop-in” meters. Currently all known

drop-ins have been equipped with water meters. Drop-in meters will continue to be installed as situations are found.

This type of retrofit requires only that the existing meter idler be removed and a standard water meter be installed in the meter box. This can be performed in approximately 30 to 60 minutes each with cost being the meter and labor. Figure 2 shows the typical layout for the “drop in” metering scenario.

The estimated cost for these meter drop-ins is \$300 to \$350 per service pending the size of the water meter, which is the current cost for a standard 3/4-inch or 1-inch residential meter and transponder for radio read capability. It is assumed that District forces will perform this work, and, therefore, no installation cost is included in the estimate.

Figure 2. Front Yard Drop-In Meter Installation



Type B. Front Yard Main, No Meter Box or Idler, All Service Line Types

This type is very convenient for retrofitting, provided an existing water main in the public right of way is fronting the home, with a readily accessible curb stop. See Figure 3. The retrofit will consist of replacing the curb stop and installing a meter setter and meter box. All disturbed hardscape and landscaping will be restored to its existing condition. In some areas district service lines are constructed of plastic, which does not meet District specifications and has a tendency to leak over time. If plastic lines are found, they are replaced per District specifications with a more

durable copper pipe. Placement of the new meter boxes is located to within one-foot back of walk. In all cases, landscaping and hardscape will be restored as closely as possible to the previous condition. Photographs will be taken prior to work to verify existing conditions.

The average cost for these meter retrofits is estimated to range from \$1,250 to \$1500 per service assuming a ¾-inch meter. This includes the cost for materials and labor including items furnished by SSWD to install a meter setter, meter box and a ¾-inch meter with a radio read transponder.

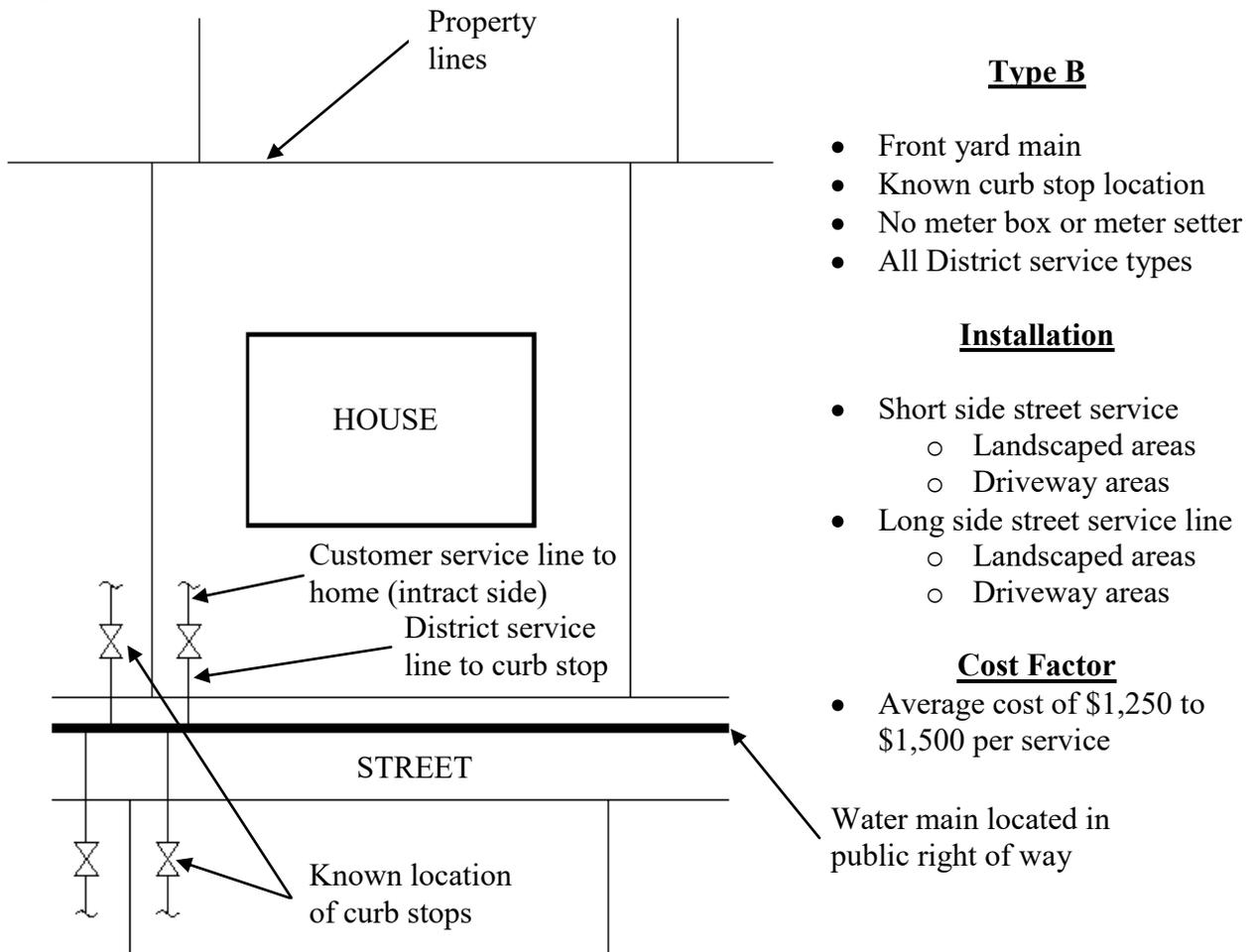
Several problems governing front yard meter retrofit installation have developed during the first three years of the program. These problems found only in the South Service Area have impacted the cost to retrofit and increase customer outreach. The problems encountered are:

1. On the streets where the water main is located at 3 to 5 feet back of side walk or curb the existing curb stop valve has been located at an additional 3 to 5 feet beyond the water main. The distance from the back of walk has been found to be 6 to 10 feet into the customer's yard. For these services the new water meter and box have been relocated to one-foot back walk or curb.
2. The locations of curb stop valves are not uniformly located. The curb stop valves have been found all over the customer's yard such as in the middle of the yard, under trees, under hardscape and under sculptured evergreen bushes. These locations are being marked with white paint, a blue flag or both. The customers are then notified in writing that the new water meter is to be located where the existing curb stop exists in the front yard. The letter also request that each homeowner look at the proposed location and if there are any problems or concerns to please call the District prior to installation so that the District can discussed an alternative location that is not as obtrusive. In these cases District Staff will meet with each homeowner to discuss the requirement for placing the meter box at the location and any possible alternative locations that are reasonable.
3. After the completion of a meter retrofit some customers have requested a relocation of the meter due to the location being aestically displeasing to the customer. At some locations after the meter box has been placed the homeowner has become dissatisfied

with the appearance of the meter box at the location. In these cases Staff will meet with the homeowner to discuss the location including moving the meter; however the cost to relocate after the meter has been installed is to be paid by the homeowner.

4. After installation of the water meter Staff has received conversations with homeowners over downsizing or upsizing of the water meter. The District has provided one down size per home. On upsizing the homeowner is informed that increasing the size of the water meter will increase the billing of the water service.

Figure 3. Front Yard Meter Retrofit Installation



Type C. Backyard, Known or Unknown Service Location, Copper or Plastic Service

Having the water main in the backyard makes retrofitting meters more complicated. The backyard mains are the oldest in the district and the rear location is non-optimal for service and repairs. Installing a meter on backyard piping is difficult and time consuming than a front yard main as more items may need to be replaced and/or repaired. Ideally, the district would like to replace all backyard mains with new mains relocated in public right of way fronting the homes and then install meters as per the “drop in” program. At some point, the current main replacement program will fall short and water meters will need to be installed in backyards to meet the Water Forum obligations.

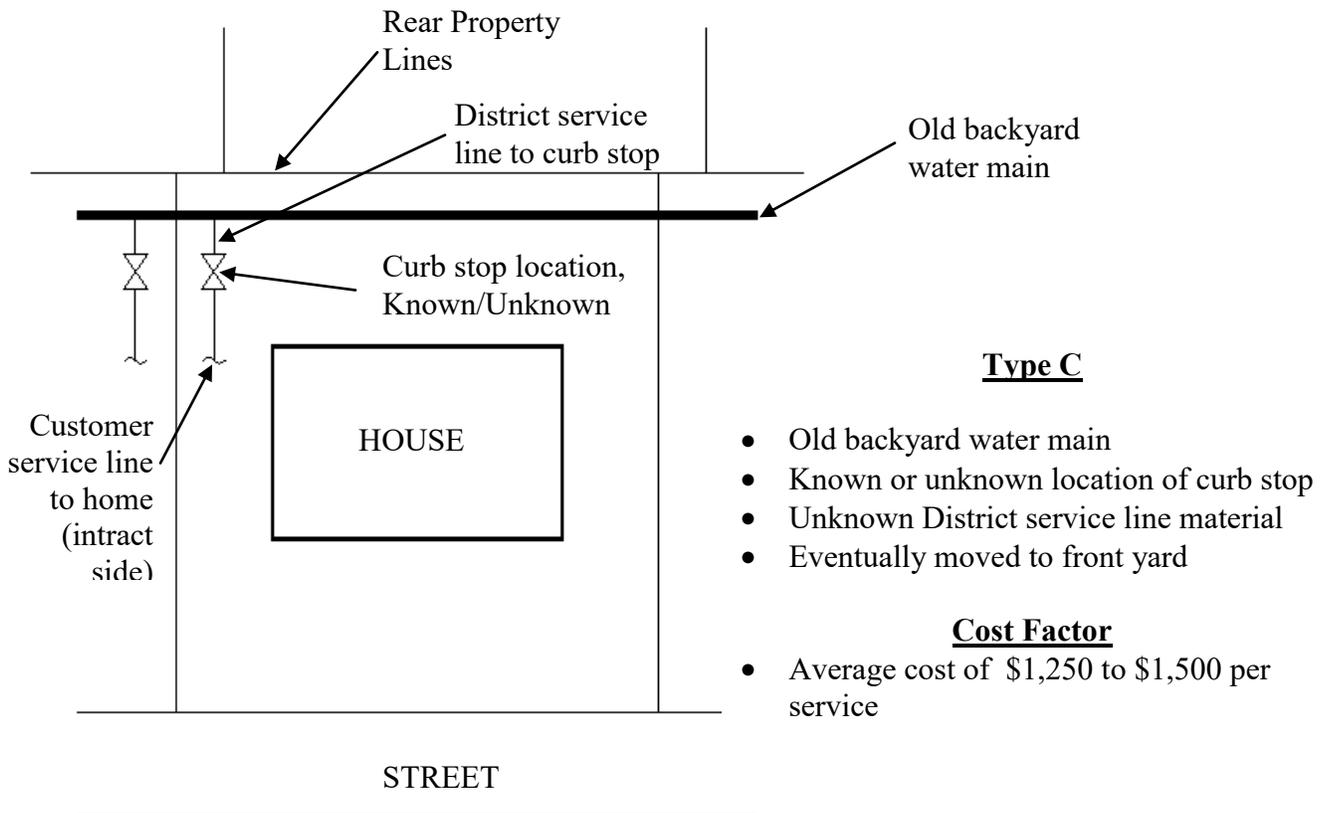
The Type “C” backyard installation in Figure 4 is recognized as having either a known or unknown curb stop or shutoff valve location. Knowing the location of the existing curb stop is beneficial. If the location is unknown, it may prove to be difficult to locate and access. Another concern maybe the type of existing District side service line material. If unsuitable the service may require replacement and then installation of a water meter. If suitable then the service line could be upgraded with a water meter. Only after excavating can the service line be inspected for adequacy.

The type of service line won't factor into this category as it did for front yard main situations. Meters previously installed in backyards will be reused in the front yard as the water main relocation program catches up to that neighborhood. This will be the case except for those occasions where the water main is located in the side yard. On these locations the new water meter would be relocated to the front yard connected to the side yard at a location that matches SSWD specifications. At that time, along with a new main, a new copper service line will also be installed to connect into the relocated water meter.

Although the District has no experience with metering back yard water services, for the purpose of this report it is estimated that the cost of these meter retrofits will average \$1,250 to \$1,500 per service with a ¾-inch meter (similar to a front yard meter retrofit). This includes the cost for materials and labor to install a meter setter, meter box and a ¾-inch meter with a radio read

transponder. This assumes that the existing service line is adequate to retrofit and provide water to the customer. If the service line requires replacement, the cost is estimated to average \$1,750 to \$2,000 per service.

Figure 4. Backyard Meter Retrofit Installation



METER RETROFIT PLAN

Analysis of District to Identify Areas of “Predominance”

To define multiple distinct areas or “blocks” for the meter retrofit project, information about the entire district regarding metering status, average water use, water main location, water main type and lot sizes were used to produce maps showing a general grouping of areas of predominance. All areas have been separated by front and back yard main locations, as these two types require different installation methods. General lot size groupings, divisions by major streets, locations of current meter “drop in” areas further determine boundaries between these sections, and areas already planned for water main replacement projects. Figure 5 shows current residential and

commercial metering status throughout the District. Figure 6 denotes updated un-metered residential areas separated into front and back yard main locations. Figure 7 shows existing water main types throughout the District. Figure 8 shows existing lot sizes throughout the District. Figure 9 shows f the areas or blocks sequentially numbered from north to south.

Figure 5. District-Wide Metering Status

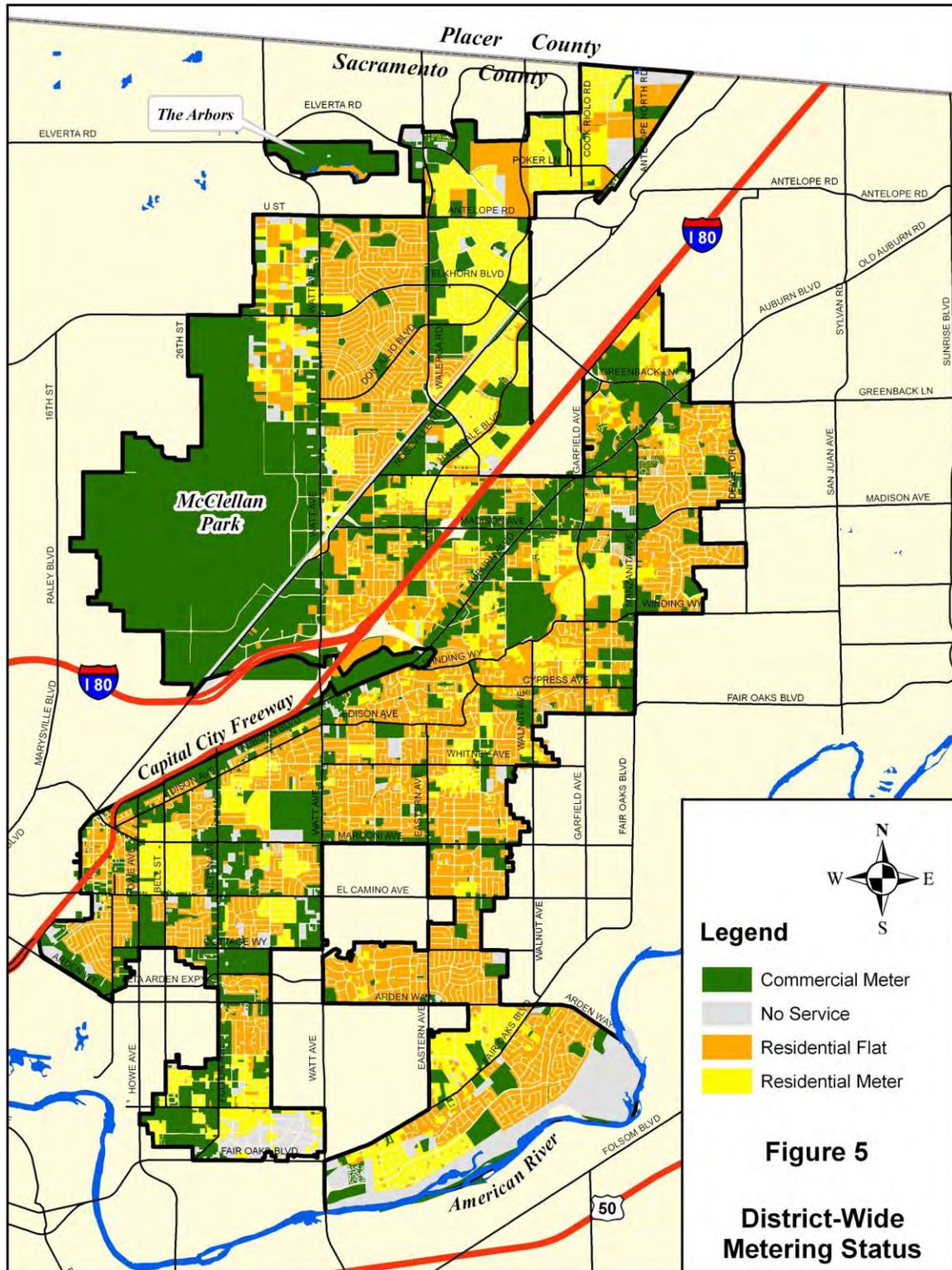


Figure 6. Location of Non-Metered Residential Services with Front or Back Yard Mains

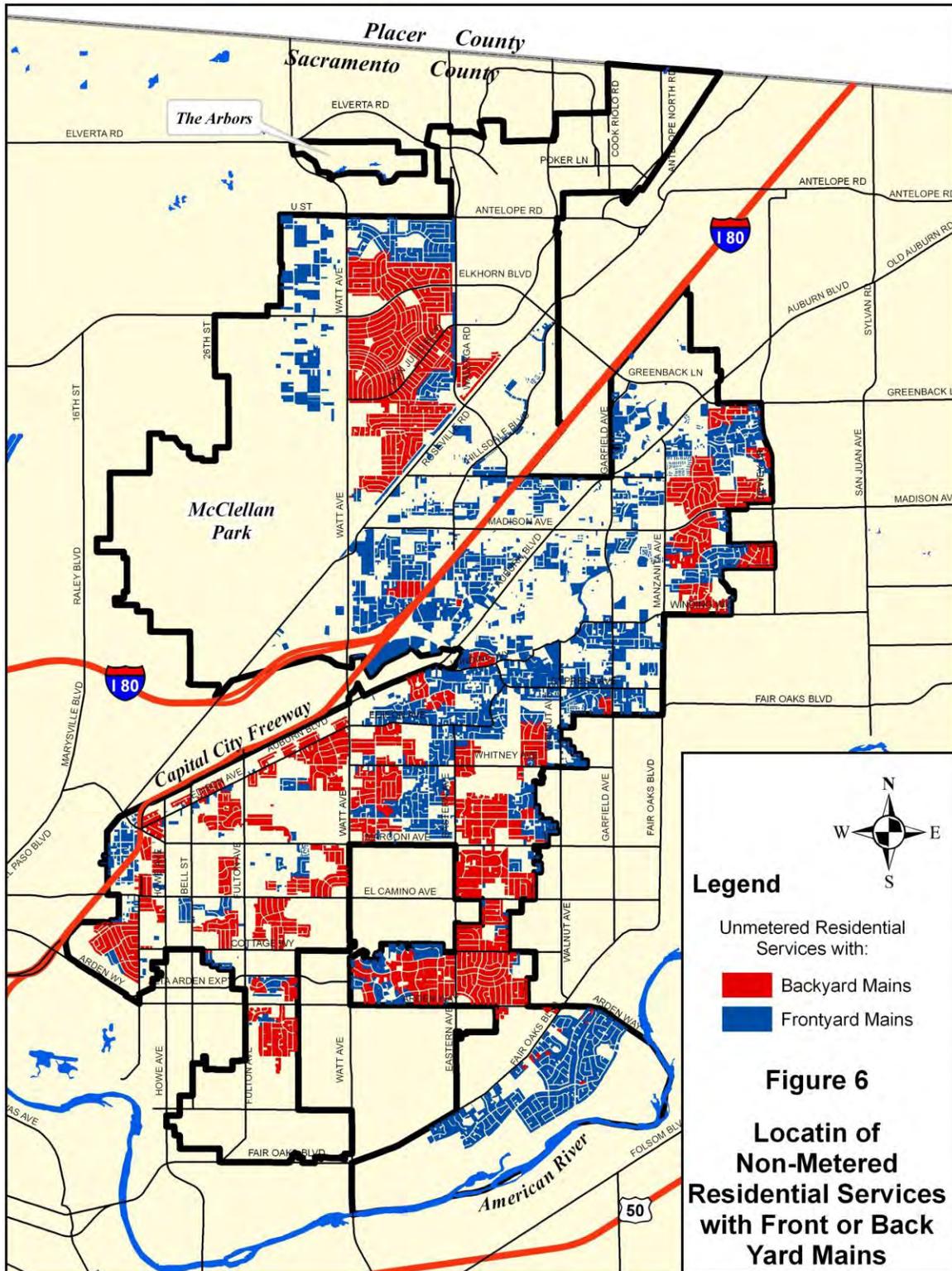


Figure 7. Water Mains Within District (by type)

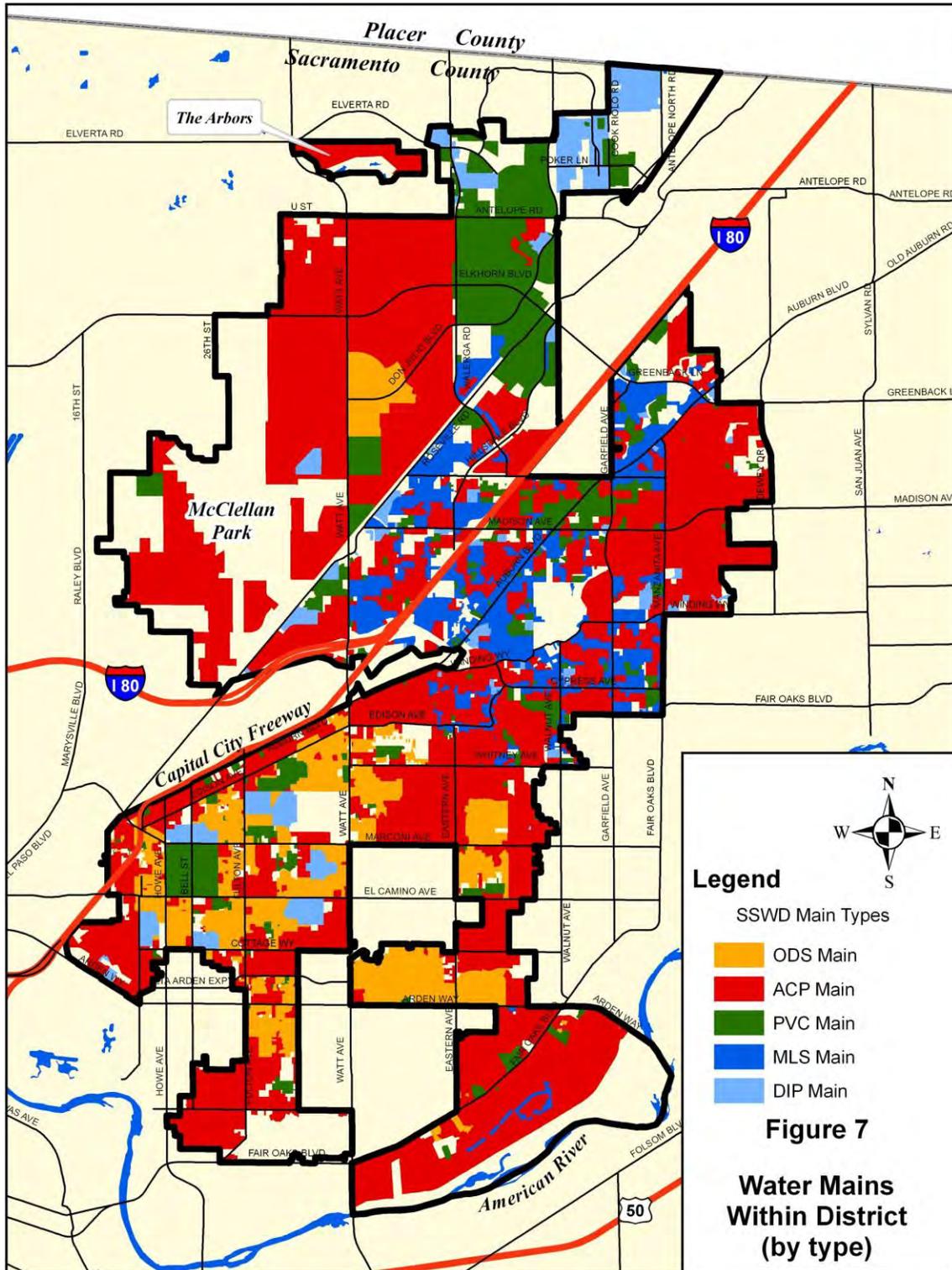


Figure 8. Lot Sizes Within District

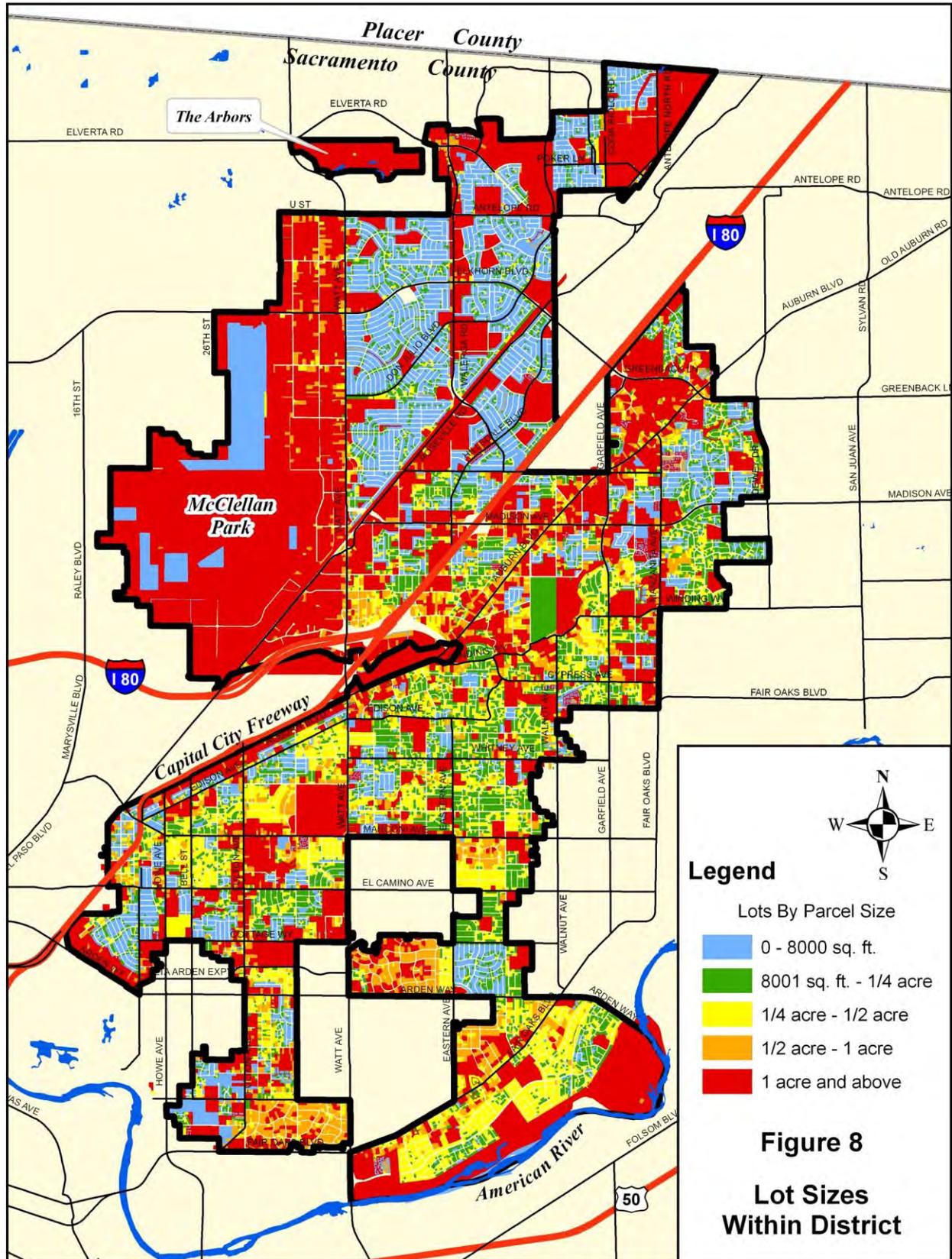


Figure 9. Water Meter Retrofit Plan Areas

Identified Areas with “Predominance” of Criteria

Areas 15, 21, 40, 44, 58, 60, and 69

There are seven separate areas within the South Service Area where main replacement projects were completed over 10 years ago. These front yard “drop-in” services have been completed.

Area 65

This area consists of the Broadmoor Estates Main Replacement Project area, which is one of 12 existing “problem” areas identified in the South Service Area for main replacement. This main replacement project was completed in 2005 including the installation of water meters.

Areas 12, 50, 51, 54, 62, 71, 73, 76, 83, 84, and 85

There are 11 remaining “problem” areas in the Arcade Service Area currently in planning for a main replacement project similar to the Broadmoor Estates Main Replacement project. They include a total of 1,016 homes. Areas 50, 51, 54, 71, 73, 83, 84 and 85 problem areas have been replaced with new water mains in the public right of ways. New water meters have also been installed as part of the completion of the areas. The balance of the areas is scheduled for the next few years for construction.

Area 48

The SSWD boundary currently includes an area within the city limits of the City of Sacramento. This area is known as “Swanston Estates.” There are a total of 1,232 parcels in this area to be metered. This area is scheduled for installation towards the end of the plan.

Area 3

This area incorporates large lots west of Watt Avenue in North Highlands consisting entirely of front yard mains. The average parcel size is 1.39 acres.

Areas 13, 14, 17, 18, 22, 26, 27, and 30

The Arvin area consists of 2,850 residences with both front and rear yard mains. Areas 13, 22, and 26 have front yard mains and total approximately 1,300 residences. The remaining areas

have backyard mains totaling approximately 1,600 residences. This area is scheduled near the end of the plan as part of the main replacement plan.

All Remaining Areas with Front Yard Mains.

These areas were determined by the front yard location of the water main, general lot size similarities and divisions by major streets. The 28 areas in this group are: 2, 4, 5, 8, 9, 11, 16, 19, 20, 23, 24, 25, 29, 31, 34, 35, 41, 43, 45, 52, 59, 77, 79, 81, 82, 87, 88, and 89. Currently areas 2, 5, 15, 21, 40, 43, 44, 58, 69, 77, 87, 88 and a sub-block of 89 have been completed to date.

All Remaining Areas with Backyard Mains

These areas were determined by the back yard location of the water main, general lot size similarities and divisions by major streets. The 28 areas in this group are: 6, 10, 28, 32, 33, 36, 37, 38, 39, 42, 46, 47, 49, 53, 55, 56, 57, 61, 63, 64, 66, 68, 70, 72, 74, 75, 78, 80, and 86. Current out of this group areas 57, partial 66, 75 and part of 86 have been completed with new water mains, fire hydrants and metered water services. Water meters are being installed as the water mains are replaced with new replacement mains constructed in the street with new water services installed at the front of the house. However, by the time the meter retrofit program is to be completed within the next 23 years (water forum agreement to 2030), there will still be areas with back and side-yard water mains. Therefore, it will be necessary to install water meters in the back or side-yards of homes. Fortunately, with radio read technology, it will not be necessary to go into the back yards to read the meters. However, meter maintenance will require access to the backyards in these areas.

PUBLIC OUTREACH

Public outreach is planned for each area as they are scheduled for meter retrofits. The District intends to prepare a detailed outreach plan that would include, at a minimum:

- Information in newsletters.
- Direct mailed letters to affected customers detailing the work that will be performed on the customer's property including a map of the affected area, contact phone numbers and a picture of the meter box that will be placed in the front yard.
- A "knock on every door" to explain the program including providing door hangers notifying of pending work.
- Water conservation information including an offer to perform a water audit.
- Information about billing, how it is calculated, when meter billing will go into effect and contact number for more information.
- Who to contact if customers have questions.

CONCLUSIONS AND RECOMMENDATIONS

- This Meter Retrofit Plan provides a reasonable plan and strategy for retrofitting the District's existing flat rate residential customers (approximately 22,851 services as of 07/19/07) with water meters.
- An accelerated "20-year retrofit plan" unless future legislation requires the District to meter on a more aggressive schedule.
- Water meters to be installed when backyard water mains (mostly located in the South Service Area) are replaced with new mains installed in the street at the front of customer's homes.
- Because of the large number of residential flat rate accounts (approximately 13,911) that are currently served by back yard water mains, and the length of time that it will take to

replace these backyard mains, it is likely that water meters will need to be installed on back yard water services over the course of the proposed 20-year meter retrofit program.

- A prioritization list has been established of the areas/blocks to be metered that is objective and defensible to our customers.
- The number of meters to be installed in any one year will be made up first of meters that are installed for reasons other than the meter retrofit plan (i.e., voluntary metering, etc). In addition, a certain number of meters will be installed each year as a result of planned main replacement projects. Finally, the remaining meters needed to meet our annual obligation will come from the prioritization list included in this report (see Figure 10).

Figure 10. Table of Meter Retrofit Plan/Projected Scheduling

Meter Retrofit Plan / Projected Scheduling*

Project Description	FY 04	FY 05	FY 06	CY06	CY07	CY08	CY09	CY10	CY11	CY12	CY13	CY14	CY15	CY16	CY17	CY18	CY19	CY20	CY21	CY22	Total	
20 Year Schedule	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		
Main Replacement Plan			96	560	475	600	256	479														
Arvin Area - Back Yard														1235	380	209	282	309	414	378		
North Highlands - Back yard																1267	1192	1176	881	113		
Meter Retrofit Program	829	935	926	969	872	1240	1024	1671	1746	1748	1646	1694	1694	1698	1606	1652	1597	1596	1512	1681	29108	
Totals	829	1031	1486	1444	1472	1496	1503	1671	1746	1748	1646	1694	1694	1698	1606	1652	1597	1596	1512	1681	29108	
Meter Retrofit Areas that correspond to the Main Replacement Program			65	50 / 51 / 54 / 57 / 71	75B / 83 / 85 / 6A / 67A / 73 / 75A	62 / 84 / 56 / 66B	6L / 6H / 6FA															
Arvin Area #'s - Backyard														13 / 14	17 / 18A	18B	18C	18D	22 / 26	27 / 30		
North Highlands - Back yard																6A / 6B / 6C / 6D / 6E / 6F / 6G / 6H / 6I / 6J / 6K / 6L / 6M / 6N / 6O / 6P						
General Area #'s Expected for Meter Retrofits.	2 / 15 / 21 / 44 / 87A	43 / 58 / 60 / 69 / 87B	05 / 77 / 88 / 89A	89B	29 / 89C	25 / 34 / 47B / 47C / 47D / 47E / 59 / 79	35 / 45	24 / 31 / 41 / 82	3 / 4 / 36 / 46 / 55	8 / 16 / 20 / 23 / 32 / 70	8 / 16 / 20 / 23 / 32 / 70	9 / 19 / 78A-E	10 / 28 / 38 / 53 / 67B / 67C / 67C / 86A	37B / 37C / 47A / 47A / 63	39 / 48 / 33 / 68	42	72	75C / 80	11 / 37A / 61 / 64			

* Updated July 23, 2007

Meter Retrofit Areas Completed To Date
 Meter Retrofits Areas Planned Over Next 3 years
 Meter Retrofit Areas Projected Beyond Next 3 Years

APPENDICES

**SACRAMENTO SUBURBAN WATER DISTRICT
(JUNE 5, 2003)**

A. INTRODUCTION

Sacramento Suburban Water District (SSWD) was organized on February 1, 2002, through consolidation of the former Arcade Water District (AWD) and the former Northridge Water District (NWD).

The initial *Water Forum Agreement* recorded agreements among stakeholder organizations that could be entered into as the effective date of the initial *Water Forum Agreement*, April 24, 2000. However, it was also recognized that there were some stakeholder organizations that had remaining issues that could not be resolved by that time.

The NWD Purveyor Specific Agreement (PSA) was completed and is included in the *Water Forum Agreement*. The AWD signed a Procedural Agreement because there remained some unresolved issues between AWD and other stakeholder organizations.

SSWD's two former Water Districts are referred to hereinafter as the Arcade Service Area (ASA) and the Northridge Service Area (NSA).

NORTHRIDGE SERVICE AREA (NSA)

The NSA is located in the north central part of Sacramento County. A portion of this service area is contiguous with Placer County. The NSA currently encompasses 22,538 customers, of which 20,049 are residential customers.

Historically, the NSA principally extracted and delivered groundwater to meet its customer demands. Since 1998, however, the NSA has delivered treated surface water to its customers on an intermittent basis through the Cooperative Transmission Pipeline (CTP) and the Northridge Transmission Pipeline (NTP).

The former NWD and the Placer County Water Agency (PCWA) entered into an agreement for delivery of up to 29,000 acre-feet per year (AF/year) under PCWA's water right as part of a groundwater stabilization program. This agreement is referred to hereinafter as the "SSWD-PCWA Agreement." Surface water has been delivered within the NSA under this agreement since June 1, 2000.

ARCADE SERVICE AREA (ASA)

The ASA currently has about 22,775 connections, of which 20,117 are residential customers. The ASA is divided into the Town & Country and North Highlands sub-areas.

Town & Country Sub-area

The Town & Country sub-area is currently entirely dependent upon groundwater. However, this area lies within the place of use (POU) of the City of Sacramento's American River water rights. The former AWD had an agreement with the City of Sacramento (City) for diversion of up to 26,064 AF/year of raw water under the City's American River water rights. This agreement provides for a floating point of diversion from the American River from below Nimbus Dam to the confluence of the American River with the Sacramento River. Current established points of diversion for this entitlement include the City's E.A. Fairbairn Water Treatment Plant (FWTP)

and a site referred to as the "American River Wells." This agreement was assigned to SSWD under the consolidation. SSWD is working on an agreement with the City for diversion and treatment of this water supply at the FWTP.

North Highlands Sub-area

The North Highlands sub-area is within the North Central Group of water purveyors (as defined by the Water Forum) in Sacramento County. This sub-area is currently entirely dependent upon groundwater. SSWD anticipates, however, that in the future the North Highlands sub-area will utilize a combination of groundwater and surface water supplies as part of the aforementioned groundwater stabilization program. Surface water supplies delivered to the North Highlands sub-area will likely come from the American River pursuant to the "SSWD-PCWA Agreement" or Section 215 water made available by the U.S. Bureau of Reclamation (Reclamation). These supplies will be delivered to North Highlands via the CTP and the NTP. The North Highlands sub-area lies within the POU of PCWA

B. SEVEN ELEMENTS OF THE WATER FORUM AGREEMENT: INTEGRATED PACKAGE

In order to achieve the Water Forum's two coequal objectives, providing a safe reliable water supply and preserving the values of the Lower American River, all signatories to the *Water Forum Agreement* need to endorse and, where appropriate, participate in each of seven complementary actions.

- X Increased Surface Water Diversions
- X Actions to Meet Customers' Needs While Reducing Diversion Impacts in Drier Years
- X Support for an Improved Pattern of Fishery Flow Releases from Folsom Reservoir
- X Lower American River Habitat Management Element
- X Water Conservation Element
- X Groundwater Management Element
- X Water Forum Successor Effort

For each interest to get its needs met, it has to endorse all seven elements. Based on this linkage, signatories agree to endorse and, where appropriate, participate in all seven of these elements.

C. BASELINE DIVERSIONS

Baseline diversions represent the historic maximum amount of water diverted annually from the American River through the year 1995.

NORTHRIDGE SERVICE AREA (NSA)

No American River diversion was included in the baseline for the NSA.

ARCADE SERVICE AREA (ASA)

Town & Country Sub-area

7722/A052903pmbWaterForumPSA
Draft: 5/29/03

Because of operational and economic considerations, the Town & Country sub-area has limited its historical maximum amount of water diverted from the American River at the American River Wells to about 3,500 AF/year. [NOTE: The historical (and existing) nominal capacity of the American River Wells is about 10 million gallons per day (MGD) or about 15.5 cubic feet per second (CFS). On a continuous basis, such a diversion is equivalent to an annual volume of water of about 11,200 AF/year.]

North Highlands Sub-area

No American River diversion was included in the baseline for the North Highlands sub-area.

D. AGREEMENT FOR MEETING SSWD'S WATER SUPPLY NEEDS TO THE YEAR 2030

NORTHRIDGE SERVICE AREA (NSA)

TEXT OF FORMER NORTHRIDGE WATER DISTRICT AGREEMENT NOW NORTHRIDGE SERVICE AREA (NSA):

This section is verbatim from the WFA and now the provisions, conditions etc. are applicable to SSWD.

INTRODUCTION

Some signatories to the *Water Forum Agreement* have differing perspectives on the conditions under which Northridge Water District ("Northridge") should divert water from Folsom Reservoir. These differing perspectives are important for understanding the context in which the following agreement has been entered into. The perspectives of Northridge and the environmental organizations signatory to the *Water Forum Agreement* are also set forth below.

In the interest of coming to an agreement, signatories to the *Water Forum Agreement* agree to the compromise set forth in the agreement below.

Agreement

All signatories will support a project to divert, treat and convey Sacramento River water in a pipeline that would connect to the Northridge pipeline ("Sacramento River Pipeline"). They will support a Warren Act contract with the U.S. Bureau of Reclamation for diversion of 29,000 acre feet of Placer County Water Agency ("PCWA") water from Folsom Reservoir. They will also support the PCWA petition to the SWRCB for change in its place of use for water to be used in north central Sacramento County ("Expanded POU"), with the following conditions included in the SWRCB order:

1. For the first ten years that water is available for diversion by Northridge from Folsom Reservoir under the Northridge-PCWA agreement, but not more than twelve years from the

effective date of the *Water Forum Agreement*, whichever occurs first,¹ Northridge's diversions under the Northridge - PCWA agreement, for its own use or delivery to other purveyors, will be subject to the following restrictions:

a. Northridge will be able to divert PCWA water only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 950,000 acre feet.

b. In December, January and February following a March through November period when the unimpaired inflow into Folsom Reservoir was less than 950,000 acre feet, Northridge will not divert PCWA water until such time as or after water is being released from Folsom Reservoir for flood protection.

c. In addition to the foregoing, Northridge's diversions of PCWA water will be limited during the ten year period pursuant to the water use schedule in the Northridge-PCWA agreement, which allows annually-increasing diversions of up to 24,000 acre feet per year during the first ten years of water deliveries under that agreement.

d. Nothing in this agreement is intended to restrict Northridge's ability to take delivery of Section 215 water from Folsom Reservoir from the U.S. Bureau of Reclamation whenever it may be available.

2. If Northridge is able to take delivery of Sacramento River water through the Sacramento River pipeline, Northridge will thereafter divert water from Folsom Reservoir under the Northridge-PCWA agreement, for its own use or delivery to other purveyors, only in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 1,600,000 acre feet (i.e., "above-Hodge").

3. If Northridge is not able to take delivery of Sacramento River water through the Sacramento River Pipeline within the ten-year period, the SWRCB would hold a hearing ("SWRCB Hearing") if requested by Northridge, the City of Sacramento, County of Sacramento, Friends of the River, Sierra Club or Save the American River Association. The purpose of the SWRCB Hearing will be to determine whether to add or revise conditions to PCWA's water rights for diversion of water from Folsom Reservoir under the Northridge-PCWA agreement that are necessary to mitigate impacts from such diversions and/or prevent such diversions from adversely impacting diversion of American River water under the City of Sacramento's prior water rights. Nothing in this agreement determines the relative priority of the water rights of the City of Sacramento and PCWA. If Northridge is not able to take delivery of Sacramento River water through the Sacramento River Pipeline within the ten-year period, Northridge would thereafter divert water from Folsom Reservoir under the Northridge-PCWA agreement, for its own use or delivery to other purveyors, only in years when the projected March through November unimpaired inflow into Folsom Reservoir was greater than 1,600,000 acre feet (i.e.,

¹ This time period is hereafter referred to as the "ten-year period," and it may be extended for a period of up to two additional years by agreement of the parties to this agreement.

"above-Hodge") and under the conditions referred to in Section 1.b. of this agreement unless these conditions are revised by a SWRCB order issued following the SWRCB Hearing. In addition, Northridge could divert water under the conditions referred to in section 1.d. of this agreement.

The diversion restrictions set forth in this agreement reflect a compromise by the Water Forum parties in order to settle a dispute among them. If there is a SWRCB Hearing, the parties do not intend that the SWRCB consider the existence of this compromise as evidence of appropriate diversion conditions after the conclusion of the ten-year period. It is the intention of the parties that the SWRCB's determination following the SWRCB Hearing be based upon the best available scientific and other evidence available at the time of the SWRCB Hearing. Nothing in this agreement shall affect the right of PCWA to terminate the Northridge-PCWA agreement if PCWA reasonably determines that any term of the SWRCB order resulting from the SWRCB Hearing is unacceptable.

4. Northridge will neither divert nor accept diversions of PCWA water from Folsom Reservoir or the American River under the Northridge-PCWA agreement, for its own use or delivery to other purveyors, whenever such diversions alone or in conjunction with other diversions would limit or impair diversions from the American River by the City of Sacramento under its prior water rights.

Northridge's delivery to other purveyors of water diverted from the American River under the Northridge-PCWA agreement is subject to those purveyors signing and implementing their commitments under the *Water Forum Agreement*.

[End of provisions to be included in SWRCB order.]

In addition, the *Water Forum Agreement* specifies that:

a. With the support of all Water Forum signatories, Northridge will continue to work with other interested parties to pursue a project involving a diversion on the Sacramento River, a new water treatment plant and water conveyance facilities that connect to the Northridge pipeline for use of Sacramento River water within the area served by the Northridge pipeline.

b. In determining the amount of surface water available for growth in the north part of Sacramento County within the ten-year period referred to in this agreement, the parties agree that the long-term annual average yield of water diverted from Folsom Reservoir under the Northridge-PCWA agreement would be not more than 17,400 acre feet, which is the projected average annual water supply that would be available if diversions were restricted to above-Hodge conditions.

PERSPECTIVES OF THE PARTIES REGARDING DIVERSIONS BY NORTHRIDGE WATER DISTRICT OF AMERICAN RIVER WATER UNDER THE NORTHRIDGE-PCWA AGREEMENT

Some signatories to the *Water Forum Agreement* have differing perspectives on the conditions under which Northridge Water District should divert water from Folsom Reservoir. These differing perspectives are important for understanding the context in which the attached agreement has been entered. The perspectives of Northridge Water District and the environmental organizations signatory to the *Water Forum Agreement* are set forth below.

It is the position of the environmental organizations signatory to the *Water Forum Agreement* that:

1. For purposes of a settlement, diversions by Northridge Water District of American River water under the Northridge-PCWA agreement in years when the projected March through November unimpaired inflow into Folsom Reservoir is greater than 950,000 acre feet are acceptable to members of the Environmental Caucus during the ten-year period following the effective date of the *Water Forum Agreement*. This is acceptable because other purveyors that divert upstream of the Lower American River who have fewer alternatives will not be substantially increasing their diversions under the *Water Forum Agreement* during the ten-year period.
2. After the ten-year period following the signing of the *Water Forum Agreement*, Northridge Water District should divert American River water under the Northridge-PCWA agreement only when the unimpaired March through November inflow into Folsom Reservoir is greater than 1,600,000 acre feet (i.e., "above Hodge"). This reflects the Environmental Caucus' belief that the north Sacramento County area groundwater basin could be stabilized at an acceptable level with Northridge diverting American River water under the Northridge-PCWA agreement in only above Hodge years.
3. Diversions of American River water under the Northridge-PCWA agreement below the Hodge threshold after the initial ten-year period would unreasonably affect the instream, wildlife, recreational and aesthetic values of the Lower American River. Such diversion below the Hodge threshold would also unreasonably affect the availability of water for instream uses downstream of the mouth of the American River.

It is the position of the Northridge Water District that:

1. Northridge believes that its dry year diversion restrictions under the *Water Forum Agreement* should be comparable to the requirements of other purveyors who divert water from Folsom Reservoir.
2. Northridge believes that diversions of PCWA water from Folsom Reservoir in below-Hodge years after the conclusion of the ten-year period referred to in the agreement need not be prohibited to avoid significant impacts to instream uses of the lower American River and downstream.

ARCADE SERVICE AREA (ASA)

Town & Country Sub-area

SSWD is pursuing a contract with the City of Sacramento for delivery of surface water from the Fairbairn Water Treatment Plant. Water delivered to SSWD by the City will be subject to (1) this Purveyor Specific Agreement, (2) the contract between SSWD and the City, and (3) the maximum diversion rates from the Fairbairn Water Treatment Plant agreed to by the City of Sacramento in its Purveyor Specific Agreement to the *Water Forum Agreement*.

1. MOST YEARS: As applied to the Town & Country sub-area and the agreement between SSWD and the City for raw surface water from the American River, Most Years are defined as time periods when the flow bypassing the City's diversion at the FWTP exceeds the Hodge Flow Criteria (see Appendix C).

In Most Years, SSWD may use up to 26,064 AF/year of surface water diverted from the American River to meet water demands within the Town & Country sub-area and for other conjunctive use purposes consistent with the groundwater management policies of the Sacramento Groundwater Authority. Operational considerations (e.g., peak demands during summer months) may require SSWD to use surface water diverted from the American River at an instantaneous rate of diversion up to 30 MGD, or 46.4 CFS. SSWD may also use groundwater to meet a portion of demands within the Town & Country sub-area. (see "4. Additional Considerations" below)

2. DRIER YEARS: As applied to the Town & Country sub-area and the agreement between SSWD and the City for raw surface water from the American River, Drier Years are defined as time periods when the flow bypassing the City's diversion at the FWTP does not exceed the Hodge Flow Criteria (see Appendix C).

In Drier Years, SSWD will use groundwater to meet the demands within the Town & Country sub-area subject to **Additional Considerations**" (No. 4,)below.

3. DRIEST YEARS (i.e. CONFERENCE YEARS): Defined for purposes of the *Water Forum Agreement* as follows: Years when the projected March through November Unimpaired Inflow to Folsom Reservoir is less than 400,000 acre feet.

In Driest Years, SSWD will use groundwater to meet the demands within the Town & Country sub-area subject to **Additional Considerations**" (No.4) below.

It is recognized that in years when the projected unimpaired inflow to Folsom Reservoir is less than 400,000 AF there may not be sufficient water available to provide the purveyors with the driest years quantities specified in their agreements and provide the expected driest years flows to the mouth of the American River. In those years, SSWD will participate in a conference with

other stakeholders on how the available water should be managed. The conferees will be guided by the Conference Year Principles described in Section Four, I. of the *Water Forum Agreement*.

4. ADDITIONAL CONSIDERATIONS

Signatories to the *Water Forum Agreement* acknowledge and agree that SSWD shall not relinquish control of or otherwise abandon the right to any quantity of water that it has foregone delivery and/or diversion of under this agreement, and that SSWD intends to pursue the potential diversion of these quantities of water from a point of diversion on the Sacramento River.

Signatories to the *Water Forum Agreement* also acknowledge and agree that if SSWD for any reason is not able to enter into a contract with the City for surface water delivery, SSWD is expected to pursue a "project" for resuming the diversion from the American River Well System (including construction of a surface water treatment plant) or from another point of diversion on the American River below Nimbus Dam established pursuant to SSWD's contract assignment from the City. If SSWD develops a specific proposal ("project"), SSWD will discuss it with other signatories to the Water Forum Agreement in the context of both the Water Forum's two coequal objectives. Water Forum signatories retain their ability to support or oppose such a future proposal.

Recognizing SSWD's diversion points on the American River, and that diversions lower on the river will increase flows in the river between the diversions points, SSWD will, taking into consideration economic factors, distribution capacity and legal constraints, make reasonable efforts to divert from the lower diversion point when SSWD has a choice of where to divert water.

North Highlands Sub-area

As discussed in the introduction, SSWD anticipates that in the future the North Highlands sub-area will utilize a combination of groundwater and surface water supplies as part of the groundwater stabilization program. Surface water supplies delivered to the North Highlands sub-area will come from the American River pursuant to the "SSWD-PCWA Agreement" or Section 215 water made available by Reclamation. These supplies will be delivered to North Highlands via the CTP and the NTP and will be subject to the same conditions described for the NSA (including the potential for delivery of surface water diverted from the Sacramento River).

E. SPECIFIC AGREEMENTS FOR COMPLYING WITH THE SEVEN ELEMENTS *(Agreements in italics are common in all Specific Agreements.)*

1. All signatories to the *Water Forum Agreement* will endorse all water entitlements needed for the diversions specified in each Purveyor Specific Agreement.
2. *All signatories will endorse construction of facilities to divert, treat and distribute water consistent with this Purveyor Specific Agreement and the Water Forum Agreement including diversion structures, treatment plants, pumping stations, wells, storage facilities, and major transmission piping. Endorsement is also to be provided for necessary rights-of-ways, permits, and other endorsements which may be needed, in the context of the following five points:*

- a. *All signatories agree that implementation of the Water Forum Agreement including an Improved Pattern of Fishery Flow Releases, the Updated Lower American River flow standard, the Lower American River Habitat Management Element, Actions to Meet Customers' Needs While Reducing Diversion Impacts in Drier Years, and the Water Conservation Element constitute reasonable and feasible mitigation for any cumulative impacts on the Lower American River caused by diversions included in the Water Forum Agreement.*
 - b. *Environmental impacts of facilities to divert, treat and distribute water will be subject to site-specific environmental review. It is understood that signatories may provide comments on site specific impacts. All signatories will work in good faith to agree on reasonable and feasible mitigation for any site-specific impacts.*
 - c. *To the extent that the water facilities are consistent with the Water Forum Agreement, signatories agree that they will not object to those water facilities based on the cumulative impacts to the Lower American River. Nor will signatories object to water facilities consistent with the Water Forum Agreement based on the planned growth to be served by those water facilities. (See Section Four IV, Relationship of Water Forum Agreement to Land Use Decision Making.)*
 - d. *In the planning for new water diversion, treatment, and distribution facilities identified in the Water Forum Agreement, water purveyors signatory to the Agreement will either provide for a public participation process, such as meeting with already established citizen advisory committees, or other appropriate means to help design and implement these projects.*
 - e. *All signatories retain their existing ability to provide input on specific details of facility design, financing, and construction.*
3. *Endorsement of the water entitlements and related facilities in the Water Forum Agreement means that signatories will expend reasonable efforts to:*
- a. *Speak before stakeholder boards and regulatory bodies,*
 - b. *Provide letters of endorsement,*
 - c. *Provide supportive comments to the media,*
 - d. *Advocate the Water Forum Agreement to other organizations, including environmental organizations that are not signatory to the Water Forum Agreement, and*
 - e. *Otherwise respond to requests from other signatories to make public their endorsement of the Water Forum Agreement.*
4. *All signatories agree that participation in the Water Forum and the Successor Effort is in*

the best interests of water consumers and the region as a whole. Participation in the Water Forum is the most economically feasible method of ensuring that water demands of the future will be met. Furthermore, provisions for groundwater management, conjunctive use, conservation programs, improved pattern of fishery flow releases from Folsom Reservoir, habitat management, and a reliable dry year supply are in the public interest, and represent reasonable and beneficial use of the water resource.

5. *All signatories will not oppose and will endorse where appropriate needed rates and fees applied equitably. This includes endorsement at the California Public Utilities Commission for investor owned utilities' ability to recover all costs of conservation programs, including residential meter retrofit, through rates.*

6. *All signatories will endorse an Improved Pattern of Fishery Flow Releases from Folsom Reservoir and reduced daily flow fluctuations for the Lower American River. (Reference Section Three, III.)*

7. *All signatories will endorse formal assurances that the diversions will be consistent with the conditions in the Water Forum Agreement and that an Improved Pattern of Fishery Flow Releases from Folsom Reservoir will be implemented.*

8. *All signatories will endorse and participate where appropriate in all provisions of the Water Forum Agreement, including all agreements pertaining to other signatories and executed as part of this agreement.*

9. *All signatories will participate in education efforts and advocate the Water Forum Agreement to regulatory bodies and signatory stakeholder boards as appropriate.*

10. *All signatories will participate in the Water Forum Successor Effort to oversee, monitor and report on the implementation of the Water Forum Agreement. (Reference Section Three, VII., Water Forum Successor Effort). This includes participating with other signatories in carrying out procedural agreements as identified in the Water Forum Agreement. To the extent that conditions change in the future, all signatories will work together in good faith to identify ways to ensure that the two coequal goals of the Water Forum will still be met.*

11. *All signatories will endorse and, where appropriate, financially participate in the Lower American River Habitat Management Element (Reference Section Three, IV., Lower American River Habitat Management Element).*

12. *All signatories will endorse and, where appropriate, implement the Water Conservation Element of the Agreement (Reference Section Three, V., Water Conservation Element). This purveyor's implementation of water conservation will be as specified in its Water Conservation Plan which is incorporated as Appendix J to the Water Forum Agreement. The signatories acknowledge that a portion of SSWD's Arcade service area is within the boundaries of the City of Sacramento.*

13. *All signatories will endorse and, where appropriate, participate in implementation of the*

Sacramento North Area Groundwater Management Authority to maintain a North Area estimated average annual sustainable yield of 131,000 acre feet.

14. *All signatories will endorse development of a groundwater management arrangement for the South Area and where appropriate participate in its development, to maintain a South Area estimated average annual sustainable yield of 273,000 acre feet.*

15. *All signatories will endorse development of a groundwater management arrangement for the Galt Area and where appropriate participate in its development, to maintain a Galt Area estimated average annual sustainable yield of 115,000 acre feet.*

16. *Signatories authorizing individuals to represent them in matters included within the Water Forum Agreement will ensure that representations made by those individuals are consistent with the Water Forum Agreement and are upheld by the signatories.*

17. *This Agreement is in force and effect for all signatories for the term of the Memorandum of Understanding, December 31, 2030.*

18. *Any solution that provides for future needs will have costs. New diversion, treatment, and distribution facilities, wells, conservation programs, and required environmental mitigation will be needed. This Agreement identifies that these solutions must be equitable, fiscally responsible, and make the most efficient use of the public's money.*

Water suppliers have both capital costs for facilities and operations and maintenance costs. This Agreement recommends that charges imposed to recover capital costs associated with water acquisition, treatment, or delivery be equitable. Any costs for facilities funded through bonds will be recovered as provided by law. In addition, signatories to the Water Forum Agreement agree that operational, maintenance and replacement costs should be recovered from beneficiaries of the system in accordance with California Government Code Sections 53720 to 53730 (Proposition 62) and California Constitution, Articles XIII, C and XIII, D (Proposition 218) and other laws to the extent they are applicable.

19. *All signatories agree to endorse, and where appropriate, participate in Sacramento River Supply for North Sacramento County and Placer County (Reference Section Four, III).*

20. *All signatories will endorse, and where appropriate, participate in the section of the Water Forum Agreement entitled "Relationship of Water Forum Agreement to Land Use Decision Making" (Reference Four, IV).*

21. *All signatories will endorse, and where appropriate, participate in the Folsom Reservoir Recreation Program (Reference Section Four, V).*

22. *Purveyors signatory to the Water Forum Agreement will reference the Water Forum Agreement, including agreed upon estimated average annual sustainable yields of each of the three subareas of the groundwater basin in Sacramento County and limits to diversions from the American River in their water master plans and urban water management plans, which are used in providing information to cities and counties as required under Chapter 881 of the Statutes of*

1995.

23. Any transfers of American River water by signatories will be delivered in a manner consistent with an Improved Pattern of Fishery Flow Releases as referenced in the Water Forum Agreement.

F. ASSURANCES AND CAVEATS

Because the *Water Forum Agreement* is a comprehensive set of linked elements, it is absolutely essential that adequate assurances be secured for every element. In an agreement that will extend over three decades, the timing of these assurances is critical. Full implementation of all seven elements cannot occur simultaneously. Therefore all signatories agree with the provisions in the Assurances and Caveats Section of this *Water Forum Agreement*.

Two particularly important assurances are the updated Lower American River Flow Standard and Upstream American River Diversion Agreements.

All signatories agree they will recommend to the State Water Resources Control Board an updated American River flow standard and updated Declaration of Full Appropriation to protect the fishery, wildlife, recreational and aesthetic values of the Lower American River. The recommendation will include requirements for U.S. Bureau of Reclamation releases to the Lower American River. In addition, the City of Sacramento's Fairbairn diversion will be required to comply with the diversion limitations of the City's Purveyor Specific Agreement. The *Water Forum Agreement* also includes agreed upon dry year reductions by purveyors upstream of Nimbus Dam. The recommendation for an updated Lower American River standard will be consistent with:

Water Forum Agreement provisions on water diversions including dry year diversions,
and
Implementation of the Improved Pattern of Fishery Flow Releases which optimizes the release of water for the fisheries.

The recommendation will also address related issues such as principles to guide water management in the driest years, flexibility in the standard to allow adaptive management, and amending the existing "Declaration of Full Appropriation for the American River."

Purveyors signatory to the *Water Forum Agreement* who divert from upstream of Nimbus Dam agree they will enter into contract with the Bureau that will provide assurances that the upstream diverters will divert only the agreed upon amounts, which include provisions for reductions in dry year and/or other equivalent measures.

In order to have a durable agreement it is necessary to include the following caveats. These are statements describing actions or conditions that must exist for the *Agreement* to be operative.

1. As specified below, each purveyor's commitment to implementing all provisions of the *Water Forum Agreement* is contingent on it successfully obtaining its water supply entitlements and facilities.

a. If a purveyor receives support from the other signatories to the *Agreement* for all of its facilities and entitlements as shown on the chart in Section Three, I., of the *Water Forum Agreement*, "Major Water Supply Projects that Will Receive Support Upon Signing the *Water Forum Agreement*" and if it receives all necessary approvals for some or all of those facilities and entitlements, then the purveyor will fully support and participate in the following provisions of the *Water Forum Agreement*:

- (1) Support for the Improved Pattern of Fishery Flow Releases
- (2) Water Forum Successor Effort
- (3) Water Conservation Element
- (4) Lower American River Habitat Management Element
- (5) Support for the Updated Lower American River flow standard
- (6) Restriction of diversions or implementation of other actions to reduce diversion impacts in drier years as specified in its Purveyor Specific Agreement.

and

b. If a purveyor is not successful in obtaining all necessary approvals for all of its facilities and entitlements as shown on the chart in Section Three, I., of the *Water Forum Agreement*, "Major Water Supply Projects that will Receive Support Upon Signing the *Water Forum Agreement*," that would constitute a changed condition that would be considered by the Water Forum Successor Effort.

2. All signatories agree that business, citizens, and environmental signatories' obligation to support, and where specified, implement all provisions of the *Water Forum Agreement* is contingent on implementation of those provisions of the *Agreement* that meet their interests.

3. A stakeholder's support for water supply entitlements and facilities is contingent on:

a. Project-specific compliance with the California Environmental Quality Act, and where applicable, the National Environmental Policy Act, federal Endangered Species Act and California Endangered Species Act.

b. Purveyors' commitment in their project-specific EIRs and CEQA findings to: all seven elements of the *Water Forum Agreement*; support for updating the Lower American River flow standard; commitment by those purveyors that divert from upstream of Nimbus Dam to entering into signed diversion agreements with the U.S. Bureau of Reclamation; commitment by the City of Sacramento to inclusion of the terms of the diversion provisions of its Purveyor Specific Agreement into its water rights.

c. Signed diversion agreements between purveyors that divert upstream of Nimbus Dam and the U.S. Bureau of Reclamation. Other signatories to the *Water Forum Agreement* shall be third party beneficiaries to the diversion agreements solely for the purpose of seeking specific performance of the diversion agreements relating to reductions in surface water deliveries and/or diversions if Reclamation fails to enforce

any of those provisions. The status of a signatory to the *Water Forum Agreement* as a third party beneficiary to the diversion agreements is dependent on that signatory complying with all the terms of the *Water Forum Agreement*, including support for the purveyor specific agreement for the purveyor's project. This is not to intend to create any other third party beneficiaries to the diversion agreements, and expressly denies the creation of any third party beneficiary rights hereunder for any other person or entity.

d. Adequate progress on the updated Lower American River standard. The schedule for obtaining the updated standard is in Section Four, I., of the *Water Forum Agreement*.

e. Adequate progress in construction of the Temperature Control Device.

f. Adequate progress in addressing the Sacramento River and Bay-Delta conditions associated with implementation of the *Water Forum Agreement*.

4. Environmental stakeholders' support for facilities and entitlements is dependent upon the future environmental conditions in the Lower American River being substantially equivalent to or better than the conditions projected in the Water Forum EIR. If the future environmental conditions in Lower American River environment are significantly worse than the conditions projected in the EIR, this would constitute a changed condition that would be considered by the Water Forum Successor Effort. Significant new information on the needs of the Lower American River fisheries, which was not known at the time of execution of the *Water Forum Agreement*, would also constitute a changed condition that would be considered by the Water Forum Successor Effort.

G. REMAINING ISSUES

None

BMP 4 RESIDENTIAL METER RETROFIT

- A. In the first two years after the *Water Forum Agreement* is signed, the Sacramento Suburban Water District would plan for, budget, and prepare the public for a residential meter retrofit program. Beginning no later than the start of the fourth year after the *Water Forum Agreement* is signed, the Sacramento Suburban Water District would annually retrofit at least 3.3% - 5% of their total number of unmetered residential connections as of the date of the *Water Forum Agreement*.

SACRAMENTO SUBURBAN WATER DISTRICT WATER FORUM WATER CONSERVATION PLAN

BMP 1 INTERIOR AND EXTERIOR WATER AUDITS AND INCENTIVE PROGRAMS FOR SINGLE FAMILY RESIDENTIAL, MULTI-FAMILY RESIDENTIAL, AND INSTITUTIONAL CUSTOMERS

- A. Within three years of agreement signing, Sacramento Suburban Water District's will:
1. contract for trained water auditors;
 2. prepare and make available, as needed, multi-lingual interior and exterior water audit materials for customers;
 3. prepare and make available to customers seasonal climate-appropriate irrigation information; and
 4. investigate opportunities for community based organizations (CBOs) to receive the training and financial incentives necessary for them to implement this BMP for their constituents.
- B. Sacramento Suburban Water District's contractor will annually:
1. offer audits to all SF, MF and Institutional customers beginning metered billing;
 2. offer, through bill inserts or other means, water-use reviews to all customers receiving a meter; and
 3. survey past program participants to determine if audit recommendations were implemented.
- C. The water-use review program contractor will:
1. provide audits conducted by trained auditors;
 2. provide audits that may include device installation by contractor or customer (showerheads, faucet aerators, etc.), identification of water-use problems, recommend repairs, instruction in landscape principles (hydrozones, ET, etc.), irrigation timer use and, when appropriate, meter reading;
 3. provide program participants with seasonal irrigation schedules by hydrozone and/or station; and
 4. provide incentives to achieve 12% annual participation of the targeted 20% of customers.
- D. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 2 PLUMBING RETROFIT OF EXISTING RESIDENTIAL ACCOUNTS

- A. Within three years of agreement signing, Sacramento Suburban Water District will:
1. provide high quality low-flow showerheads, faucet aerators and toilet leak detection tablets, as appropriate at time of audit, to customers without efficient fixtures;
 2. offer toilet leak test kits to all change of account customers who visit the signatory's office;
 3. work with the local "Welcome Wagon" or equivalent organization to provide water conservation materials to new residents;
 4. work with local hardware/home stores to offer free water conservation information and toilet leak test kits at the check-out counters; and
 5. investigate partnership programs with local energy utilities to provide water conservation audits, materials and devices.
- B. Sacramento Suburban Water District and its contractor will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 3 DISTRIBUTION SYSTEM WATER AUDITS, LEAK DETECTION AND REPAIR

- A. Within three years of agreement signing, Sacramento Suburban Water District will complete and be maintaining:
1. an annually updated 'system map' of type, size and age of pipes; pressures; leak history; and historic data;
 2. installation, where appropriate, of devices (such as pressure recorders) or use of other methods designed to identify area with greater than 10% losses;
 3. an ongoing meter calibration and replacement program for all production and distribution meters;
 4. an ongoing leak detection & repair program (as defined in the manual) focused on high probability leak areas identified by the system map; and
 5. a complete system-wide leak detection program when Sacramento Suburban Water District is completely metered.
- B. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 4 NON-RESIDENTIAL METER RETROFIT

- A. Within three years of agreement signing, Sacramento Suburban Water District will:
1. identify all non-residential unmetered customers;
 2. provisionally identify any non-residential unmetered customers whom may be very difficult and expensive to retrofit;

3. adopt a plan to meter at least 20 percent of unmetered non-residential accounts yearly so that within five years of becoming a signatory 85-90 percent of non-residential customers are metered; and
 4. begin installation of meters at non-residential unmetered customer locations, with consideration of separate landscape meters.
- B. Within 60 days of meter installation, Sacramento Suburban Water District will provide newly metered non-residential customers with:
1. information on how to read their meter and a consumption-based water bill; and
 2. information on Sacramento Suburban Water District-provided water conservation programs and services.
- C. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 4 RESIDENTIAL METER RETROFIT

- A. In the first two years after the *Water Forum Agreement* is signed, the Sacramento Suburban Water District would plan for, budget, and prepare the public for a residential meter retrofit program. Beginning no later than the start of the fourth year after the *Water Forum Agreement* is signed, the Sacramento Suburban Water District would annually retrofit at least 3.3% - 5% of their total number of unmetered residential connections as of the date of the *Water Forum Agreement*.

BMP 5 LARGE LANDSCAPE WATER AUDITS AND INCENTIVES FOR COMMERCIAL, INDUSTRIAL, INSTITUTIONAL (CII), AND IRRIGATION ACCOUNTS

- A. Within three years of agreement signing, Sacramento Suburban Water District's will:
1. identify all Irrigation accounts and CII accounts with landscapes of one acre and larger and record that information in the customer database;
 2. contract for certified and/or trained landscape water auditors;
 3. prepare and distribute multi-lingual (as appropriate) irrigation system materials, seasonal climate-appropriate information on irrigation scheduling and offer training for customers and landscape workers;
 4. develop seasonal climate-appropriate information to determine irrigation schedules, for the three basic hydrozones identified in the *DWR Landscape Water Management Handbook*, and provided that information to the customers with one acre or larger landscapes; and
 5. begin installation of climate appropriate water efficient landscaping at landscaped Sacramento Suburban Water District facilities, phased in over the five years following agreement signing.

- B. Sacramento Suburban Water District's contractor will annually:
1. directly contact all Irrigation accounts and CII accounts with one acre and larger landscapes, not previously audited, and offer them landscape water-use reviews (audits);
 2. offer, through bill inserts or other means, landscape water-use reviews to all customers;
 3. survey past program participants to determine if audit recommendations were implemented; and
 4. offer program participants with separate irrigation meters information showing the relationship between actual consumption and their ET-based water demand.
- C. The Sacramento Suburban Water District landscape water-use review program contractor will:
1. provide audits conducted by certified landscape water auditors;
 2. provide audits that consist of a system review, to identify necessary irrigation system repairs, and, once repairs have been completed, a water-use review including measurement of landscaped area;
 3. provide program participants with seasonal irrigation schedules by hydrozone and/or station;
 4. provide program participants with regular reminders to adjust irrigation timer settings; and
 5. provide incentives to achieve at least 12 percent annual participation of targeted customers.
- D. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 6 LANDSCAPE WATER CONSERVATION REQUIREMENTS FOR NEW AND EXISTING COMMERCIAL, INDUSTRIAL, INSTITUTIONAL AND MULTI-FAMILY DEVELOPMENTS

- A. Sacramento Suburban Water District will:
1. attend a landscape task force with other local governments and water purveyors, the building and green industries and environmental / public interest groups to review the existing ordinance to determine if it is at least as effective as the Model Water Efficient Landscape Ordinance, and to monitor, and revise, when applicable, the ordinance;
 2. participate in the landscape task force's review of the implementation of the ordinance, including the landscape plan review and final inspection/certification process; and
 3. participate in the landscape task force's determination if program effectiveness is diminished by city/county staff time constraints, budget or lack of landscape knowledge/expertise.

- B. Sacramento Suburban Water District will publicly support the county's actions to enact and/or revise and then fully implement a landscape water efficiency ordinance.
- C. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 7 PUBLIC INFORMATION

- A. Within three years of agreement signing, Sacramento Suburban Water District's program will include:
 - 1. a combination of a Sacramento Suburban Water District specific program in conjunction with full participation by the Sacramento Suburban Water District in the Sacramento Area Water Works Association (SAWWA) Conservation Committee's Public Outreach Program or other equivalent regional program. This program includes programs such as: media advertising campaigns, commercial consumer outreach, promotional materials, community events and fairs, evapotranspiration data availability, a Web site, and allied organizations outreach;
 - 2. elements implemented directly by the Sacramento Suburban Water District will include:
 - a. using utility bill inserts or messages on payment notices; and
 - b. providing information on residential metered customers' bills showing use in gallons per day for the last billing period compared to the same period the year before.

BMP 8 SCHOOL EDUCATION

- A. Within three years of agreement signing, Sacramento Suburban Water District's program will include:
 - 1. A combination of a Sacramento Suburban Water District specific program in conjunction with full participation by the Sacramento Suburban Water District in the Sacramento Area Water Works Association (SAWWA) Conservation Committee's Public Outreach Program or other equivalent regional program. This program includes programs such as: school outreach, promotional materials, community events and fairs, a Web site, and allied organizations outreach;
 - 2. Elements implemented directly by the Sacramento Suburban Water District include:
 - a. offering tours of Sacramento Suburban Water District xeriscape gardens to elementary schools in the Sacramento Suburban Water District service area; and
 - b. working with schools served by the Sacramento Suburban Water District to promote school audits, reduced water bills, and innovative funding for equipment upgrades.

BMP 9 COMMERCIAL AND INDUSTRIAL (CI) WATER CONSERVATION

- A. Within three years of agreement signing, Sacramento Suburban Water District's will have:
1. contracted for trained commercial/industrial water auditors;
 2. the DWR Commercial / Industrial (CI) water-use materials available for CI customers;
 3. established, if possible, cooperative CI audit programs with other utilities; and
 4. a list of available CI water-use consultants.
- B. Sacramento Suburban Water District's contractor will annually:
1. identify the top 10% of commercial water users and top 10% of industrial water users, not previously audited, and directly contact them or the appropriate customer's representative and offer them water-use reviews (audits). Provide these customers with data on their current water-related costs (supply, wastewater, energy, on-site treatment, etc.);
 - a. (for metered customers) annually determine the top 10% of commercial customers and of industrial customers based on water use, and when appropriate, special water-use factors (high water use, high wastewater flows, poor quality wastewater, high-energy use, etc.); and
 - b. (for unmetered customers) annually determine the top 10% of commercial customers and of industrial customers based on special water-use factors such as wastewater flows, poor quality wastewater, and high-energy use. etc.
 2. offer, through bill inserts or other means, CI water-use reviews to all CI customers; and
 3. survey past program participants to determine if audit recommendations were implemented
- C. The Sacramento Suburban Water District water-use review program contractor will:
1. provide audits conducted by trained commercial/industrial water auditors;
 2. provide incentives to achieve at least 20% annual participation of the targeted 10% of existing customers; and
 3. contact past program participants for a follow-up audit at least every fifth year.
- D. Within three years of agreement signing, Sacramento Suburban Water District will:
1. promote the use of efficient water-use technologies by commercial and industrial customers by offering incentives related to the benefits gained by the water and sewer service providers;
 2. coordinate with the city or county during the permitting of new, modified or change-of-water-use CI projects within the Sacramento Suburban Water District's service area to ensure that the submitted findings are reviewed by the Sacramento Suburban Water District to identify incentive program opportunities;
 3. consider separate landscape water meter(s) when the combined service would require a 1 1/2" or larger meter; and
 4. require efficient cooling systems, recirculating pumps for fountains and ponds, and water recycling systems for vehicle washing as a condition of service.

- E. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 11 CONSERVATION PRICING FOR METERED ACCOUNTS

- A. Within three years of agreement signing, Sacramento Suburban Water District will:
1. identify all metered customers by account type (single family, multi-residential, commercial, industrial, institutional, landscape irrigation, reclaimed, wholesale);
 2. establish quantity-based rates for each account type;
 3. begin educating all customers about the quantity-based rate structure; and
 4. provide metered customers with monthly or bi-monthly information which shows current flat-rate charges, actual water use in ccf (hundred cubic feet), and what charges would have been if based on actual use.
- B. Sacramento Suburban Water District will, within six years of agreement signing, bill all metered customers utilizing rates designed to recover the cost of providing service as well as on quantity of water used.

BMP 12 LANDSCAPE WATER CONSERVATION FOR NEW/EXISTING SINGLE FAMILY HOMES

- A. Sacramento Suburban Water District's contractor will implement a program, which includes:
1. information on climate-appropriate landscape design, plants and efficient irrigation equipment/management provided to change-of-customer accounts and, in cooperation with the Building Industry Association of Superior California, to new customers. The availability of this information will be publicized to all existing Single Family Homes in the Sacramento Suburban Water District's service area on an annual basis;
 2. landscape audit/water-use survey program actively marketed to all SF customers at the beginning of metered billing; and
 3. annual pre-irrigation season notification to Single Family Homes served by the Sacramento Suburban Water District of Sacramento Suburban Water District-provided landscape assistance (audits/surveys, materials, special offers, etc.).
- B. Sacramento Suburban Water District's on-going program, in cooperation with the California Landscape Contractors Association, Sacramento Area Water Works Association, other purveyors, etc., will include:
1. participation in the development/maintenance of a local demonstration garden within five years following agreement signing (does not have to be located within Sacramento Suburban Water District's service area but should be convenient to the Sacramento Suburban Water District's customers);
 2. annual participation at local and regional landscape fairs and garden shows;
 3. annual cooperative education and marketing campaigns with local nurseries;
 4. annual irrigation season landscape media campaign; and
 5. annual post-irrigation season notification, to all customers, of the importance of timer resets/ sprinkler shut-offs.

C. Sacramento Suburban Water District will:

1. attend a landscape task force with other local governments and water purveyors, the building and green industries and environmental / public interest groups to review the existing ordinance to determine if it is at least as effective as the Model Water Efficient Landscape Ordinance as pertains to single family homes, and to monitor, and revise, when applicable, the ordinance;
2. participate in the landscape task force's review of the implementation of the ordinance, including builder compliance, landscape plan review, and final inspection/certification process; and
3. participate in the landscape task force's determination if program effectiveness is diminished by city/county staff time constraints, budget or lack of landscape knowledge/expertise.

D. Sacramento Suburban Water District will publicly support the county's actions to enact and/or revise and fully implement a landscape water efficiency ordinance.

E. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

BMP 13 WATER WASTE PROHIBITION

Sacramento Suburban Water District has a water waste prohibition ordinance which includes measures and enforcement mechanisms.

A. The water waste prohibition measures include:

1. irrigation water shall not be allowed to run off to adjoining property or to a roadside ditch or gutter;
2. leaking pipes, fixtures, or sprinklers shall be repaired promptly;
3. open hoses not permitted - automatic shut-off nozzles are required; and
4. swimming pools, ponds and fountains shall be equipped with recirculating pumps. Pool draining and refilling only for health, maintenance or structural reasons - requires agency approval.

B. Other measures, such as the following, will be considered and may be permanent, seasonal or related to water shortage:

1. restricting irrigation hours or days;
2. use of a hose to clean sidewalks, driveways, patios, streets and commercial parking lots is not permitted, except for health and safety;
3. restaurants serving water only on request;
4. restricting the use of potable water for compaction, dust control or other construction purposes when non-potable water is available; and
5. limiting the flushing of sewers or fire hydrants, except for health and safety (may be permanent, seasonal or related to water shortage).

- C. The waste prohibition enforcement mechanisms are a graduated series of responses, which include: personal notification, monetary fees, and service termination.
- D. Within three years of agreement signing Sacramento Suburban Water District will:
1. notify all customers at least annually of the waste prohibitions (by newspaper, public notice, mailings, utility billings or a combination of such) prior to the irrigation season;
 2. have staff will respond to reports of water waste in a timely manner;
 3. will have water waste patrols at least during water shortages; and
 4. will cooperate with the city or county in their program enforcement efforts.

BMP 14 WATER CONSERVATION COORDINATOR

Sacramento Suburban Water District's water conservation coordinator is Warren Jung, who will be responsible for preparing, implementing and monitoring the Plan.

Within three years of agreement signing, at least one Sacramento Suburban Water District staff member or employee of the Sacramento Suburban Water District's conservation program contractor will be an AWWA Certified Water Conservation Practitioner (Level II), if the program becomes an industry standard, or will pass equivalent training.

BMP 16. ULTRA-LOW FLUSH TOILET REPLACEMENT PROGRAM FOR NON-RESIDENTIAL CUSTOMERS

- A. Within three years of agreement signing, Sacramento Suburban Water District's contractor will:
1. identify all non-residential customers, estimate the approximate number of non-ULF toilets at each account, and rank them by high, medium or low use (e.g., restaurant toilets are high use, warehouse toilets are low use); and
 2. if possible, established a cooperative district / sanitation district ULF rebate program.
- B. If a regional program is established, Sacramento Suburban Water District's contractor will annually:
1. offer, through direct mail or other direct communication, ULF rebates to all non-residential accounts which do not yet have ULF toilets, with special focus on those with the highest number of high-use non ULF-toilets.
- C. The regional retrofit program will:
1. offer the necessary incentive (which may include rebates, no interest loans, vouchers, billing surcharges/rebates, etc.) to insure that at least 10 percent of non-residential non-ULF toilets are replaced with ULF toilets each year, with a final installation target of 90 percent of all non-residential toilets being ULFs within ten years;
 2. consider larger rebates for the more expensive high-use flushometer-type ULF installations;

3. investigate opportunities for community based organizations (CBOs) to receive the training and financial incentives necessary for them to implement this BMP for their constituents; and
4. consider monitoring the change in water use at metered-accounts that install ULF toilets.

D. Sacramento Suburban Water District will be fully implementing the program described above no later than the beginning of the fourth year after agreement signing.

CITIZEN INVOLVEMENT PROGRAM

The Sacramento Suburban Water District is investigating ways to implement this aspect of the *Water Forum Agreement* by using existing citizen groups such as perhaps the various CPAC's (County Planning Advisory Committees such as the North Highlands – Foothill Farms Area CPAC, the Carmichael CPAC, and the Antelope CPAC) in their service area.

Assembly Bill No. 2572

CHAPTER 884

An act to amend Section 521 of, to amend and renumber Sections 110 and 111 of, to add Sections 527, 528, 529, and 529.5 to, and to add the heading of Article 3.5 (commencing with Section 525) to Chapter 8 of Division 1 of, the Water Code, relating to water.

[Approved by Governor September 29, 2004. Filed
with Secretary of State September 29, 2004.]

LEGISLATIVE COUNSEL'S DIGEST

AB 2572, Kehoe. Water meters.

Existing law generally requires the installation of a water meter as a condition of water service provided pursuant to a connection installed on or after January 1, 1992. Existing law declares that the state goal for measurement of water use is the achievement, on or before January 1, 1992, of the installation of water meters on all new water service connections after that date to systems owned or operated by a water purveyor.

This bill, with certain exceptions, would require an urban water supplier, as defined, on or before January 1, 2025, to install water meters on all municipal and industrial water service connections that are located in its service area.

The bill would require an urban water supplier, beginning on or before January 1, 2010, but subject to certain exceptions, to charge each customer that has a service connection for which a water meter has been installed, based on the actual volume of deliveries, as measured by a water meter.

The bill would require a water purveyor that becomes an urban water supplier on or after January 1, 2005, to install water meters on all municipal and industrial water service connections within 10 years of becoming an urban water supplier, and, with a certain exception, to charge each customer for which a meter has been installed, based on the actual volume of water delivered, as measured by the water meter, within 5 years of becoming an urban water supplier.

The bill would provide that these provisions supersede and preempt all enactments, including charter provisions and amendments thereto, and other local action of cities and counties, including charter cities and charter counties, and other local public agencies that conflict with these provisions, other than enactments or local action that impose additional or more stringent requirements regarding matters set forth in the bill.

The bill, on and after January 1, 2010, would require an urban water supplier that applies for financial assistance from the state for a wastewater treatment project, drinking water treatment project, or water use efficiency project, or a permit for a new or expanded water supply, to demonstrate that the applicant meets certain requirements.

The bill would authorize a water purveyor, including an urban water supplier, to recover the cost of providing services related to the purchase, installation, and operation of a water meter from rates, fees, or charges.

The people of the State of California do enact as follows:

SECTION 1. Section 110 of the Water Code is amended and renumbered to read:

525. (a) Notwithstanding any other provision of law, every water purveyor who sells, leases, rents, furnishes, or delivers water service to any person shall require, as a condition of new water service on and after January 1, 1992, that a suitable water meter to measure the water service shall be installed on the water service facilities in accordance with this chapter. The cost of installation of the meter shall be paid by the user of the water, and any water purveyor may impose and collect charges for those costs.

(b) Subdivision (a) applies only to potable water.

(c) Subdivision (a) does not apply to a community water system which serves less than 15 service connections used by yearlong residents or regularly serves less than 25 yearlong residents, or a single well which services the water supply of a single-family residential home.

SEC. 2. Section 111 of the Water Code is amended and renumbered to read:

526. (a) Notwithstanding any other provision of law, an urban water supplier that, on or after January 1, 2004, receives water from the federal Central Valley Project under a water service contract or subcontract executed pursuant to Section 485h(c) of Title 43 of the United States Code with the Bureau of Reclamation of the United States Department of the Interior shall do both of the following:

(1) On or before January 1, 2013, install water meters on all service connections to residential and nonagricultural commercial buildings constructed prior to January 1, 1992, located within its service area.

(2) On and after March 1, 2013, or according to the terms of the Central Valley Project water contract in operation, charge customers for water based on the actual volume of deliveries, as measured by a water meter.

(b) An urban water supplier that receives water from the federal Central Valley Project under a water service contract or subcontract

described in subdivision (a) may recover the cost of providing services related to the purchase, installation, and operation and maintenance of water meters from rates, fees, or charges.

SEC. 3. Section 521 of the Water Code is amended to read:

521. The Legislature further finds and declares all of the following:

(a) Water furnished or used without any method of determination of the quantities of water used by the person to whom the water is furnished has caused, and will continue to cause, waste and unreasonable use of water, and that this waste and unreasonable use should be identified, isolated, and eliminated.

(b) Water metering and volumetric pricing are among the most efficient conservation tools, providing information on how much water is being used and pricing to encourage conservation.

(c) Without water meters, it is impossible for homeowners and businesses to know how much water they are using, thereby inhibiting conservation, punishing those who conserve, and rewarding those who waste water.

(d) Existing law requires the installation of a water meter as a condition of water service provided pursuant to a connection installed on or after January 1, 1992, but the continuing widespread absence of water meters and the lack of volumetric pricing could result in the inefficient use of water for municipal and industrial uses.

(e) The benefits to be gained from metering infrastructure are not recovered if urban water suppliers do not use this infrastructure.

(f) This chapter addresses a subject matter of statewide concern. It is the intent of the Legislature that this chapter supersede and preempt all enactments and other local action of cities and counties, including charter cities and charter counties, and other local public agencies that conflict with this chapter, other than enactments or local action that impose additional or more stringent requirements regarding matters set forth in this chapter.

(g) An urban water supplier should take any available necessary step consistent with state law to ensure that the implementation of this chapter does not place an unreasonable burden on low-income families.

SEC. 4. The heading of Article 3.5 (commencing with Section 525) is added to Chapter 8 of Division 1 of the Water Code, to read:

Article 3.5. Metered Service

SEC. 5. Section 527 is added to the Water Code, to read:

527. (a) An urban water supplier that is not subject to Section 526 shall do both the following:

(1) Install water meters on all municipal and industrial service connections located within its service area on or before January 1, 2025.

(2) (A) Charge each customer that has a service connection for which a water meter has been installed, based on the actual volume of deliveries, as measured by the water meter, beginning on or before January 1, 2010.

(B) Notwithstanding subparagraph (A), in order to provide customers with experience in volume-based water service charges, an urban water supplier that is subject to this subdivision may delay, for one annual seasonal cycle of water use, the use of meter-based charges for service connections that are being converted from nonvolume-based billing to volume-based billing.

(b) A water purveyor, including an urban water supplier, may recover the cost of providing services related to the purchase, installation, and operation of a water meter from rates, fees, or charges.

SEC. 6. Section 528 is added to the Water Code, to read:

528. Notwithstanding Sections 526 and 527, any water purveyor that becomes an urban water supplier on or after January 1, 2005, shall do both the following:

(a) Install water meters on all municipal and industrial service connections located within its service area within 10 years of meeting the definition of urban water supplier.

(b) (1) Charge each customer for which a water meter has been installed, based on the actual volume of water delivered, as measured by the water meter, within five years of meeting the definition of urban water supplier.

(2) Notwithstanding paragraph (1), in order to provide customers with experience in volume-based water service charges, an urban water supplier that is subject to this subdivision may delay, for one annual seasonal cycle of water use, the use of meter-based charges for service connections that are being converted from nonvolume-based billing to volume-based billing.

(c) For the purposes of this article, an "urban water supplier" has the same meaning as that set forth in Section 10617.

SEC. 7. Section 529 is added to the Water Code, to read:

529. (a) This article addresses a subject matter of statewide concern.

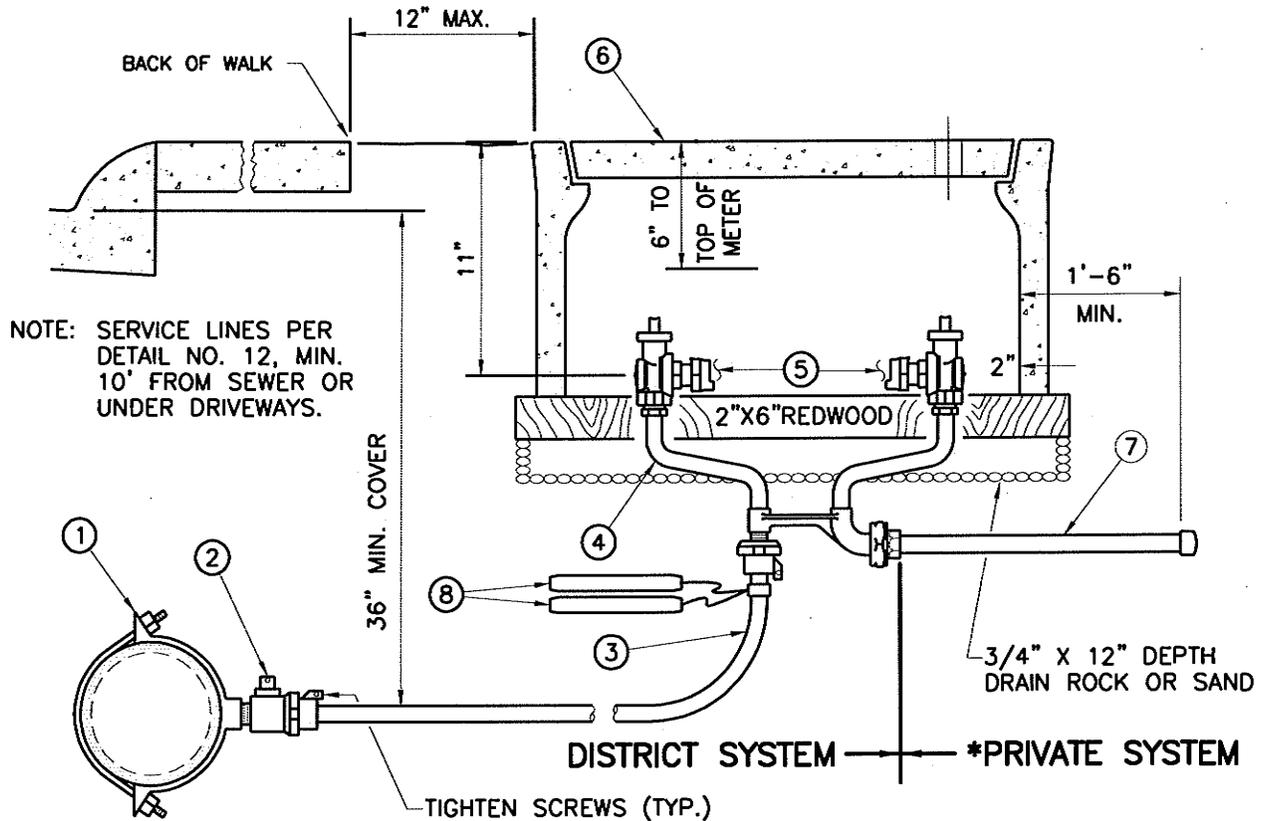
(b) Subject to subdivision (c), this article supersedes and preempts all enactments, including charter provisions and amendments thereto, and other local action of cities and counties, including charter cities and charter counties, and other local public agencies that conflict with this article.

(c) This article does not supersede or preempt any enactment or other local action that imposes additional or more stringent requirements regarding matters set forth in this article.

SEC. 8. Section 529.5 is added to the Water Code, to read:

529.5. On and after January 1, 2010, any urban water supplier that applies for financial assistance from the state for a wastewater treatment project, a water use efficiency project, or a drinking water treatment project, or for a permit for a new or expanded water supply, shall demonstrate that the applicant meets the requirements of this article.

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1. 1" SERVICE SADDLE, FIP AS PER SEC. 2-1.08 (a), STD. SPECS.
2. 1" CORP. COCK, MIP X COMP., AS PER SECTION 2-1.08 (b), STD. SPECS.
3. 1" TYPE K POLYETHYLENE-COATED COPPER TUBING, AS PER SEC. 2-1.08 (c) STD. SPECS.
4. 1" COPPER SETTER: W/CT PACK JOINT INLET AND FIP OUTLET AS PER SECTION 2-1.08 (d), STD. SPECS.
5. WATER METER TO BE INSTALLED BY CONTRACTOR, PAID FOR BY DEVELOPER AT FURNISH ONLY FEE.
6. 1" CONCRETE METER BOX (MARKED "WATER"): AS PER SECTION 2-1.08 (d).
7. BRASS NIPPLE - 18" LONG, FIP CAP (1" MINIMUM).
8. 2 - 4# HIGH PURITY COPPER SERVICE LINE ANODES WITH INSULATED SOLID CORE COPPER WIRE 10 FEET LONG AND BRASS CABLE TO PIPE CLAMP. ANODES TO BE USED ONLY ON EXISTING COPPER SERVICE LINES, AS PER SECTION 2-2.11 STD. SPECS.

NOTES:

POLYETHYLENE ENCASUREMENT WILL BE REQUIRED FOR ALL COPPER PIPE INSTALLATION. ENCASUREMENT MATERIAL AND INSTALLATION METHODS SHALL CONFORM TO AWWA STANDARD C-105.

***PRIVATE SYSTEM TO CONFORM WITH SACRAMENTO CO. STANDARDS**



PHONE (916) 972-7171
 3701 MARCONI AVENUE
 SUITE 100
 SACRAMENTO, CA
 95821-5346

STANDARD DETAIL

TYPICAL 3/4" & 1" METERED
 RESIDENTIAL WATER SERVICE

DATE: OCTOBER 2006 | STD. DET. NO. 13

Recordall® Cold Water Bronze Disc Meter	Size 3/4" (DN 20mm)	Technical Brief
--	----------------------------	----------------------------

DESCRIPTION

Badger Meter offers the Recordall Disc meter in Cast Bronze and a Low Lead Alloy. The Low Lead Alloy (Trade Designation: M35 LL) version complies with NSF/ANSI Standard 61 and carries the NSF-61 Mark on the housing. All components of the Low Lead Alloy meter, i.e., disc, chamber, housing, seals, etc., comprise the certified system.

APPLICATIONS: For use in measurement of potable cold water in residential, commercial and industrial services where flow is in one direction only.

OPERATION: Water flows through the meter's strainer and into the measuring chamber where it causes the disc to nutate. The disc, which moves freely, nutates on its own ball, guided by a thrust roller. A drive magnet transmits the motion of the disc to a follower magnet located within the permanently sealed register. The follower magnet is connected to the register gear train. The gear train reduces the disc nutations into volume totalization units displayed on the register dial face.

OPERATING PERFORMANCE: The Badger® Recordall® Disc meters meet or exceed registration accuracy for the low flow rates (95%), normal operating flow rates (100 ± 1.5%), and maximum continuous operation flow rates as specifically stated by AWWA Standard C700.

CONSTRUCTION: Badger Recordall Disc meter construction, which complies with ANSI/AWWA standard C700, consists of three basic components: meter housing, measuring chamber, and permanently sealed register. The water meter is available in bronze and Low Lead Alloy with externally-threaded spuds. A corrosion-resistant thermoplastic material is used for the measuring chamber.

To simplify maintenance, the register, measuring chamber, and strainer can be replaced without removing the meter housing from the installation. No change gears are required for accuracy calibration. Interchangeability of parts among like-sized meters also minimizes spare parts inventory investment. The built-in strainer has an effective straining area of twice the inlet size.

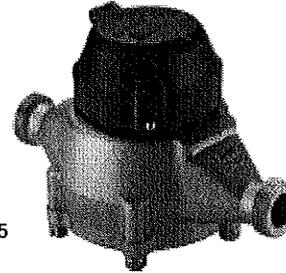
MAGNETIC DRIVE: Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling for straight-reading, remote or automatic meter reading options.

SEALED REGISTER: The standard register consists of a straight-reading odometer-type totalization display, 360° test circle with center sweep hand and flow finder to detect leaks. Register gearing consists of self-lubricating thermoplastic gears to minimize friction and provides long life. Permanently sealed; dirt, moisture, tampering and lens fogging problems are eliminated. Multi-position register simplifies meter installation and reading. Generator-type remote reading and automatic meter reading systems are available for all Recordall Disc meters. All reading options are removable from the meter without disrupting water service.

TAMPER-PROOF FEATURES: Customer removal of the register to obtain free water can be prevented when the optional tamper detection seal wire screw or TORX® tamper resistant seal screw is added to the meter. Both can be installed at the meter site or at the factory.

MAINTENANCE: Badger Recordall Disc meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location. As an alternative to repair by the utility, Badger offers various maintenance and meter component exchange programs to fit the needs of the utility.

CONNECTIONS: Tailpieces/Unions for installations of meters on various pipe types and sizes, including misaligned pipes, are available as an option.



Model 35

SPECIFICATIONS

Typical Operating Range (100% ± 1.5%)	3/4-35 GPM (.17 to 7.9 m³/hr)
Low Flow (Min. 97%)	3/8 GPM (.085 m³/hr)
Maximum Continuous Operation	25 GPM (5.7 m³/hr)
Pressure Loss at Maximum Continuous Operation	5 PSI at 25 GPM (.37 bar at 5.7 m³/hr)
Maximum Operating Temperature	80°F (26°C)
Maximum Operating Pressure	150 PSI (10 bar)
Measuring Element	Nutating disc, positive displacement
Register Type	Straight reading, permanently sealed magnetic drive standard. Remote reading or Automatic Meter Reading units optional.
Register Capacity	10,000,000 Gallons, 1,000,000 Cubic Feet, 100,000 m³. 6 odometer wheels.
Meter Connections	Available in bronze and thermoplastic to fit 3/4" spud thread bore diameter sizes. See table below.

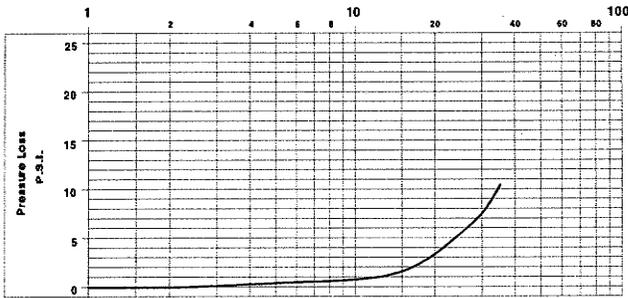
METER SPUD AND CONNECTION SIZES

Size Designation	x	"L" Laying Length	"B" Bore Dia.	Coupling Nut and Spud Thread	Tailpiece Pipe Thread (NPT)
3/4"	x	7½"	3/4"	1" (3/4")	3/4"
3/4"	x	9"	3/4"	1" (3/4")	3/4"
3/4" x 1"	x	9"	3/4"	1¼" (1")	1"

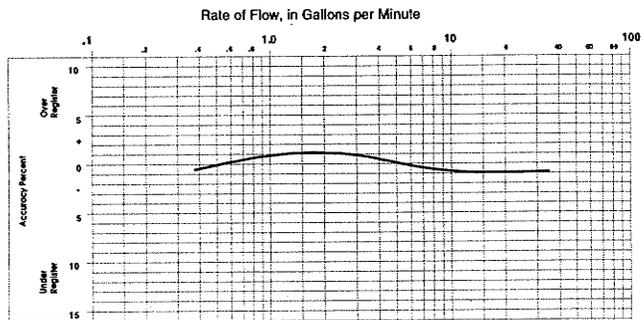
MATERIALS

Meter Housing	Cast Bronze, Low Lead Alloy
Housing Bottom Plates	Bronze, Cast Iron, Low Lead Alloy
Measuring Chamber	Thermoplastic
Disc	Thermoplastic
Trim	Stainless Steel, Bronze
Strainer	Thermoplastic
Disc Spindle	Stainless Steel
Magnet	Ceramic
Magnet Spindle	Stainless Steel
Register Lid and Shroud	Thermoplastic, Bronze
Generator Housing	Thermoplastic

PRESSURE LOSS CHART
Rate of Flow, in Gallons per Minute



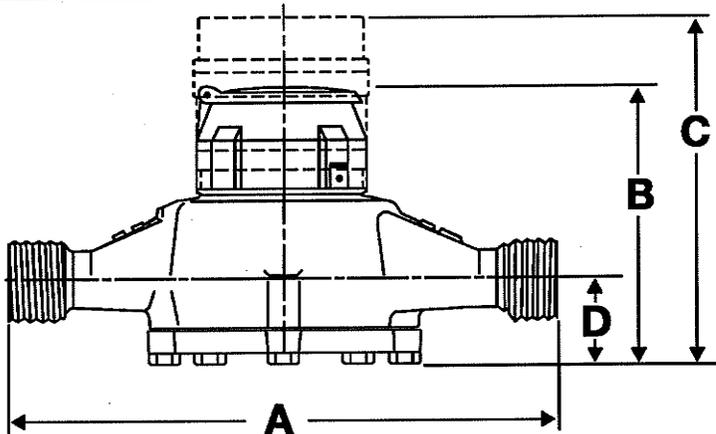
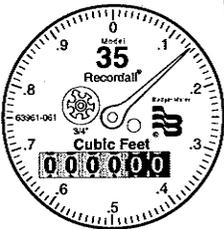
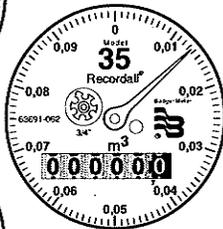
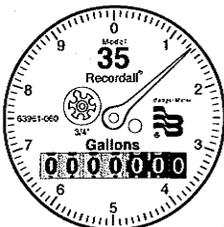
ACCURACY CHART



METER SIZE	METER MODEL	A LAYING LENGTH	B HEIGHT REG. / RTR	C HEIGHT GEN.	D CENTERLINE BASE	WIDTH	APPROX. SHIPPING WEIGHT
3/4" (20mm)	35	7 1/2" (190mm)	5 1/4" (133mm)	6 5/8" (168mm)	1 5/8" (41mm)	5" (127mm)	5 1/2 lb. (2.5kg)
3/4" (20mm)	35	9" (229mm)	5 1/4" (133mm)	6 5/8" (168mm)	1 5/8" (41mm)	5" (127mm)	5 3/4 lb. (2.6kg)
3/4" x 1" (20mm)	35	9" (229mm)	5 1/4" (133mm)	6 5/8" (168mm)	1 5/8" (41mm)	5" (127mm)	6 lb. (2.7kg)

Sweep Hand Registration

MODEL	GALLON	CU.FT.	CU. METER
M35	10	1	.1



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TORX® is a registered trademark of Camcar, Division of Textron, Inc.



Please see our website at
www.badgermeter.com
for specific contacts.



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www.badgermeter.com

**Recordall®
Cold Water
Bronze Disc Meter**

Size 1" (DN 25mm)

**Technical
Brief**

DESCRIPTION

Badger Meter offers the Recordall Disc meter in Cast Bronze and a Low Lead Alloy. The Low Lead Alloy (Trade Designation: M70 LL) version complies with NSF/ANSI Standard 61 and carries the NSF-61 Mark on the housing. All components of the Low Lead Alloy meter, i.e., disc, chamber, housing, seals, etc., comprise the certified system.

APPLICATIONS: For use in measurement of potable cold water in residential, commercial and industrial services where flow is in one direction only.

OPERATION: Water flows through the meter's strainer and into the measuring chamber where it causes the disc to nutate. The disc, which moves freely, nutates on its own ball, guided by a thrust roller. A drive magnet transmits the motion of the disc to a follower magnet located within the permanently sealed register. The follower magnet is connected to the register gear train. The gear train reduces the disc nutations into volume totalization units displayed on the register dial face.

OPERATING PERFORMANCE: The Badger Recordall Disc meters meet or exceed registration accuracy for the low flow rates (95%), normal operating flow rates (100 ± 1.5%), and maximum continuous operation flow rates as specifically stated by AWWA Standard C700.

CONSTRUCTION: Badger Recordall Disc meter construction, which complies with ANSI/AWWA standard C700, consists of three basic components: meter housing, measuring chamber, and permanently sealed register. The water meter is available in bronze and Low Lead Alloy with externally-threaded spuds. A corrosion-resistant thermoplastic material is used for the measuring chamber.

To simplify maintenance, the register, measuring chamber, and strainer can be replaced without removing the meter housing from the installation. No change gears are required for accuracy calibration. Interchangeability of parts among like-sized meters also minimizes spare parts inventory investment.

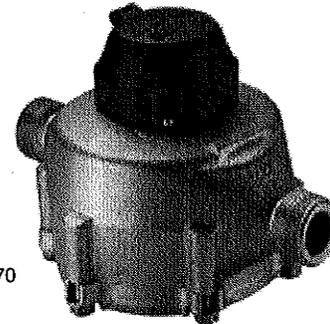
MAGNETIC DRIVE: Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling for straight-reading, remote or automatic meter reading options.

SEALED REGISTER: The standard register consists of a straight-reading odometer-type totalization display, 360° test circle with center sweep hand and flow finder to detect leaks. Register gearing consists of self-lubricating thermoplastic gears to minimize friction and provides long life. Permanently sealed; dirt, moisture, tampering and lens fogging problems are eliminated. Multi-position register simplifies meter installation and reading. Generator-type remote reading and automatic meter reading systems are available for all Recordall Disc meters. All reading options are removable from the meter without disrupting water service.

TAMPER-PROOF FEATURES: Customer removal of the register to obtain free water can be prevented when the optional tamper detection seal wire screw or TORX® tamper resistant seal screw is added to the meter. Both can be installed at the meter site or at the factory.

MAINTENANCE: Badger Recordall Disc meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location. As an alternative to repair by the utility, Badger offers various maintenance and meter component exchange programs to fit the needs of the utility.

CONNECTIONS: Tailpieces/Unions for installations of meters on various pipe types and sizes, including misaligned pipes, are available as an option.



Model 70

SPECIFICATIONS

Typical Operating Range (100% ± 1.5%)	1 1/4-70 GPM (.28 to 16 m³/hr)
Low Flow (Min. 95%)	3/4 GPM (.17 m³/hr)
Maximum Continuous Operation	50 GPM (11.3 m³/hr)
Pressure Loss at Maximum Continuous Operation	6.5 PSI at 50 GPM (.45 bar at 11.3 m³/hr)
Maximum Operating Temperature	80°F (26°C)
Maximum Operating Pressure	150 PSI (10 bar)
Measuring Element Register Type	Nutating disc, positive displacement Straight reading, sealed magnetic drive standard. Remote reading or Automatic Meter Reading units optional.
Register Capacity	10,000,000 Gallons, 1,000,000 Cubic Feet, 100,000 m³. 6 odometer wheels.
Meter Connections	Available in bronze and thermoplastic to fit 1" (DN 25mm) spud thread bore diameter sizes. See table below.

METER SPUD AND CONNECTION SIZES

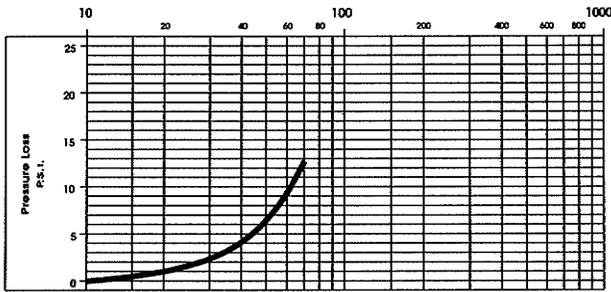
Size Designation	x	"L" Laying Length	"B" Bore Dia.	Coupling Nut and Spud Thread	Tailpiece Pipe Thread (NPT)
1"	x	10 3/4"	1"	1 1/4" (1")	1"

MATERIALS

Meter Housing	Cast Bronze, Low Lead Alloy
Housing Bottom Plates	Bronze, Cast Iron, Low Lead Alloy
Measuring Chamber	Thermoplastic
Disc	Thermoplastic
Trim	Stainless Steel, Bronze
Strainer	Thermoplastic
Disc Spindle	Stainless Steel
Magnet	Ceramic
Magnet Spindle	Stainless Steel
Register Lid and Shroud	Thermoplastic, Bronze
Generator Housing	Thermoplastic

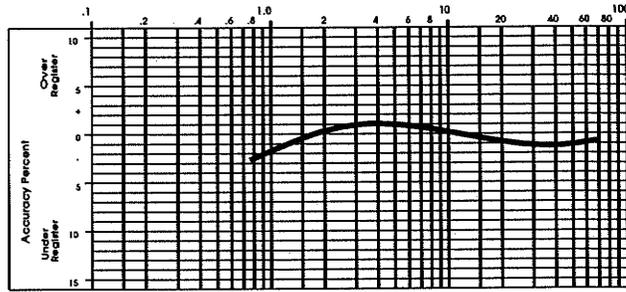
PRESSURE LOSS CHART

Rate of Flow, in Gallons per Minute



ACCURACY CHART

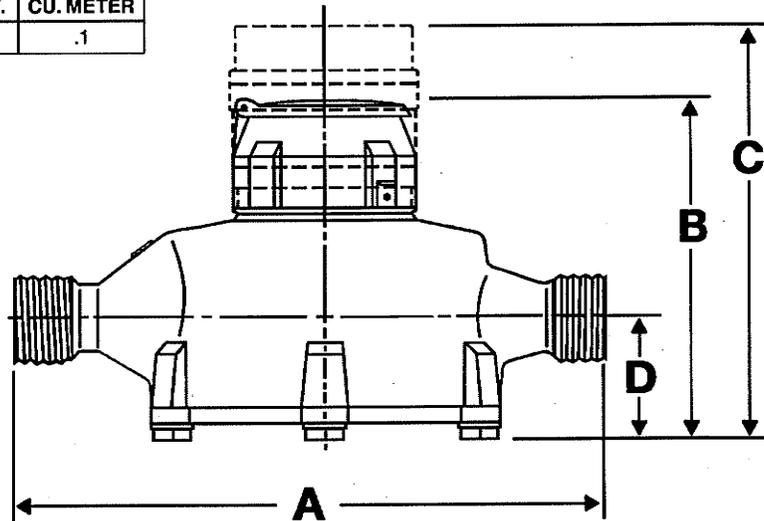
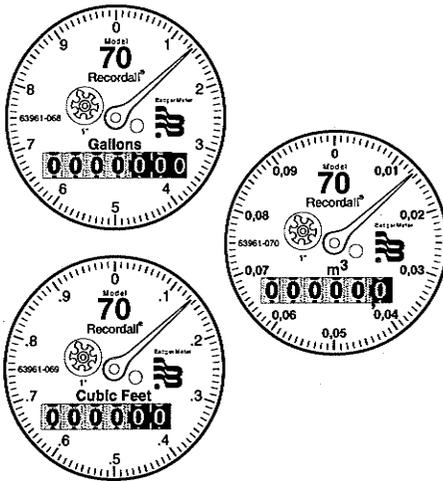
Rate of Flow, in Gallons per Minute



METER SIZE	METER MODEL	A LAYING LENGTH	B HEIGHT REG./RTR	C HEIGHT GEN.	D CENTERLINE TO BASE	WIDTH	APPROX. SHIPPING WEIGHT
1" (25mm)	70	10 3/4" (273mm)	6 1/2" (165mm)	7 7/8" (200mm)	2 5/16" (59mm)	7 3/4" (197mm)	11 1/2 lb. (5.2kg)

Sweep Hand Registration

MODEL	GALLON	CU.FT.	CU. METER
M70	.10	1	.1



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BadgerMeter, Inc.
 P.O. Box 245036, Milwaukee, WI 53224-9536
 (800) 876-3837 / Fax: (888) 371-5982
www.badgermeter.com

Model RET™

Recordall® Electronic Transmitter

Technical Brief

DESCRIPTION

APPLICATIONS: The Recordall® Electronic Transmitter (RET™) is designed for use with all Recordall Disc, Compound and Turbo Series meters as well as Turbo II meters to provide output compatibility with standard industry instrumentation devices. The RET is equipped with an LCD display that can be calibrated in either gallons, cubic feet, cubic meters, liters or imperial gallons.

OPERATION: The Recordall Electronic Transmitter provides a variety of information via the display such as Totalization, Rate of Flow, Meter Identification, Test Mode Totalization, Backflow Totalization, Scaled Pulse Resolution, 20 mA set point, and an Alarm Screen. The operator can toggle through this information using a magnet. The RET provides scaled and unscaled open collector outputs (30V @ 1 mA) with an optional 4 to 20 mA analog signal representing flow rate. The scaled output resolution and the 20 mA set point are programmable. The 4 to 20 mA output is programmed and digitally controlled requiring no zero or span adjustments. The RET is a totally electronic device that can be operated with or without external power. An internal long life lithium battery is used to provide power when external power is lost or not used. Programmed parameters are stored in non-volatile memory.

RESOLUTION: The totalization resolution, scaled pulse output resolution, and 20 mA set point are programmable. The displayed information is accomplished using a 6 digit liquid crystal display. The information table in this brochure lists the limits of the resolutions. There are default values listed for each meter size and type. The default scaled output is 1/10th the totalization resolution. The 20 mA set point is typically set for the maximum flow of the meter unless specified differently. The Test Mode Totalization and Backflow Totalization resolutions are 1/1000th of the totalization display. The unscaled output is meter specific. Changing the programmed resolutions does not change meter accuracy.

RESPONSE TIME: From 10 - 100% of maximum flow, the response time of the flow rate display and the 4-20 mA output signal is 6 seconds to record any change in flow. For flow rates less than 10% of maximum flow, the response time is programmable allowing for improved readings and the ability to monitor low flow rates.

MOUNTING: The RET in its shroud uses a bayonet mount compatible with all Recordall Disc, Turbo, Compound, and Fire Series Meters. A Torx® seal screw is provided to allow positioning of the register for most convenient reading and to secure the register to the meter body in a tamper resistant mode. The RET can be removed from the meter without disrupting water service.

MAGNETIC SENSING: The RET detects the movement of the wet side meter magnet with magnetic sensors. The RET uses no moving parts to measure water flow so there is no wear, and loading on the meter is reduced.

WIRE CONNECTIONS: The RET comes with a waterproof plug-in connector making it easy to install and is field programmable with the use of an RS-232 interface package, a laptop computer, and proprietary software.

ENVIRONMENTAL: The operating temperature of the RET is -10 to +60°C (14 to +140°F). The register is completely sealed to protect the electronics from moisture, dirt, and other contaminants. The RET is designed for use in flooded pits or vaults.

MOISTURE: The RET achieves true water resistance due to the adhesive technology used in the sealing process. Leak rates less than 10⁻⁶ cc/sec as tested by a helium mass spectrometer, are comparable to a true hermetic seal. Due to this unique sealing process the



SPECIFICATIONS

Transmitter/Register	Liquid crystal display, permanently sealed, magnetic pick-ups, multiple outputs, water proof connection
Liquid Crystal Display	Six digits with 1/4" numerals
Weight	13 Ounces
Humidity	0% to 100% Condensing
Operating Temperature	-10 to 60°C (14 to 140°F)
Unit of Measure	U.S. Gallons, Cubic Feet, Cubic Meters, Liter, Imperial Gallons clearly identified on LCD display
Rate of Flow	Units per Minute or Units per Hour
Rate of Flow Response	6 seconds when flow rate is 10% to 100% of maximum flow. Response time is programmable when flow rates are < 10% of maximum flow.
Test Mode Totalization	1/1000th of totalization display
Backflow Totalization	1/1000th of totalization display
Internal Power Source	One lithium, 2.4 A hr. battery
External Power	9.0V 0-50VDC (required to use optional 4-20 mA output) max loop resistance 50 Ohm + 50 Ohm (V supply - 9V)
Electrical Criteria	Immunity to electrical surges and transient per IEC 1000-4-2 & IEC 1000-4-4. The electronic circuitry is designed to provide immunity to electrical surges and transient per IEC 1000-4-2 and IEC 1000-4-4.
FCC Compliance	FCC Part 15 Subpart J
Digital Signal Characteristics	Open Drain (FET)
Reverse Flow	1/1000th of totalization display
Resolution	Scaled is programmable with unscaled fixed to meter size and type
On State Resistance	<50 Ohms @ 25°C (77°F) for scaled output <400 Ohms for unscaled output @0.1 ma
Off State Resistance	>5 MOhms @ 25°C (77°F)
Power Source	Internal with External Option
Maximum Switching	30 VDC @ 1 mA @ 25°C (77°F)



BadgerMeter, Inc.

RET-T-01

RET exceeds all applicable requirements of AWWA Standards C706 and C707 regarding moisture intrusion. The waterproof connector protects the external wiring connection.

TAMPER-PROOF FEATURES: Customer removal of the RET can be prevented using a tamper resistant Torx seal screw. Torx seal screws are provided as standard accessories. Optional tamper detection seal wire screws are also available. The waterproof connector uses a locking band to show tampering. A magnetic shield ring is used to provide resistance to magnetic tampering.

CONSTRUCTION: The housing of the RET is constructed of a strengthened glass lens top and a copper metal alloy bottom. Internal support materials are thermoplastics for long-life and high reliability. The outer shroud and water proof connector are polycarbonate. The integrity of the adhesive seal joining the glass top to metal base provide unmatched protection in water meter applications. A corrosion and tamper resistant Torx seal screw is provided to secure the RET to the meter.

OUTPUT CAPABILITIES: Default parameters of the RET calibrated in gallons for Recordall® Disc and Turbo Series meters are noted below. Other Default parameters are listed in RET-IOM-01. To request specific requirements for your application, contact your Badger Meter regional sales office, or representative.

Recordall Disc Series	Size	Unscaled Pulse Output (Gal/Pulse)	Default Scaled Output (Gal/Pulse)	Default Flow Rate at 20 mA (Gal/Min)
25	5/8	0.00252	1	25
35	3/4	0.00395	1	35
40	1	0.00557	1	40
70	1	0.01070	1	70
120	1 1/2	0.02095	10	120
170	2	0.03433	10	170
180	2	0.04983	10	180

Turbo Series	Size	Unscaled Pulse Output (Gal/Pulse)	Default Scaled Output (Gal/Pulse)	Default Flow Rate at 20 mA (Gal/Min)
160	1 1/2	0.32538	10	200
200	2	0.32538	10	310
450	3	0.31286	10	550
1000	4	0.30031	10	1250
2000	6	3.33217	100	2500
3500	8	3.30176	100	4500
5500	10	2.52488	100	7000
6200	12	3.88442	1000	8800
6600	16	32.16460	1000	13200
10000	20	55.43655	1000	19800

Battery Life Expectancy (Years)

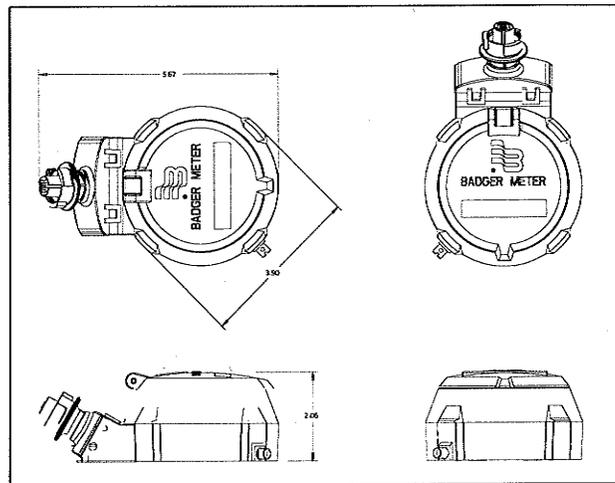
	Unpowered	Powered
Recordall Disc Series	6	15
Turbo Series	8	15

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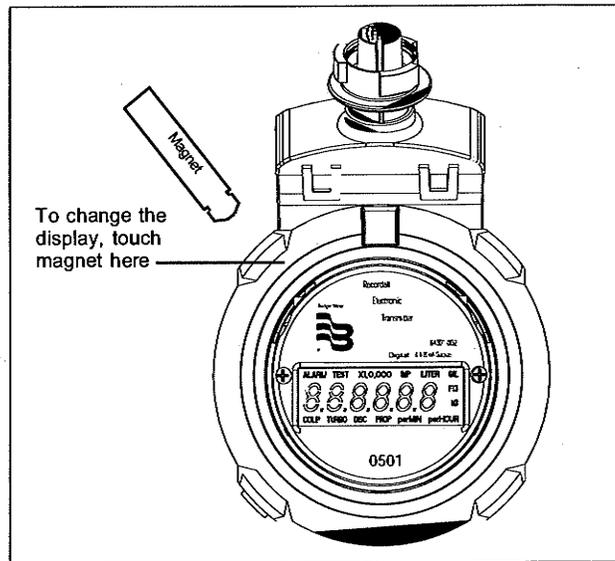


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www.badgermeter.com
 for specific contacts.

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Dimensional Drawing

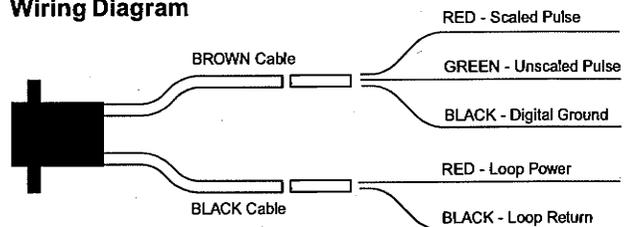


RET Register

CAUTION

The RET is only designed to be used with Recordall Disc, Compound, Fire and Turbo Series meters manufactured by Badger Meter, Inc.

Wiring Diagram



Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding bid obligation exists.



BadgerMeter, Inc.

P.O. Box 245036, Milwaukee, WI 53224-9536
 (800) 876-3837 / Fax: (888) 371-5982
www.badgermeter.com

Appendix J: CUWCC BMP Reports

The fields in red are required.

Primary contact:

Agency name: First name:

Reporting unit name (District name): Last name:

Reporting unit number: Email:

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.



Base Year Data

[Link to FAQs](#)

Reporting Unit Base Year

Base Year

What is your reporting period?

BMP 1.3 Metering

Number of unmetered accounts in Base Year

BMP 3.1 & BMP 3.2 & BMP 3.3 Residential Programs

Number of Single Family Customers in Base Year

Number of Multi Family Units in Base Year

BMP 3.4 WaterSense Specification (WSS) Toilets

Number of Single Family Housing Units constructed prior to 1992

Number of Multi Family Units prior to 1992

Average number of toilets per single family household

Average number of toilets per multi family household

Five year average resale rate of single family households

Five-year average resale rate of multi family households

Average number of persons per single family household

Average number of persons per multi family household

BMP 4.0 & BMP 5.0 CII & Landscape

Total water use (in Acre Feet) by CII accounts

Number of accounts with dedicated irrigation meters

Number of CII accounts without meters or with Mixed Use Meters

Number of CII accounts

Comments:

The fields in red are required.



Agency name: Primary contact:

Reporting unit name (District name): Last name:

Reporting unit number: Email:

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

[Link to FAQs](#)

2010

BMP 1.1 Operations Practices

Comments:

[See the complete MOU:](#) [View MOU](#)

[See the coverage requirements for this BMP:](#)

Conservation Coordinator

Conservation Coordinator Yes No

Contact Information

First Name:

Last Name:

Title:

Phone:

Email:

Note that the contact information may be the same as the primary contact information at the top of the page. If this is your case, excuse the inconvenience but please enter the information again.

Water Waste Prevention

Water Agency shall do one or more of the following:

- a. Enact and enforce an ordinance or establish terms of service that prohibit water waste
- b. Enact and enforce an ordinance or establish terms of service for water efficient design in new development
- c. Support legislation or regulations that prohibit water waste
- d. Enact an ordinance or establish terms of service to facilitate implementation of water shortage response measures
- e. Support local ordinances that prohibit water waste
- f. Support local ordinances that establish permits requirements for water efficient design in new

To document this BMP, provide the following:

- a. A description of, or electronic link to, any ordinances or terms of service
- b. A description of, or electronic link to, any ordinances or requirements adopted by local jurisdictions or regulatory agencies with the water agency's service area.
- c. A description of any water agency efforts to cooperate with other entities in the adoption or enforcement of local requirement
- d. description of agency support positions with respect to adoption of legislation or regulations

You can show your documentation by providing files, links (web addresses), and/or entering a description.

File name(s): Email files to natalie@cuwcc.org

Web address(s) URL: comma-separated list

Enter a description:

The fields in red are required.



Agency name: Primary contact: First name: Last name: Email:

Reporting unit name (District name): Reporting unit number:

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

[Link to FAQs](#)

[View MOU](#)

2010 BMP 1.2 Water Loss Control

AWWA Water Audit

Agency to complete a Water Audit & Balance Using The AWWA Software Yes No
Email to natalie@cuwcc.org - Worksheets (AWWA Water Audit). Enter the name of the file below:

Water Audit Validity Score from AWWA spreadsheet

Agency Completed Training In The AWWA Water Audit Method Yes No
Agency Completed Training In The Component Analysis Process Yes No

Completed/Updated the Component Analysis (at least every 4 years)? Yes No
Component Analysis Completed/Updated Date

Water Loss Performance

Agency Repaired All Reported Leaks & Breaks To The Extent Cost Effective Yes No

Recording Keeping Requirements:

Date/Time Leak Reported	Leak Location
Type of Leaking Pipe Segment or Fitting	Leak Running Time From Report to Repair
Leak Volume Estimate	Cost of Repair

Agency Located and Repaired Unreported Leaks to the Extent Cost Effective Yes No

Type of Program Activities Used to Detect Unreported Leaks

Annual Summary Information

Complete the following table with annual summary information (required for reporting years 2-5 only)

Total Leaks Repaired	Economic Value Of Real Loss	Economic Value Of Apparent Loss	Miles Of System Surveyed For Leaks	Pressure Reduction Undertaken for loss reduction	Cost Of Interventions	Water Saved (AF/Year)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Comments:

The fields in red are required.

Primary contact:

Agency name: Sacramento Suburban Water District

First name: Stephanie

Reporting unit name (District name): Sacramento Suburban Water District

Last name: Crary

Reporting unit number: 7049

Email: scrary@sswd.org

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.



BMP 1.3 Metering with Commodity 2010

[Link to FAQs](#)

[See the complete MOU: View MOU](#)

[See the coverage requirements for this BMP:](#)

Implementation

Does your agency have any unmetered service connections? Yes No

If YES, has your agency completed a meter retrofit plan? Yes No

Enter the number of previously unmetered accounts fitted with meters during reporting year: 1,382

Are all new service connections being metered? Yes No

Are all new service connections being billed volumetrically? Yes No

Has your agency completed and submitted electronically to the Council a written plan, policy or program to test, repair and replace meters? Yes No

Please Fill Out The Following Matrix

Account Type	# Metered Accounts	# Metered Accounts Read	# Metered Accounts Billed by Volume	Billing Frequency Per Year	# of estimated bills/yr
Single-Family	17,582	17,582	17,582	Monthly	
Multi-Family	2,302	2,302	2,302	Monthly	
Commercial	2,099	2,099	2,099	Monthly	
Industrial	13	13	13	Monthly	
Institutional	459	459	459	Monthly	
Dedicated Irrigatic	377	377	377	Monthly	
Other				Other	
Other				Other	
Other				Other	
Other				Other	

Number of CII Accounts with Mixed-use Meters 2,194

Number of CII Accounts with Mixed-use Meters Retrofitted with Dedicated Irrigation Meters during Reporting Period 0

Feasibility Study

Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? Yes No

If YES, please fill in the following information:

A. When was the Feasibility Study conducted

B. Describe, upload or provide an electronic link to the Feasibility Study Upload File

File name(s): Email files to natalie@cuwcc.org

Web address(s) URL: comma-separated list

Comments:

The fields in red are required.

Primary contact:

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

Agency name: Sacramento Suburban Water District

First name: Stephanie

Reporting unit name (District name): Sacramento Suburban Water District

Last name: Crary

Reporting unit number: 7049

Email: scrary@sswd.org



BMP 1.4 Retail Conservation Pricing

[Link to FAQs](#)

[View MOU](#)

If you are reporting more rate structures than this form allows, add the structures to a spreadsheet and send the file to natalie@cuwcc.org.

2010

Implementation (Water Rate Structure)

Enter the Water Rate Structures that are assigned to the majority of your customers, by customer class

Rate Structure	Customer Class	Total Revenue Commodity Charges	Total Revenue Customer Meter/Service (Fixed Charges)
Increasing Block	Single-Family	5,455,431.00	18,065,584.00
Increasing Block	Multi-Family	546,152.00	1,735,264.00
Increasing Block	Commercial	3,670,519.00	6,134,181.00
Increasing Block	Industrial	11,239.00	24,654.00
Increasing Block	Institutional	826,416.00	1,074,510.00
Increasing Block	Dedicated Irrigation	456,990.00	632,650.00
Select a Rate Struc	Other		

Implementation Option (Conservation Pricing Option)

- Use Annual Revenue As Reported
- Use Canadian Water & Wastewater Association Rate Design Model

If CWWA is select, enter the file name and email the spreadsheet to natalie@cuwcc.org

Retail Waste Water (Sewer) Rate Structure by Customer Class

Agency Provide Sewer Service Yes No

Select the Retail Waste Water(Sewer) Rate Structure assigned to the majority of your customers within a specific customer class.

Rate Structure	Customer Class	Total Revenue Commodity Charges	Total Revenue Customer Meter/Service (Fixed Charges)
Select a Rate Struc	Other		
Select a Rate Struc	Other		
Select a Rate Struc	Other		
Select a Rate Struc	Other		
Select a Rate Struc	Other		
Select a Rate Struc	Other		
Select a Rate Struc	Other		

Comments:

The fields in red are required.



Agency name: Primary contact: First name: Last name: Email:
 Reporting unit name (District name):
 Reporting unit number:

Click here to open a table that displays your agency name reporting unit name and reporting unit number. Please ensure that you enter the correct information.

[Link to FAQs](#)

[View MOU](#)

2010

BMP 2.1 Public Outreach - Retail Reporting

Is a Wholesale Agency Performing Public Outreach?

Are there one or more wholesale agencies performing public outreach which can be counted to help your agency comply with the BMP?

Yes No

Enter the name(s) of the wholesale agency (comma delimited)

Is your agency performing public outreach?

Report a minimum of 4 water conservation related contacts your agency had with the public during the year.

Did at least one contact take place during each quarter of the reporting year?

Public Information Programs List

Number of Public Contacts	Public Information Programs
6	Landscape water conservation media campaigns
14	Newsletter articles on conservation
20	Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets
2	Website
4	General water conservation information

Contact with the Media

Are there one or more wholesale agencies performing media outreach which can be counted to help your agency comply with the BMP?

Yes No

Enter the name(s) of the wholesale agency (comma delimited)

OR Retail Agency (Contacts with the Media)

Did at least one contact take place during each quarter of the reporting year?

Media Contacts List

Number of Media Contacts	Did at least one contact take place during each quarter of the reporting year?	Media Contact Types
9		Articles or stories resulting from outreach
		Editorial board visits
4		News releases
		Radio contacts
		Television contacts
		Select a type of media contact

Is a Wholesale Agency Performing Website Updates?

Did one or more CUWCC wholesale agencies agree to assume your agency's responsibility for meeting the requirements of and for CUWCC reporting of this BMP? Yes No

Enter the name(s) of the wholesale agency (comma delimited)

Is Your Agency Performing Website Updates?

Enter your agency's URL (website address):

www.BeWaterSmart.info & sswd.org

Describe a minimum of four water conservation related updates to your agency's website that took place during the year:

1. The rebate section of the www.water20.org includes information about toilet, high efficiency clothes washer, smart irrigation controller, ceiling fans, compact fluorescent light bulbs, programmable thermostats and for machine repair rebates. This section is updated annually with program date changes and a minimum three Green Gainswater Training Program, 2 per year.
2. The calendar of events is updated as information is provided by member agencies and stakeholders. The calendar is updated annually with the annual workscope for the Sacramento-San Joaquin River Delta.
3. The Regional Water Efficiency Program created a new Web site (currently <http://www.bwssternment.info/blue-thumb/>) for the Blue Thumb outdoor water efficiency program. The website includes information about outdoor water use (and potential savings) in the Sacramento region; case studies; tips on how to use water efficiently outdoors and earn an incentive prize. The website also includes information about the program manager's interview with Farmer Fred Hoffman of FFBK and information about the agency's partnership with The Home Depot.

Did at least one Website Update take place during each quarter of the reporting year? Yes No

Public Outreach Annual Budget

Enter budget for public outreach programs. You may enter total budget in a single line or break the budget into discrete categories by entering many rows. Please indicate if personnel costs are included in the entry.

Category	Amount	Personnel Costs Included? <small>If yes, check the box.</small>	Comments
Advertising, media	\$164,308	<input checked="" type="checkbox"/>	
		<input type="checkbox"/>	
		<input type="checkbox"/>	
		<input type="checkbox"/>	
		<input type="checkbox"/>	
		<input type="checkbox"/>	

Comments:

The fields in red are required.

Primary contact:

Agency name: Sacramento Suburban Water District

First name: Stephanie

Reporting unit name (District name): Sacramento Suburban Water District

Last name: Cray

Reporting unit number: 7049

Email: scrary@sswd.org

Click here to open a table that displays your agency name reporting unit name and reporting unit number. Please ensure that you enter the correct information.



[Link to FAQs](#)

2010

BMP 2.1 Public Outreach Cont'd

[View MOU](#)

Public Outreach Expenses

Enter expenses for public outreach programs. Please include the same kind of expenses you included in the question related to your budget (Section 2.1.7, above). For example, if you included personnel costs in the budget entered above, be sure to include them here as well.

Expense Category	Expense Amount	Personnel Costs Included?
Advertising, media buys, partnerships	\$164,308	<input checked="" type="checkbox"/> If yes, check the check box.
		<input type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>

Additional Public Information Program

Please report additional public information contacts. List these additional contacts in order of how your agency views their importance / effectiveness with respect to conserving water, with the most important/ effective listed first (where 1 = most important).

Were there additional Public Outreach efforts?

Yes No

Public Outreach Additional Information

Public Information Programs	Importance
The Regional Water Efficiency Program designed and implemented a Community-Ba	\$1

Social Marketing Programs

Branding

Does your agency have a water conservation "brand," "theme" or mascot? Yes No

Describe the brand, theme or mascot.

Be Water Smart & Blue Thumb

Market Research

Have you sponsored or participated in market research to refine your message? Yes No

Market Research Topic

The Regional Water Efficiency Program conducted a statistically valid telephone survey of 600 customers about water efficiency knowledge, attitudes and behaviors; also written/online surveys of participants in the Community-Based Social Marketing (CBSM) program Blue Thumb Neighbors

Brand Message

Be Water Smart - use water wisely
Blue Thumb - use water efficiently outdoors

Brand Mission Statement

The "Be Water Smart" and "Blue Thumb" brands both encourage residents to use water efficiently at home. "Blue Thumb" focuses on water efficiency in the landscape where most water use--and water waste--occurs

Community Committees

Do you have a community conservation committee?

Yes No

Enter the names of the community committees:

Regional Water Authority Public Outreach Committy

Training

Training Type	# of Trainings	# of Attendees	Description of Other
Green Gardener	\$2	\$31	Trains landscape professionals in resource efficient and po
Turf Mgt	\$1	\$48	Introduces new irrigation technologies and used the a large

Social Marketing Expenditures

Public Outreach Social Marketing Expenses

Expense Category	Expense Amount	Description
Program consultants f	19,920	Designed community based social marketing project called Blue Thumb

Partnering Programs - Partners

Name

Type of Program

CLCA?

Green Building Programs?

Master Gardeners?

Cooperative Extension?

Local Colleges?

Other

The Regional Water Efficiency Program partnered with The Home Depot and WaterSense during Water Awareness Month in May. Results incl

Retail and wholesale outlet; name(s) and type(s) of programs:

Partnering Programs - Newsletters

Number of newsletters per year

Number of customers per year

Partnering with Other Utilities

Describe other utilities your agency partners with, including electrical utilities

Conservation Gardens

Describe water conservation gardens at your agency or other high traffic areas or new

The District owns and maintains a water efficient demonstration garden that is open to the public for self guided tours. Also, as part of a partnership, the District helps support a second water efficient demonstration garden.

Landscape contests or awards

Describe water wise landscape contest or awards program conducted by your agency

Comments:

The fields in red are required.



Agency name: Sacramento Suburban Water District

Primary contact:

First name: Stephanie

Click here to open a table that displays your agency name reporting unit name and reporting unit number. Please ensure that you enter the correct information.

Reporting unit name (District name): Sacramento Suburban Water District

Last name: Cray

Reporting unit number: 7049

Email: scray@sswd.org

[Link to FAQs](#)

2010

BMP 2.2 School Education Programs, Retail Agencies School Programs

[View MOU](#)

Is a wholesale agency implementing school programs which can be counted to help your agency comply with this BMP?

Yes No

Enter Wholesaler Names, separated by commas:

Sacramento Regional Water Authority

Materials meet state education framework requirements?

Description of Materials

* Student supplements, written by an award-winning environmental educator and edited by water agency personnel.
* Teaching materials, online Be Water Smart teacher guides and activities
* California Waterways map
* Student contests for K-4th grades and 5th-8th grades
* Subscription to Sacramento Bee newspaper for 4 consecutive weeks for the program

Materials distributed to K-6 Students?

Description of materials distributed to K-6 Students

* Student supplements, written by an award-winning environmental educator and edited by water agency personnel.
* Teaching materials, online Be Water Smart teacher guides and activities
* California Waterways map
* K-4 will receive a class set of "Water Conservation and You booklets"
* Student contests for K-4th grades and 5th-8th grades
* Subscription to Sacramento Bee newspaper for 4 consecutive weeks for the program

Number of students reached

5,172

Materials distributed to 7-12 Students?

Description of materials distributed to 7-12 Students

None

Number of Distribution

Annual budget for school education program

\$21,500.00

Description of all other water supplier education programs

School Program Activities

Classroom presentations:

Number of presentations: 5

Number of attendees: 30 each

Large group assemblies:

Number of presentations: 1

Number of attendees: 600

Children's water festivals or other events:

Number of presentations: None

Number of attendees:

Cooperative efforts with existing science/water education programs (various workshops, science fair awards or judging) and follow-up:

Number of presentations: 1

Number of attendees: 92

Other methods of disseminating information (i.e. themed age-appropriate classroom loaner kits):

Description

Number distributed

Staffing children's booths at events & festivals:

Number of booths Number of attendees

Water conservation contests such as poster and photo:

Description

Number distributed

Offer monetary awards/funding or scholarships to students:

Number Offered Total Funding

Teacher training workshops:

Number of presentations Number of attendees

Fund and/or staff student field trips to treatment facilities, recycling facilities, water conservation gardens, etc.:

Number of tours or field trips Number of participants

College internships in water conservation offered:

Number of internships Total funding

Career fairs/workshops:

Number of presentations Number of attendees

Additional program(s) supported by agency but not mentioned above:

Description

Number of events (if applicable) Number of participants

Total reporting period budget expenditures for school education programs (include all agency costs):

Comments



The fields in red are required.

Primary contact:

Agency name: **Sacramento Suburban Water Dist** First name: **Stephanie**
 Division name (Reporting unit): **Sacramento Suburban Water Dist** Last name: **Crary**
 Reporting unit number: **7049** Email: **scrary@sswd.org**



WATER SOURCES

Service Area Population: **170,615**

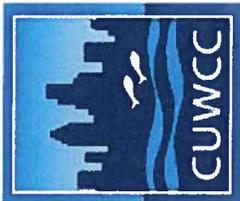
Potable Water

Own Supply Source Name	AF/YEAR	Water Supply Type	Water Supply Description
District owned wells	20,178.00	Groundwater	
		Other	

Imported Supply Source Name	AF/YEAR	Water Supply Type	Water Supply Description
PCWA via USBR, City of Sac.	16,208.00	Surface	
		Other	

Exported Water Name	AF/YEAR	Where Exported?
Surface	1,628.00	Cal Am
Surface	2.00	Rio Linda Elverta
Surface	2,801.00	State Water Contractors Assoc.

2010



California Urban Water Conservation Council

2020 GPCD Target Calculator v1.5

This spreadsheet-based calculator is designed to help urban retail water suppliers establish a 2020 water use target

The methodologies contained herein are consistent with the publication *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*, the purpose of which is to ensure the consistent implementation of the Water Conservation Act of 2009.

Name of City or Utility:

Name of Contact:

Email:

Telephone: Ext:

Reporting Period:

Beginning Month:

Guidance & Instructions

This GPCD target calculator is designed to enable the user to generate and select a 2020 water use target. Only systems serving more than 3,000 end users, or that supply more than 3,000 acre-feet of potable water annually at retail rates, are eligible for municipal purposes need to develop a target. Please note the following items:

All data entry is required to be in units of **Acre-feet**, unless indicated otherwise.

- Cells shown in this color are for data entry.
- Cells shown in this color are calculated fields and cannot be changed or overwritten.
- Option buttons for user selection.

Data can be input monthly, or annually; the monthly totals will override the annual totals. However, when entering monthly data, ensure all month fields are completed. Do NOT leave blanks. For zero enter "0".

If any month is left blank, all other monthly data for that year will be ignored and the annual total will be used.

- Cells shown in this color warn the user that monthly data has been left blank and therefore other monthly data entered for the year will be ignored.
- User tips are shown in these boxes.

Please read before data entry begins...
Establishing a baseline period is a key step in developing a 2020 water use target. The choice of baseline period is dependent on the result of evaluating 2008 recycled water use against water delivered and the result of this test will determine, to some extent, the timeframe for required data input. Please see below for more details...

The flow chart below shows how the result of evaluating 2008 recycled water against water delivered impacts the choice of baseline periods and required data input.



Main Data

Input cells:
 Calculated cells:

Data Entry in acre-feet unless otherwise noted

Volume from Own Sources

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2010												
2009												
2008												
2007												
2006												
2005												
2004												
2003												
2002												
2001												
2000												
1999												
1998												
1997												
1996												
1995												
1994												
1993												
1992												
1991												
1990												

ANNUAL TOTAL (INPUT)	METER ADJUSTMENT (%)	CALCULATED TOTAL
20,178.000		20,178.000
23,021.000		23,021.000
23,516.000		23,516.000
37,084.000		37,084.000
26,559.000		26,559.000
26,829.000		26,829.000
33,651.000		33,651.000
33,981.000		33,981.000
32,243.000		32,243.000
33,806.000		33,806.000
32,257.000		32,257.000
37,252.000		37,252.000
28,040.000		28,040.000
42,481.000		42,481.000
40,904.000		40,904.000
38,806.000		38,806.000
40,837.000		40,837.000
36,252.000		36,252.000
36,697.000		36,697.000
37,019.000		37,019.000
40,892.000		40,892.000

Volume from Imported Sources

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2010												
2009												
2008												
2007												
2006												
2005												
2004												
2003												
2002												
2001												
2000												
1999												
1998												

ANNUAL TOTAL (INPUT)	METER ADJUSTMENT (%)	CALCULATED TOTAL
16,208.000		16,208.000
12,084.000		12,084.000
14,982.000		14,982.000
7,498.000		7,498.000
13,345.000		13,345.000
14,364.000		14,364.000
14,948.000		14,948.000
15,341.000		15,341.000
16,938.000		16,938.000
15,567.000		15,567.000
14,988.000		14,988.000
8,573.000		8,573.000
12,145.000		12,145.000



Population

Input cells:
Calculated cells:

Enter population data for the service area.

YEAR	POPULATION
2010	170,615
2009	170,475
2008	170,255
2007	169,900
2006	169,718
2005	169,197
2004	167,409
2003	173,769
2002	176,124
2001	176,480
2000	170,405
1999	170,382
1998	167,594
1997	168,274
1996	159,087
1995	160,647
1994	<--Enter Population
1993	<--Enter Population
1992	<--Enter Population
1991	<--Enter Population
1990	<--Enter Population

Please note:

The GPCD calculation is very sensitive to errors in population. Please review the guidance document **Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use** for additional information and direction in order to acquire the most accurate population estimates.

Population data are only required for years that contain water use data.

If you see "<--Enter Population" this indicates you have entered water use data for this timeframe but not population. Please add population data to enable a calculation of GPCD and associated targets.

169,017

Average population, for the baseline period selected, in the GPCD Matrix worksheet



This worksheet can be used as a calculator to generate an annual total for each year of input to the Main Data worksheet: [\(see here\)](#)

Annual Deductible Volume of Indirect Recycled Water Entering Distribution System

Input cells:
 Calculated cells:

Data Entry in acre-feet unless otherwise noted

Surface Reservoir Augmentation	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	N/A	N/A	Volume Discharged from Reservoir for Distribution System Delivery	Recycled Water Blend %	Recycled Water Delivered to Treatment Plant	Use Default <input type="checkbox"/> 3% Transmission / Treatment Loss %	Use Default <input type="checkbox"/> 3% Transmission / Treatment Loss %	Volume entering Distribution System	
Source 1									
Source 2									
Source 3									
Source 4									
Source 5									

Subtotal Reservoir Augmentation (A): 0.000

Groundwater Recharge	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Use Default <input type="checkbox"/> 90% Recharge Recovery Factor	S-Year Annual Average Recharge	Recycled Water Pumped from Basin	Utility Pumping as % of Basin Total	Recycled Water Pumped by Utility	Use Default <input type="checkbox"/> 3% Transmission / Treatment Loss %	Use Default <input type="checkbox"/> 3% Transmission / Treatment Loss %	Volume entering Distribution System	
Basin 1									
Basin 2									
Basin 3									
Basin 4									
Basin 5									

Subtotal Groundwater Recharge (B): 0.000

Deductible Volume of Indirect Recycled Water Entering Distribution System (A+B): 0.000

Transfer this value back to



GPCD Matrix

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL GPCD
2010	190.4	190.4	190.4	190.4	190.4	190.4	190.4	190.4	190.4	190.4	190.4	190.4	190.4
2009	183.8	183.8	183.8	183.8	183.8	183.8	183.8	183.8	183.8	183.8	183.8	183.8	183.8
2008	201.9	201.9	201.9	201.9	201.9	201.9	201.9	201.9	201.9	201.9	201.9	201.9	201.9
2007	234.3	234.3	234.3	234.3	234.3	234.3	234.3	234.3	234.3	234.3	234.3	234.3	234.3
2006	209.9	209.9	209.9	209.9	209.9	209.9	209.9	209.9	209.9	209.9	209.9	209.9	209.9
2005	217.3	217.3	217.3	217.3	217.3	217.3	217.3	217.3	217.3	217.3	217.3	217.3	217.3
2004	259.2	259.2	259.2	259.2	259.2	259.2	259.2	259.2	259.2	259.2	259.2	259.2	259.2
2003	253.4	253.4	253.4	253.4	253.4	253.4	253.4	253.4	253.4	253.4	253.4	253.4	253.4
2002	249.3	249.3	249.3	249.3	249.3	249.3	249.3	249.3	249.3	249.3	249.3	249.3	249.3
2001	249.8	249.8	249.8	249.8	249.8	249.8	249.8	249.8	249.8	249.8	249.8	249.8	249.8
2000	247.5	247.5	247.5	247.5	247.5	247.5	247.5	247.5	247.5	247.5	247.5	247.5	247.5
1999	240.1	240.1	240.1	240.1	240.1	240.1	240.1	240.1	240.1	240.1	240.1	240.1	240.1
1998	214.1	214.1	214.1	214.1	214.1	214.1	214.1	214.1	214.1	214.1	214.1	214.1	214.1
1997	232.9	232.9	232.9	232.9	232.9	232.9	232.9	232.9	232.9	232.9	232.9	232.9	232.9
1996	242.0	242.0	242.0	242.0	242.0	242.0	242.0	242.0	242.0	242.0	242.0	242.0	242.0
1995	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3
1994													
1993													
1992													
1991													
1990													

Recycled water accounts for 0% of 2008 deliveries, therefore select a 10 year baseline period using the selection buttons below

Baseline Ending In...	Baseline 10- years	N/A	N/A	N/A	N/A	N/A	N/A
2010	<input checked="" type="radio"/>						
2009	<input type="radio"/>	224.9					N/A
2008	<input type="radio"/>	230.6					N/A
2007	<input type="radio"/>	236.3					N/A
2006	<input type="radio"/>	237.5					N/A
2005	<input type="radio"/>	237.3					N/A
2004	<input checked="" type="radio"/>	240.6					N/A

Ending in...	Baseline 5- years
2010	<input type="radio"/>
2009	<input type="radio"/>
2008	<input type="radio"/>
2007	<input type="radio"/>

Base daily per capita water use (10-15yr baseline) **241.7**
 Base daily per capita water use (5yr baseline) **204.1**

User selection buttons:
 Use the buttons to indicate the

Min Value Max Value

Use site buttons to indicate site
chosen baseline period





Landscaped Area Water Use (method 2 only)

Input cells:
 Calculated cells:

Please note:

Water suppliers shall develop an estimate (forecast) of 2020 landscaped areas for purposes; do not enter existing landscaped area data

ET zone	Reference Evapotranspiration (Inches per year)	Landscaped Area (1992 MWELO) (Square feet)	Landscaped Area (2009 MWELO) (Square feet)	Special Landscaped Area (Non-residential, non-commercial) (Square feet)	Maximum Applied Water Allowance (Gallons per year)		Maximum Applied Water Allowance (2009) (Gallons per year)
					(1992)	(2009)	
ET zone 1							
ET zone 2							
ET zone 4							
ET zone 4							
ET zone 5							
ET zone 6							
ET zone 7							
ET zone 8							
ET zone 9							
ET zone 10							

2020 Target:

ET Zones:
Enter landscaped area data for .



Commercial, Industrial & Institutional (CII) Water Use (Method 2 only)

If you wish to exclude process water from the calculation of the baseline CII GPCD, enter process water volumes in the [Main Data](#) sheet

Input cells:
 Calculated cells: unless otherwise noted

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL TOTAL (INPUT)	METER ADJUSTMENT (%)	CALCULATED TOTAL	POPULATION SERVED BY CII	ANNUAL CII GPCD
2010																	
2009																	
2008																	
2007																	
2006																	
2005																	
2004																	
2003																	
2002																	
2001																	
2000																	
1999																	
1998																	
1997																	
1996																	
1995																	
1994																	
1993																	
1992																	
1991																	
1990																	

Recycled water accounts for 0% of 2008 deliveries, therefore select a 10 year baseline period using the selection buttons below
WARNING: Insufficient data for the selected baseline period; please add data or choose a different baseline period (in the GPCD worksheet)

Ending in...	Baseline 10- years	N/A	N/A	N/A	N/A	N/A
2010	0.0					N/A
2009	0.0					N/A
2008	0.0					N/A
2007	0.0					N/A
2006	0.0					N/A
2005	0.0					N/A
2004	0.0					N/A

Min Value Max Value

Please add data or use a different baseline period N/A

CII Baseline start and end date is determined by the selection made in the GPCD Matrix worksheet. The red outlined cell in the table to the left indicates the choice of baseline and the corresponding CII GPCD value.

Adjustments for Residential Uses in CII Connections
 Some CII connections also may serve group quarters or other residential uses. Examples could include campus dormitories, military base housing, and apartments that are served by a CII connection. Water use target Method 2 already provides an indoor use allowance of 55 GPCD for such residents. To ensure that this indoor use is not double-counted, enter the population served by CII connections during the baseline period and whose residents use is included in the water supplier's unadjusted Baseline CII Water Use.

NOTE: This value is a subset of the Population value entered on the Population worksheet



California Urban Water Conservation Council

TARGETS / COMPLIANCE (CUWCC MOU)

Baseline / Initial GPCD
(Use option buttons to select)

GPCD in 2006 **209.9**
 Baseline GPCD (1997 to 2006) **237.3**

GPCD in 2010 **190.4**
 GPCD Target for 2018 **194.6**

Biennial GPCD Compliance Table

Year	Report	Target		Highest Acceptable Bound	
		% Base	GPCD	% Base	GPCD
2010	1	96.4%	228.8	100%	237.3
2012	2	92.8%	220.3	96.4%	228.8
2014	3	89.2%	211.7	92.8%	220.3
2016	4	85.6%	203.2	89.2%	211.7
2018	5	82.0%	194.6	82.0%	194.6

Potable Water GPCD for each Year in the Baseline Period

Year	GPCD
2006	209.9
2005	217.3
2004	259.2
2003	253.4
2002	249.3
2001	249.8
2000	247.5
1999	240.1
1998	214.1
1997	232.9

Monthly GPCD Data for Weather Normalization

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2010	190.4	190.4	190.4	190.4	190.4	190.4	190.4	190.4	190.4	190.4	190.4	190.4
Baseline avg*	237.3	237.3	237.3	237.3	237.3	237.3	237.3	237.3	237.3	237.3	237.3	237.3

* The average for each month is based on the baseline period 1997 to 2006



TARGETS / COMPLIANCE (SBx7-7)

Target Summary	2020	2015
Method 1	193.4	217.6
Method 2	N/A	N/A
Method 3	167.2	204.5
Method 4	0.0	0.0

Input cells:
 Calculated cells:

GPCD in 2010
 Base daily per capita water use (10-15yr baseline)
 Base daily per capita water use (5yr baseline)
 Max. allowable GPCD target in 2020 (95% x 5yr baseline)

Method 1: Baseline per Capita Water Use

80% x Base daily per capita water use (10-15yr baseline):
 2015 Target:
 2020 Target:

Method 3: Hydrologic Region Targets

Enter the percentage of your service area population in each hydrologic region

Region	Region Name	% Population	GPCD Target
1	North Coast		137
2	San Francisco Bay		131
3	Central Coast		123
4	South Coast		149
5	Sacramento River	100.0%	176
6	San Jacinto		174
7	Tulare lake		188
8	North Lahontan		173
9	South Lahontan		170
10	Colorado River	100.0%	211

2015 Target:
 2020 Target:

Method 2: Performance Standards

TM 2 Indoor Water Use allowance:
 TM 6 Landscaped Area Water Use:
 TM 7 Baseline CI Water Use:
 2015 Target:
 2020 Target:

Method 4:

To be Developed



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