DRAFT - JUNE 2016

CITY OF SACRAMENTO

# 2015 Urban Water Management Plan

WEST YOST ASSOCIATES

City of SACRAMENTO

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# Draft
# 2015 Urban Water Management Plan

Prepared for

## City of Sacramento

**June 2016**

WEST YOST ASSOCIATES
Consulting Engineers

038-12-16-44

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## List of Acronyms and Abbreviations

| | |
|---|---|
| AB | Assembly Bill |
| Act | Urban Water Management Act |
| ADWF | Average Dry Weather Flow |
| AF | Acre-Feet |
| AFB | Air Force Base |
| AFY | Acre-Feet Per Year |
| AWWA | American Water Works Association |
| Baseline GPCD | Baseline Daily Per Capita Water Use |
| BMP | Best Management Practice |
| Cal Am | California American Water |
| CALSIMII | Lower American River Flow Management System |
| CCR | Consumer Confidence Report |
| CDoF | California Department of Finance |
| cfs | Cubic Feet Per Second |
| CIMIS | California Irrigation Management Information System |
| City | City of Sacramento |
| Cogen | SPA Cogeneration |
| CPUC | California Public Utilities Commission |
| Cr6 | Hexavalent Chromium |
| CSS | Combined Sewer System |
| CUWCC | California Urban Water Conservation Council |
| CWC | California Water Code |
| CWTP | Combined Wastewater Treatment Plant |
| DBP | Disinfection By-Product |
| DCE | cis-1,2-dichloroethene |
| DMMs | Demand Management Measures |
| DOF | Department of Finance |

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|---|---|
| DOU | Department of Utilities |
| DWR | Department of Water Resources |
| DWR Guidebook | 2015 Urban Water Management Plans Guidebook for Urban Water Suppliers |
| ETo | Reference Evapotranspiration |
| FVWC | Fruitridge Vista Water Company |
| FWTP | Fairbairn Water Treatment Plant |
| GMP | Groundwater Management Plan |
| GPCD | Gallons Per Capita Per Day |
| GSA | Groundwater Sustainability Agency |
| GSP | Groundwater Sustainability Plan |
| HET | High Efficiency Toilet |
| MCL | Maximum Contaminant Level |
| MG | Million Gallons |
| MGD | Million Gallons Per Day |
| MOU | Memorandum of Understanding |
| MTBE | methyl-tertiary butyl ether |
| NAICS | North American Industry Classification System |
| NDMA | n-nitrosodimethylamine |
| NJV | Natomas Joint Vision Study Area |
| NPDES | National Pollutant Discharge Elimination System |
| O&M | Operation and Maintenance |
| OES | Office of Emergency Services |
| PCE | Tetrachloroethylene |
| POU | Places of Use |
| PSA | Purveyor Specific Agreement |
| PWS | Public Water System |
| RHNP | Regional Housing Needs Plan |
| RUWMP | Regional Urban Water Management Plan |
| RWA | Regional Water Authority |
| RWFS | Recycled Water Feasibility Study |
| SACOG | Sacramento Area Council of Governments |
| SASD | Sacramento Area Sewer District |
| SB | Senate Bill |
| SB X7-7 | Senate Bill Seven of the Senate's Seventh Extraordinary Session of 2009 |
| SCGA | Sacramento Central Groundwater Authority |
| SCWA | Sacramento County Water Agency |
| SGA | Sacramento Groundwater Authority |
| SGMA | Sustainable Groundwater Management Act |
| SMUD | Sacramento Municipal Utility District |
| SMWA | Sacramento Metropolitan Water Authority |
| SPA | Sacramento Power Authority |

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| | |
|---|---|
| SRCSD | Sacramento Regional County Sanitation District |
| SRWTP | Sacramento River Water Treatment Plant |
| SRWWTP | Sacramento Regional Wastewater Treatment Plant |
| SSA | South Service Area |
| SSS | Separated Sewer System |
| SSWD | Sacramento Suburban Water District |
| SWRCB | State Water Resources Control Board |
| TCE | Trichloroethylene |
| UARP | Upper American River Project |
| USBR | United States Bureau of Reclamation |
| UWMP | Urban Water Management Plan |
| West Yost | West Yost Associates |
| WFA | Water Forum Agreement |
| WRCC | Western Regional Climate Center |
| WRF | Water Reclamation Facility |
| WSCP | Water Shortage Contingency Plan |
| WSMP | Water Supply Master Plan |

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## ES.1 INTRODUCTION

Over the last several years, Urban Water Management Plans (UWMP) have assumed an important role in water supply planning and management for communities in California. UWMPs have become the foundational documents which cities and water agencies use to develop water supply assessments and other key water supply reliability documents in support of providing water service to existing customers and future development in accordance with adopted General Plans and established Spheres of Influence.

With the current water supply conditions in California, development of the 2015 UWMPs comes at a pivotal time. Current drought conditions have resulted in State mandates for water conservation and have led to the passage of the Sustainable Groundwater Management Act of 2014. These actions will impact all water suppliers and all water users in the State. With the improving economy statewide, the need for reliable water supplies to serve existing customers, as well as new development, is more critical than ever. Also, 2015 is the first compliance year for the interim water use targets required by the Water Conservation Act of 2009 (SB X7-7).

As described in this 2015 UWMP, the City of Sacramento's (City) residents and businesses have responded positively to the call for water conservation, and the City continues to be committed to the implementation of good water management practices to ensure that adequate, reliable water supplies are available to meet existing and projected demands. The City has met its interim 2015 per capita water use target and is well positioned to meet the final 2020 water use target per capita water demand.

## ES.2 WATER CODE REQUIREMENTS

The Urban Water Management Planning Act (Act) requires water suppliers that provide over 3,000 acre-feet per year (AFY) or have over 3,000 connections to prepare and submit to the State Department of Water Resources (DWR) an UWMP every 5 years.

The Act has been modified over the years in response to the State's water shortages and other factors. A significant amendment was made in 2009, after the 2007 to 2009 drought, and as a result of the Governor's call for a statewide 20 percent reduction in urban water use by the year 2020. This was the Water Conservation Act of 2009, also known as SB X7-7. This act required agencies to establish water use targets for 2015 and 2020 that would result in statewide water savings of 20 percent by 2020.

The primary objective of the Act is to direct "urban water suppliers" to develop an UWMP which provides a framework for long-term water supply planning and documents how urban water suppliers are carrying out their long-term resource planning responsibilities to ensure adequate water supplies are available to meet existing and future water demands.

In 2015, the City supplied approximately 86,031 acre-feet (AF) of water to approximately 135,830 residential and non-residential connections located within its water service area and approximately 1,199 AF of water to four wholesale customers. The City is therefore considered a retail urban water supplier and is required to submit an UWMP. Although the City supplied less than 3,000 AF of wholesale water in 2015, the City's existing wholesale agreements require the

City to plan to provide more than 3,000 AF wholesale supply in future years. Therefore, the City chose to submit the 2015 UWMP as a retail and wholesale urban water supplier. This 2015 UWMP describes the City water system, historical and projected water use, water supply sources, and a comparison of projected water supply to water demands during normal, single-dry, and multiple-dry years in five-year increments from 2020 to 2040. As required by SB X7-7, this 2015 UWMP also confirms the City's 2015 and 2020 water use targets, verifies the City's compliance with the interim 2015 water use target, and describes the City's implementation plan for meeting the City's final 2020 water use target.

The City's 2015 UWMP has been prepared in accordance with the Act, as defined by the California Water Code (CWC), Division 6, Part 2.6, Sections 10610 through 10656 (Urban Water Management Planning), and the Water Conservation Act of 2009 (SB X7-7), as defined by California Water Code, Division 6, Part 2.55, Section 10608 (Sustainable Water Use and Demand Reduction). A copy of the relevant sections of the Water Code are included in Appendix A of this document.

A brief summary of this 2015 UWMP's contents and the public review and adoption process is provided below, following a summary of the legislative changes that have been enacted since the 2010 UWMPs were prepared and adopted.

### ES.3 LEGISLATIVE CHANGES FROM 2010 UWMP

The legislative changes to the Act are described in Chapter 1. Some highlighted changes include:

- Demand Management Measures: Address the nature and extent of each water demand management measure implemented over the past 5 years in narrative form.
- 2015 UWMP Submittal Date to DWR: Changed from December 31, 2015 to July 1, 2016.
- Water Loss: Requires water suppliers to quantify and report on distribution system water loss using the American Water Works Association (AWWA) Water Audit methodology.
- Voluntary Reporting of Passive Savings: Due to new water codes and requirements.
- Voluntary Reporting of Energy Intensity: Describe the water/energy nexus.
- Defining Water Features: Water Shortage Contingency Plans must distinguish between water features that are artificially supplied with water (including ponds, lakes, waterfalls, and fountains) and swimming pools and spas.

## ES.4 PLAN ORGANIZATION

This 2015 UWMP contains the appropriate sections and tables required per California Water Code Division 6, Part 2.6 (Urban Water Management Planning Act), included in Appendix A of this 2015 UWMP, and has been prepared based on guidance provided by DWR in their March 2016 "2015 Urban Water Management Plans, Guidebook for Urban Water Suppliers" (DWR Guidebook).

DWR's Urban Water Management Plan Checklist, as provided in the DWR Guidebook, has been completed to demonstrate compliance with applicable requirements. A copy of the completed checklist is included in Appendix C.

This 2015 UWMP is organized into the following chapters:

- Chapter 1: Introduction and Overview
- Chapter 2: Plan Preparation
- Chapter 3: System Description
- Chapter 4: System Water Use
- Chapter 5: SB X7-7 Baselines and Targets
- Chapter 6: System Supplies
- Chapter 7: Water Supply Reliability
- Chapter 8: Water Shortage Contingency Planning
- Chapter 9: Demand Management Measures
- Chapter 10: Plan Adoption, Submittal and Implementation

Appendices (listed in Chapter 1) provide relevant supporting documents, including the 2015 UWMP tables and SB X7-7 Verification Form.

## ES.5 PLAN REVIEW AND ADOPTION

The Act requires the water supplier to coordinate the preparation of its UWMP with other appropriate agencies, including other water suppliers that share a common source, water management agencies, and relevant public agencies. These agencies, as well as the public, participated in the coordination and preparation of this 2015 UWMP. The coordination and outreach are described in Chapter 2.

A public hearing to discuss the Draft 2015 UWMP was held on June 21, 2016.

The public hearing provided an opportunity for City water users and the general public to become familiar with the 2015 UWMP and ask questions about its water supply, in addition to the City's continuing plans for providing a reliable, safe, high-quality water supply, and the adoption, implementation and economic impact of revised per capita water use targets. Copies of the draft 2015 UWMP were made available for public inspection at the Department of Utilities office, City Clerk's office, and the Central Sacramento public library.

CWC Section 10621 (b) requires agencies to notify the cities and counties to which they serve water that the 2015 UWMP is being updated and reviewed. This notification must be sent out at least 60 days in advance of the public hearing. In April 2016, a notice of preparation was sent to the cities and counties, and other stakeholders, to inform them of the UWMP update process and schedule, and to solicit input for the 2015 UWMP update. The notifications to cities and counties, the public hearing notifications, and the public hearing and adoption are discussed in Chapter 10 and provided in Appendix D.

This 2015 UWMP was adopted by the City Council on June 21, 2016. A copy of the adoption resolution is provided in Appendix T.

Within 30 days of adoption, a copy of the 2015 UWMP was submitted to DWR, the California State Library and the cities and counties to which the urban water supplier provides water.

Within 30 days of submitting the adopted plan to DWR, copies of this 2015 UWMP will be made available during normal business hours at local public libraries, and city offices.

A copy of the adopted 2015 UWMP will also be available for review and download on the City's website: http://www.cityofsacramento.org.

Should this 2015 UWMP be amended or changed, copies of amendments or changes shall be submitted to DWR, the California State Library, and any city or county within which the City provides water supplies within 30 days after adoption of the amendment(s).

# CHAPTER 1
## Introduction and Overview

This chapter provides an introduction and overview of the City of Sacramento (City) 2015 Urban Water Management Plan (UWMP) including the importance and extent of the City's water management planning efforts, changes since the preparation of the City's 2010 UWMP, and organization of the City's 2015 UWMP. This 2015 UWMP has been prepared jointly by City staff and West Yost Associates (West Yost).

### 1.1 INTRODUCTION

The Urban Water Management Planning Act (Act) was originally established by Assembly Bill (AB) 797 on September 21, 1983. Passage of the Act was recognition by state legislators that water is a limited resource and a declaration that efficient water use and conservation would be actively pursued throughout the state. The primary objective of the Act is to direct "urban water suppliers" to develop an UWMP which provides a framework for long-term water supply planning and documents how urban water suppliers are carrying out their long-term resource planning responsibilities to ensure adequate water supplies are available to meet existing and future water demands. A copy of the current version of the Act, as incorporated in Sections 10610 through 10656 of the California Water Code (CWC), is provided in Appendix A of this document.

### 1.2 IMPORTANCE AND EXTENT OF CITY'S WATER MANAGEMENT PLANNING EFFORTS

The purpose of the UWMP is to provide a planning tool for the City for developing and delivering municipal water supplies to the City's water service area. The City has had a long history of providing clean and reliable water to its customers. The City's UWMP is a comprehensive guide for planning for a safe and adequate water supply.

### 1.3 CHANGES FROM 2010 UWMP

The Act has been modified over the years in response to the State's water shortages, droughts and other factors. A significant amendment was made in 2009, after the 2007 to 2009 drought, and as a result of the Governor's call for a statewide 20 percent reduction in urban water use by the year 2020. This was the Water Conservation Act of 2009, also known as Senate Bill Seven of the Senate's Seventh Extraordinary Session of 2009 (SB X7-7). This act required agencies to establish water use targets for 2015 and 2020 that would result in statewide water savings of 20 percent by 2020.

There have been several additions and changes to the CWC since the City's 2010 UWMP was prepared. These are summarized below:

- AB 2067 (Weber 2014)
  - CWC Section 10631 (f)(1) and (2): Demand Management Measures
    - Requires water suppliers to provide narratives describing their water demand management measures, as provided.

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    - Requires retail water suppliers to address the nature and extent of each water demand management measure implemented over the past 5 years and describe the water demand management measures that the supplier plans to implement to achieve its water use targets.
    - See Chapter 9 of this 2015 UWMP for a description of the City's Demand Management Measures.
  - CWC Section 20621 (d): Submittal Date
    - Requires each urban water supplier to submit its 2015 plan to the Department of Water Resources (DWR) by July 1, 2016.

- SB 1420 (Wolk 2014)
  - CWC Section 10644 (a)(2): Submittal Format
    - Requires the plan, or amendments to the plan, to be submitted electronically to the department.
  - CWC Section 10644(a)(2): Standardized Forms
    - Requires the plan, or amendments to the plan, to include any standardized forms, tables, or displays specified by the department.
  - CWC Section 10631 (e)(1)(J) and (e)(3)(A) and (B): Water Loss
    - Requires a plan to quantify and report on distribution system water loss.
    - See Chapter 4 of this 2015 UWMP for a description of the City's distribution system water losses.
  - CWC Section 10631 (e)(4): Voluntary Reporting of Passive Savings
    - Provides for water use projections to display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans, when that information is available and applicable to an urban water supplier.
    - The City has included passive savings in this 2015 UWMP.

- SB 1036 (Pavley 2014)
  - CWC Section 10631.2 (a) and (b): Voluntary Reporting of Energy Intensity
    - Allows an urban water supplier to include certain energy-related information, including, but not limited to, an estimate of the amount of the energy used to extract or divert water supplies.
    - The City has opted to not report on energy intensity in this 2015 UWMP.

- CWC 10632: Defining Water Features
  - Commencing with the UWMP update due July 1, 2016, for purposes of developing the water shortage contingency analysis, requires urban water suppliers to analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.
  - See Chapter 8 of this 2015 UWMP for a discussion of water features that are artificially supplied with water.

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## 1.4 PLAN ORGANIZATION

This 2015 UWMP contains the appropriate sections and tables required per CWC Division 6, Part 2.6 (Urban Water Management Planning Act), included in Appendix A of this 2015 UWMP, and has been prepared based on guidance provided by the DWR in their March 2016 "2015 Urban Water Management Plans, Guidebook for Urban Water Suppliers" (DWR Guidebook).

This 2015 UWMP is organized into the following chapters:

- Chapter 1: Introduction and Overview
- Chapter 2: Plan Preparation
- Chapter 3: System Description
- Chapter 4: System Water Use
- Chapter 5: SB X7-7 Baselines and Targets
- Chapter 6: System Supplies
- Chapter 7: Water Supply Reliability Assessment
- Chapter 8: Water Shortage Contingency Planning
- Chapter 9: Demand Management Measures
- Chapter 10: Plan Adoption, Submittal and Implementation

This 2015 UWMP also contains the following appendices of supplemental information and data related to the City's 2015 UWMP:

- Appendix A: Legislative Requirements
- Appendix B: DWR 2015 Urban Water Management Plan Tables
- Appendix C: DWR 2015 Urban Water Management Plan Checklist
- Appendix D: Agency and Public Notices
- Appendix E: DWR Water Audit
- Appendix F: SB X7-7 Compliance and Verification Tables
- Appendix G: Sacramento Groundwater Authority Notification
- Appendix H: USBR Settlement Contract Schedule B
- Appendix I: Water Forum Agreement – Purveyor Specific Agreement
- Appendix J: Recycled Water Feasibility Study Executive Summary
- Appendix K: Principles of Agreement for Recycling Water Program
- Appendix L: Water Shortage Stage Workshop Summary Report
- Appendix M: City Code 1304

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- Appendix N: Ordinance No. 2015-0011 and Resolution No. 2015-0162
- Appendix O: Ordinance No. 2016-0015
- Appendix P: Draft Water Shortage Resolution
- Appendix Q: CUWCC Annual Reports
- Appendix R: Water Conservation Plan
- Appendix S: Leak Detection Program Fact Sheet
- Appendix T: UWMP Adoption Resolution

Furthermore, this 2015 UWMP contains all of the tables recommended in the DWR Guidebook, both embedded into the UWMP chapters where appropriate and included in Appendix B.

DWR's UWMP Checklist, as provided in the DWR Guidebook, has been completed to demonstrate the plan's compliance with applicable requirements. A copy of the completed checklist is included in Appendix C.

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This chapter describes the preparation of the City's 2015 UWMP, including the basis for the preparation of the plan, individual or regional planning, fiscal or calendar year reporting, units of measure, and plan coordination and outreach.

## 2.1 BASIS FOR PREPARING A PLAN

The Act requires every "urban water supplier" to prepare and adopt an UWMP, to periodically review its UWMP at least once every five years and make any amendments or changes which are indicated by the review. An "urban water supplier" is defined as a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually (AFY).

The City manages Water System CA3410020. As shown in Table 2-1, the City provided water to 135,830 customer connections and supplied 86,031 acre-feet (AF) of water in 2015 to wholesale and retail customers. The City primarily supplies water to retail customers. Therefore, the City is required to prepare an UWMP. The City's last UWMP, the 2010 UWMP, was adopted by the City Council in October 2011.

**Table 2-1. Retail: Public Water Systems (DWR Table 2-1)**

| Public Water System Number | Public Water System Name | Number of Municipal Connections 2015 | Volume of Water Supplied 2015 |
|---|---|---|---|
| CA3410020 | Sacramento, City of | 135,830 | 86,031 |
| | **TOTAL** | 135,830 | 86,031 |
| NOTES: Volumes are in AF. Volume includes wholesale and retail deliveries. | | | |

## 2.2 REGIONAL PLANNING

As described in Section 2.3 below, the City has prepared this 2015 UWMP on an individual reporting basis, not part of a regional planning process.

## 2.3 INDIVIDUAL OR REGIONAL PLANNING AND COMPLIANCE

This 2015 UWMP has been prepared on an Individual Reporting basis covering only the City's service area (Table 2-2). The City does not participate in a regional alliance, and it has not prepared a Regional Urban Water Management Plan (RUWMP). As described below in Section 2.5, the City has notified and coordinated with appropriate regional agencies and constituents.

**Table 2-2. Plan Identification (DWR Table 2-2)**

| Select Only One | Type of Plan | Name of RUWMP or Regional Alliance *if applicable* |
|---|---|---|
| ☑ | Individual UWMP | |
| ☐ | Regional Urban Water Management Plan (RUWMP) | |

## 2.4 FISCAL OR CALENDAR YEAR AND UNITS OF MEASURE

The City is a water wholesaler and a water retailer.

The City's 2015 UWMP has been prepared on a calendar year basis, with the calendar year starting on January 1 and ending on December 31 of each year. Water use and planning data for the entire calendar year of 2015 has been included.

The water volumes in this 2015 UWMP are reported in units of AF.

The City's reporting methods for this 2015 UWMP are summarized in Table 2-3.

**Table 2-3. Agency Identification (DWR Table 2-3)**

| Type of Agency (select one or both) | |
|---|---|
| ☑ | Agency is a wholesaler |
| ☑ | Agency is a retailer |
| Fiscal or Calendar Year (select one) | |
| ☑ | UWMP Tables Are in Calendar Years |
| ☐ | UWMP Tables Are in Fiscal Years |
| Units of Measure Used in UWMP (select from Drop down) | |
| Unit | AF |

## 2.5 COORDINATION AND OUTREACH

This section includes a discussion of the City's inter-agency coordination and coordination with the general public. The UWMP Act requires the City to coordinate the preparation of its UWMP with other appropriate agencies and all departments within the City, including other water suppliers that share a common source, water management agencies, and relevant public agencies. These agencies, as well as the public, participated in the coordination and preparation of this 2015 UWMP, and are summarized below.

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### 2.5.1 Wholesale and Retail Coordination

The City does not rely upon a wholesale agency for water supply. Therefore, Table 2-4 is intentionally blank.

**Table 2-4. Retail: Water Supplier Information Exchange (DWR Table 2-4)**

| The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631. |
|---|
| Wholesale Water Supplier Name |
| NOTES: The City does not rely upon a wholesale agency for water supply. |

The City provides wholesale water service to four customers. In accordance with CWC Section 10631, the City provided supply information to the agencies receiving wholesale water supplies shown in Table 2-5.

**Table 2-5. Wholesale: Water Supplier Information Exchange (DWR Table 2-4)**

| ☑ | Supplier has informed 10 or fewer other water suppliers of water supplies available in accordance with CWC 10631. **Complete the table below.** |
|---|---|
| Water Supplier Name | |
| Sacramento County Water Agency | |
| Sacramento Suburban Water District | |
| California American Water Company | |
| Fruitridge Vista Water Company | |

### 2.5.2 Coordination with Other Agencies and the Community

The City actively encourages community participation in water management activities and specific water-related projects. The City's public participation program includes both active and passive means of obtaining input from the community, such as mailings, public meetings, and web-based communication. The City's website describes on-going projects and posts announcements of planned rate increases to fund these water projects.

As part of the 2015 UWMP update, the City facilitated a public review period. Public noticing, pursuant to Section 6066 of the Government Code, was conducted prior to commencement of a public comment period. Public hearing notices are included in Appendix D of this document. During the public comment period, the Draft UWMP was made available on the City's website and at City offices, library, and City Hall.

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The City also coordinated the preparation of this 2015 UWMP with several agencies, including relevant public agencies that utilize the same water supplies. These agencies included the following:

- County of Sacramento
- Sacramento County Water Agency
- Regional Water Authority
- Sacramento Groundwater Authority
- Sacramento Central Groundwater Authority
- California American Water Company
- Sacramento Suburban Water District
- Sacramento Regional County Sanitation District
- Fruitridge Vista Water Company
- Sacramento Water Conservation Advisory Group
- Rio Linda/Elverta Community Water District
- Del Paso Manor Water District
- Natomas Mutual Water Company
- Florin County Water District
- Tokay Park Water District

The public hearings provided an opportunity for all City water users and the general public to become familiar with the UWMP and ask questions about its water supply in addition to the City's continuing plans for providing a reliable, safe, high-quality water supply.

### 2.5.3 Notice to Cities and Counties

CWC Section 10621 (b) requires agencies to notify the cities and counties to which they serve water at least 60 days in advance of the public hearing that the plan is being updated and reviewed. In April 2016, a notice of preparation was sent to the cities and counties, and other stakeholders, to inform them of the UWMP update process and schedule and to solicit input for the 2015 UWMP. The notifications to cities and counties, the public hearing notifications, and the public hearing and adoption are discussed in Chapter 10.

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This chapter provides a description of the City's water system and service area. This includes a description of the water system facilities, climate, population, and housing within the City's service area.

## 3.1 GENERAL DESCRIPTION

The City is located in the Central Valley of California, which is surrounded by the Sierra Nevada Mountains to the east, coastal ranges to the west, Klamath Mountains to the North, and is oriented in a north-south direction. The City is located at the confluence of the Sacramento and American Rivers that meet on the western boundary of the City. The Sacramento River flows south from Lake Shasta, while the American River flows west from the Sierra Nevada Mountains. As shown in Figure 3-1, the City limits span the area north of the City of Elk Grove, west of the City of Rancho Cordova, east of the Sacramento River, and south of Placer and Sutter Counties.

The City was founded in 1849 with a population of 9,087 people, and in 1920, voters adopted a City Charter (municipal constitution) and a City Council-City Manager form of government; this form of government is still in use today. The City's population is approximately 480,105. The City's Department of Utilities (DOU) is responsible for providing and maintaining water, sewer collection, storm drainage and flood control services for residents and businesses within the City's water service area.

## 3.2 SERVICE AREA DESCRIPTION

The following sections provide brief descriptions of the City's retail system and wholesale agencies receiving water supply from the City.

### 3.2.1 Retail Service Area

The City's retail water service area boundary is largely contiguous with the City limits. As shown in Figure 3-1, the City serves a small number of customers in an adjacent, unincorporated portion of Sacramento County, and does not serve a small portion of City residents who receive their water from Sacramento Suburban Water District (SSWD). The population of these two areas are roughly equivalent. In addition, the Sacramento Power Authority's (SPA) Cogeneration (Cogen) Facility is located outside of the City limits and currently receives potable water from the City, shown on Figure 3-1. The Cogen Facility is anticipated to receive recycled water from the City in the future.

The City's retail service area covers approximately 99 square miles (63,182 acres). Ground surface elevations generally range from about 5 feet above sea level east of the Sacramento River to approximately 75 feet above sea level in the northeast part of the service area. Soils within the City consist of unconsolidated clay, silt, and sand that resulted from floodplain deposits. The City is within the reclaimed flood plain of the Sacramento River.

The City has multiple surface water entitlements, consisting of five appropriative water right permits issued by the State Water Resources Control Board (SWRCB), pre-1914 rights and a water rights settlement contract with the United States Bureau of Reclamation (USBR). These water

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rights allow the City to divert water from the Sacramento and American Rivers. A description of the City's surface water rights is included in Chapter 6.

The City's authorized Place of Use (POU) for the Sacramento River includes all the land within the City limits. The POU for the American River supply includes the City limits and also defined areas adjacent to the City that includes portions of service areas of other water purveyors. The City's POU for each surface water source is shown in Figure 3-2.

The City's current water system serves about 135,830 customers (connections) as of 2015. The system is responsible for delivering treated water to residential, commercial, and irrigation customers. The distribution system consists of two surface water treatment facilities, two pressure zones, groundwater wells, storage tanks, pumping facilities, and distribution/transmission pipelines. Each of these components is discussed in more detail below, and the locations of the major components are shown in Figure 3-3.

### 3.2.2 Wholesale Service Area

The City's water rights and supply facilities provide regional benefits by making water available for the benefit of areas within the POU for each surface water source. The City currently delivers wholesale water to four customers through seven turnouts that border the City's retail service area. The four wholesale customers are shown in Figure 3-2 and described below. The City uses the same surface water treatment facilities, groundwater wells, storage tanks, pumping facilities, and distribution/transmission pipelines described in later sections and shown in Figure 3-3 to deliver water to wholesale customers.

#### 3.2.2.1 Sacramento County Water Agency

Sacramento County Water Agency (SCWA) was formed in 1952 by a special legislative act of the State of California and is governed by a Board of Directors. SCWA serves approximately 49,249 customers within Sacramento County. SCWA uses a combination of surface water, groundwater, and recycled water as its sources of water supply. SCWA has a wheeling agreement with the City whereby the City treats and delivers SCWA water from the Sacramento River to serve a portion of their Zone 40 service area and a wholesale water agreement to serve their Zone 50 Metro Air Park service area. The estimated water required to serve these areas is approximately 9,300 AFY.

The City has two connections to serve SCWA. One connection located near Franklin Boulevard at the southern boundary of the City serves the Zone 40 service area. A second connection located in Bayou Road at the western edge of the City serves the Sacramento International Airport and Zone 50 Metro Air Park.

In addition to wholesale water service, the City wheels water for SCWA. Wheeled water is diverted, treated, and conveyed through the City's water system using SCWA's water entitlements. Wheeled water volumes are not included as a demand in this UWMP.

#### 3.2.2.2 Sacramento Suburban Water District

SSWD is made up of four service areas within Sacramento County. SSWD serves approximately 46,650 customer connections within Sacramento County. SSWD uses a combination of surface

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water and groundwater as its sources of water supply. In 2004, the City entered into an agreement with SSWD to supply up to 20 million gallons per day (MGD) (22,400 AFY) of American River water supply plus up to 10 MGD of additional water. The amount of water available to SSWD is impacted by the hydrologic conditions in the American River and is reduced during dry conditions. SSWD has been receiving wholesale water from the City for their South Service Area (SSA) located within the American River POU since 2007.

The City has one connection to serve the SSWD near Howe Avenue and Northrop Drive at the eastern boundary of the City.

#### 3.2.2.3 California American Water Company

California American Water (Cal Am) is a wholly-owned subsidiary of the American Water Works Company. Cal Am was incorporated into American Water Works Company under California law in 1966. The Sacramento area is part of the Northern Division of Cal Am and contains nine service areas within Sacramento County with approximately 59,090 connections in 2015. Three of the service areas lie within the American River POU, Arden, Parkway, and Suburban Rosemont. Cal Am uses a combination of groundwater and wholesale purchases as its water supply. In 1997, the City entered into a wholesale agreement for the Parkway service area. In 2010 the agreement was modified to include both firm and non-firm capacity. The modified agreement includes a firm capacity of 2.3 MGD (2,580 AFY) and a non-firm capacity of 3.46 MGD (3,880 AFY) during off-peak periods (October 15$^{th}$ through May 14$^{th}$), and can be delivered to any of the three services areas within the American River POU.

The City has two existing and one (near) future connections to serve Cal Am. The existing connections are located at 1) the intersection of "A" Parkway & Franklin Boulevard to serve Cal Am's Parkway service area, and 2) the terminal end of a 24-inch diameter transmission main in Folsom Boulevard to serve the Rosemont service area. Additionally, Cal Am is planning to construct a connection to serve their Arden service area.

#### 3.2.2.4 Fruitridge Vista Water Company

The Fruitridge Vista Water Company (FVWC) was formed in 1953 by the Cook family to serve water to homeowners in an unincorporated area south of the City in Sacramento County. FVWC is an investor owned utility governed by the State of California Public Utility Commission (CPUC). The FVWC service area is considered substantially built out with approximately 95 percent of the service area developed. The service area is located within the American River POU and serves approximately 4,700 connections. FVWC uses primarily groundwater for supply with wholesale water as a supplemental supply source. The City's agreement with FVWC allows the purchase of 3.24 MGD (3,630 AFY) firm capacity which is subject to reductions under certain hydrologic conditions.

The City has two connections to serve FVWC. One is located in 47$^{th}$ Avenue near the western boundary of the FVWC service area and another located near the intersection of Fruitridge Boulevard and Sampson Avenue.

### 3.2.3 Surface Water Supply and Treatment Facilities

The City treats surface water diverted from the Sacramento and American Rivers with two water treatment facilities: the Sacramento River Water Treatment Plant (SRWTP) and the E.A. Fairbairn Water Treatment Plant (FWTP). The locations of the water treatment plants are shown in Figure 3-3.

#### 3.2.3.1 Sacramento River Water Treatment Plant

The SRWTP, located just east of Interstate 5 and south of Richards Boulevard, treats water that is pumped from the Sacramento River about one-half mile downstream of the American River confluence (Figure 3-3). The SRWTP began operation in 1924 with an initial capacity of 32 MGD. Expansions and modifications completed by the City since the 1920's have increased the diversion capacity to 160 MGD which is also the permitted capacity for the SRWTP. In 2015, the reliable treatment capacity of the SRWTP was 135 MGD. A rehabilitation project to increase the reliable treatment capacity to 160 MGD will be completed in 2016.

#### 3.2.3.2 E.A. Fairbairn Water Treatment Plant

The FWTP is located on the south bank of the lower American River, approximately seven miles upstream from its confluence with the Sacramento River (Figure 3-3). The FWTP began operation in 1964 and has a diversion capacity of 200 MGD. The permitted and reliable treatment capacity for FWTP is 160 MGD.

### 3.2.4 Groundwater Wells

The City currently operates twenty-two active municipal groundwater supply wells; 20 wells are located within the City's service area north of the American River, and the remaining 2 are located south of the American River. The current total pumping capacity of the City's municipal supply wells is approximately 20.6 MGD (23,077 AFY). The City is conducting a well rehabilitation program which includes projects for improving capacity at several existing wells. In addition to the rehabilitation project, the City has recently constructed one new well in the southern portion of the system at Shasta Park with a second new well pending at the FWTP. These will not be equipped to supply potable water until 2017-2018. The current locations of the City's municipal groundwater wells are shown in Figure 3-3. The City anticipates groundwater pumping capacity to increase to approximately 25 MGD (28,006 AFY) after the rehabilitation project and new wells are completed.

### 3.2.5 Storage Tanks

The City currently has seventeen storage facilities: twelve storage reservoirs are located throughout the City, and five finished water clearwells are located at the water treatment plants (two at FWTP and three at SRWTP). Each storage reservoir in the City distribution system has a storage capacity of 3 million gallons (MG), except for Florin Reservoir which has a capacity of 15 MG. Therefore, the cumulative distribution storage reservoir capacity is 48 MG. A new 4 MG distribution storage tank in the southern portion of the City is expected to be complete in 2017, which will increase the distribution storage to 52 MG. The clearwells located at FWTP and SRWTP have a combined capacity of approximately 45 MG.

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The locations of the twelve storage tanks located throughout the City and the locations of the two water treatment plants are shown in Figure 3-3.

### 3.2.6 Pumping Facilities

The City currently operates high lift pump stations at both the SRWTP and the FWTP. An additional ten pump stations are located at storage tanks within the distribution system; the elevated Freeport Reservoir does not have a pump station.

### 3.2.7 Distribution and Transmission Pipelines

The City maintains approximately 1,600 miles of transmission and distribution system mains ranging in size from 2 to 72 inches in diameter; only 360 miles are of pipeline sizes 12 inches in diameter or larger.

### 3.2.8 Pressure Zones

Two pressure zones exist in the City. High service pumps at each of the treatment plants pump water directly into the distribution system creating a pressure zone that encompasses the majority of the City. The Bell Avenue Booster Pump Station is an in-system booster pump station that creates a small pressure zone in the northeastern part of the City.

## 3.3 SERVICE AREA CLIMATE

The climate of the City's retail and wholesale service areas are typical of the Sacramento Valley. The winters are moist with mild temperatures, while the summers are hot and dry. As shown in Table 3-1, precipitation averages approximately 17 inches per year, while temperatures range from a low of around 36°F to a high of around 93°F. Average evapotranspiration (ETo) is based on data for Station 131 (Fair Oaks) obtained from the California Irrigation Management Information System (CIMIS) website. Rainfall and temperature data is based on data for Sacramento Executive Airport Station obtained from the Western Regional Climate Center (WRCC) website. The historical climate characteristics affecting water management in the City's service area are shown in Table 3-1.

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**Table 3-1. Monthly Average Climate Data Summary**

| Month | Standard Monthly Average ETo, inches[(a)] | Average Total Precipitation, inches[(b)] | Average Temperature, degrees Fahrenheit[(b)] | |
|---|---|---|---|---|
| | | | Max | Min |
| January | 1.14 | 3.56 | 53.5 | 37.8 |
| February | 1.76 | 3.07 | 59.9 | 41.0 |
| March | 3.28 | 2.44 | 64.6 | 43.1 |
| April | 4.51 | 1.17 | 71.4 | 45.9 |
| May | 6.46 | 0.5 | 79.9 | 50.7 |
| June | 7.44 | 0.18 | 87.2 | 55.4 |
| July | 7.91 | 0.03 | 92.7 | 58.2 |
| August | 7.02 | 0.06 | 91.5 | 57.8 |
| September | 5.13 | 0.25 | 87.7 | 55.8 |
| October | 3.33 | 0.93 | 77.7 | 50.2 |
| November | 1.59 | 2.04 | 63.7 | 42.6 |
| December | 1.02 | 3.02 | 53.8 | 35.8 |
| Totals | 50.59 | 17.24 | 73.6 | 48.1 |

(a) Source: California Irrigation Management Information System (CIMIS) data for Fair Oaks station 131 (downloaded March 30, 2016).
(b) Source: Western Regional Climate Center (www.wrcc.dri.edu) data for Sacramento Executive Airport station 047630 (period of record: November 10, 1941 to January 20, 2015).

## 3.4 SERVICE AREA POPULATION AND DEMOGRAPHICS

The City's water service area is described below, including population, employment, and other demographics that may affect water management and planning.

### 3.4.1 Retail Service Area Population

As described above, the City provides water service to most of the area within the City limits, except a small number of City residents who receive their water from SSWD. The City also serves a small number of customers outside of the City limits in an adjacent, unincorporated portion of Sacramento County. The population of these two areas are roughly equivalent. Because the retail service area boundary and the City boundary correspond by at least 95 percent, the City estimates its service area population using California Department of Finance (CDoF) data. The City's current (2015) service area population is 480,105.

Land use planning within the City is undertaken by the City's Community Development Department. The City adopted its 2035 General Plan in March 2015. The 2035 General Plan provides a framework for the City's vision and guiding principles for development within the City for a planning horizon to 2035. Projections of future population within the City's service area and sphere of influence for the years 2020 and 2035 are based on the 2035 General Plan. Projected populations for the years 2025 and 2030 are interpolated from 2035 General Plan information. To obtain population projections for the year 2040, an assumption of a continued growth rate within the current service area and sphere of influence consistent with the 2035 General Plan was used,

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and projected population for the special study area, as defined in the 2035 General Plan, for the Natomas Joint Vision Study Area (NJV), located north of the City that is anticipated to be annexed, was then added. Figure 3-4 shows the City's sphere of influence and NJV. The City's current and projected service area populations are shown in Table 3-2.

**Table 3-2. Retail: Population – Current and Projected (DWR Table 3-1)**

| Population Served | 2015 | 2020 | 2025 | 2030 | 2035 | 2040*(opt)* |
|---|---|---|---|---|---|---|
| | 480,105 | 528,866 | 560,278 | 600,339 | 640,381 | 695,830 |

NOTES:
2015 population reported by California Department of Finance.
2020 and 2035 population from 2035 General Plan.
2025 and 2030 population interpolated from 2035 General Plan data.
2040 population projected by the City assuming a growth rate inside the existing service area boundary consistent with 2035 General Plan and the annexation of the Natomas Joint Vision area.

#### 3.4.1.1 Retail Service Area Population Beyond 2040

The City's long range planning extends beyond the year 2040. In the 2035 General Plan, special study areas are included, such as NJV, that are adjacent to the existing city limits. Future planning for these unincorporated areas involves the City and County of Sacramento.

To meet the 20-year planning requirement for future water supply assessments (Senate Bill 610), the City has decided to include population projections to the year 2045 in its 2015 UWMP. Based on 2035 General Plan growth rate for areas within the current service area and sphere of influence and projected population for the NJV, the 2045 projected population is 751,250.

### 3.4.2 Wholesale Service Area Population

The City's wholesale customers provided their current and projected service area population information to the City. The wholesale population numbers summarized in Table 3-3 represent the population for wholesale customer's entire service areas. Therefore, the information shown includes population outside the American River POU.

**Table 3-3. Wholesale: Population – Current and Projected (DWR Table 3-1)**

| Population Served | 2015 | 2020 | 2025 | 2030 | 2035 | 2040*(opt)* |
|---|---|---|---|---|---|---|
| | 362,731 | 404,406 | 442,072 | 480,911 | 520,203 | 561,594 |

NOTES:
Wholesale service area population estimates are provided by wholesale customers. Estimates include areas outside of the American River POU. Projections for Cal Am were not available at time of publishing the Public Draft UWMP. Population projections will be added to the Final UWMP for submittal to DWR.

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### 3.4.3 Retail Service Area Demographics

The total number of accounts to which the City supplies potable water has increased by 2,134 connections compared to the number of connections reported in the City's 2010 UWMP. Retail potable water customers have been primarily residential, with about 93 percent of the City's customers being residential; about 6 percent commercial/industrial; and 1 percent irrigation (2015 Meter Records).

The City's average household size has been increasing since 1990. Sacramento's average household size in 1990 was 2.50, increasing slightly to 2.57 in 2000 and 2.62 in 2010. This trend may reflect an increasing number of large unrelated households.

Based on the City's 2035 General Plan, Sacramento will add over 90,000 jobs from 2008 to 2035. Projected job growth is mostly in lower wage employment sectors with opportunities to capture a growing share of employment in emerging technology and energy industries. In 2008, there were 299,732 jobs in Sacramento. By 2020, the number of jobs is expected to increase by 8 percent to 324,027. By 2035, the number of jobs is expected to increase another 20 percent to 390,112. Future housing needs, and therefore residential water demands, depend in part on employment trends.

### 3.4.4 Wholesale Service Area Demographics

The Sacramento Area Council of Governments (SACOG) projects that Sacramento County, as a whole, will continue to experience growth in jobs, housing and population.[1] Other service area demographics that may impact water supply planning for the City's wholesale customers are discussed below.

#### 3.4.4.1 SCWA

The SCWA Zone 40 service areas are predominantly residential with a small amount of commercial and institutional customers. Population is expected to grow approximately 2.6 percent annually between 2010 and 2035.[2] SCWA purveys recycled water to customers adjacent to the City.

#### 3.4.4.2 SSWD

The SSWD service area is projected to reach buildout by 2031.[3] Based on SACOG data, SSWD projects that single family homes will grow at a faster rate than multi-family homes in its service area, and the number of jobs is expected to increase by 20 percent between 2013 and 2035.[4]

[1] Fruitridge Vista Water Company, Urban Water Management Plan (December 2011)
[2] Sacramento County Water Agency, 2010 Zone 41 Urban Water Management Plan (July 2011)
[3] Sacramento Suburban Water District, 2015 Urban Water Management Plan Draft (April 2016)
[4] Sacramento Suburban Water District, 2010 Urban Water Management Plan (July 2011)



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#### 3.4.4.3 Cal Am

Cal Am's Arden and Parkway service areas are in the unincorporated region of Sacramento County (County), and SACOG projects most employment growth will be in the unincorporated areas of the County. A region that is expected to grow more intensely is Rancho Cordova; Cal Am's Suburban Rosemont service area partially overlies the City of Rancho Cordova.[5] The service area is mostly residential with 88 percent of the customers residential and 9 percent commercial.

#### 3.4.4.4 FVWC

The FVWC service area is a highly urbanized portion of south County. It is considered substantially developed, and buildout is expected by 2020.[6]

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[5] California American Water, Sacramento District 2010 Urban Water Management Plan (October 2011)
[6] Fruitridge Vista Water Company, Urban Water Management Plan (December 2011)

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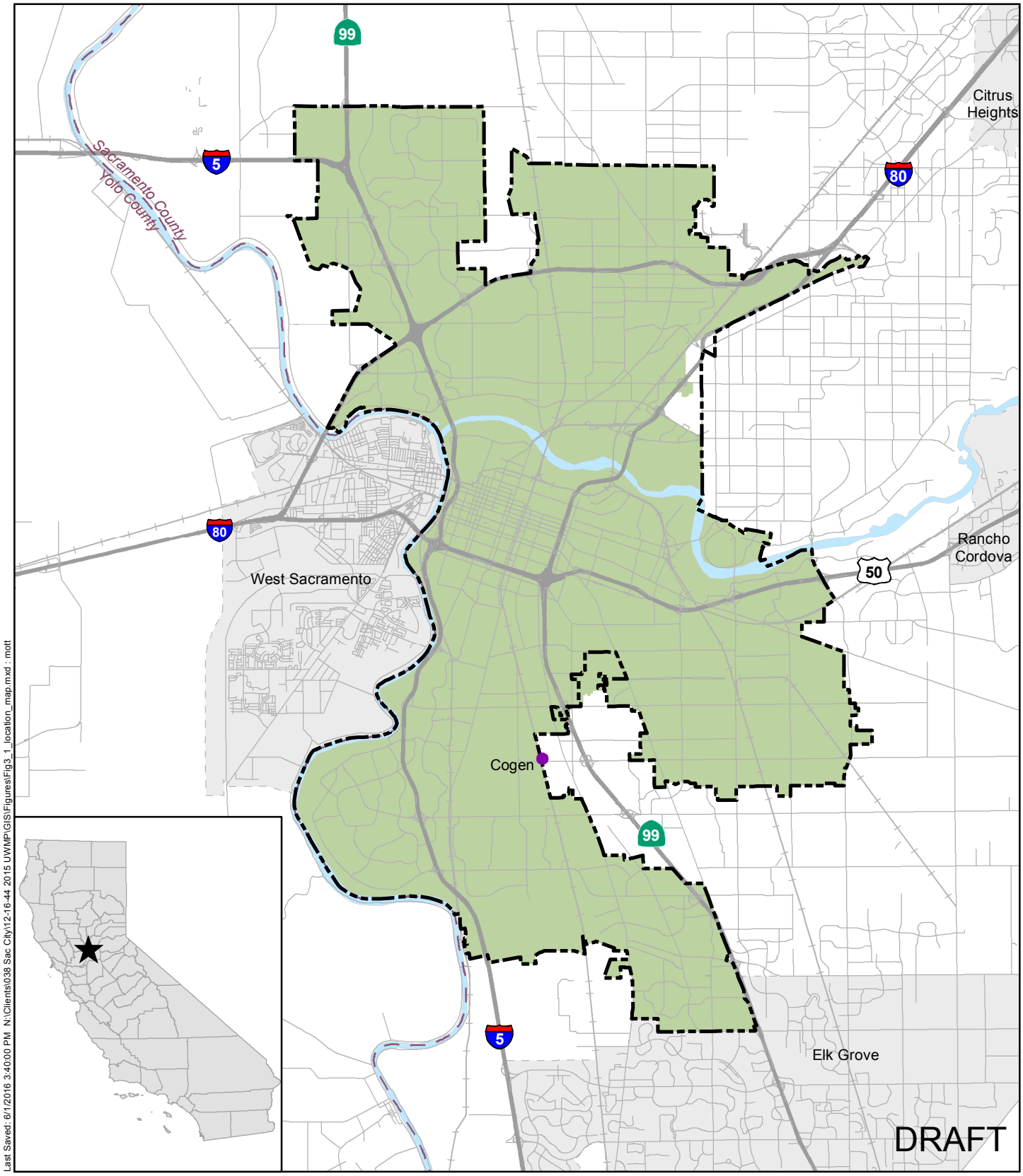


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## Legend

- City Limits
- City Retail Service Area

N

0 1.25 2.5

Scale in Miles

City of SACRAMENTO

WEST YOST ASSOCIATES

**Figure 3-1**

**Location Map**

City of Sacramento
2015 Urban Water
Management Plan

Notes:
The Cogeneration Facility (Cogen) is a City customer located outside the City's service area.

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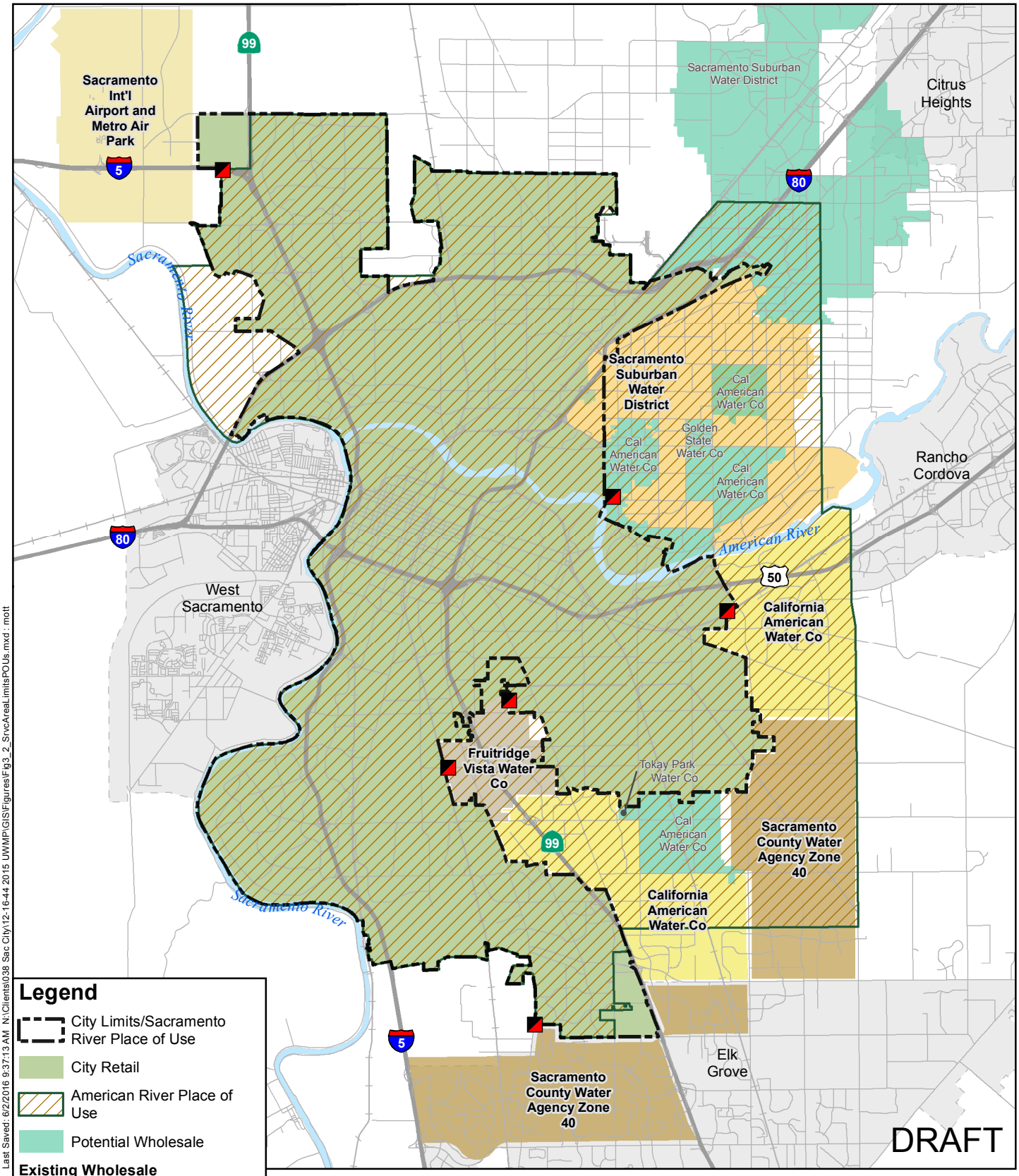


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City of SACRAMENTO

WEST YOST ASSOCIATES

**Figure 3-2**

**Service Area, Limits, and Places of Use**

City of Sacramento
2015 Urban Water Management Plan

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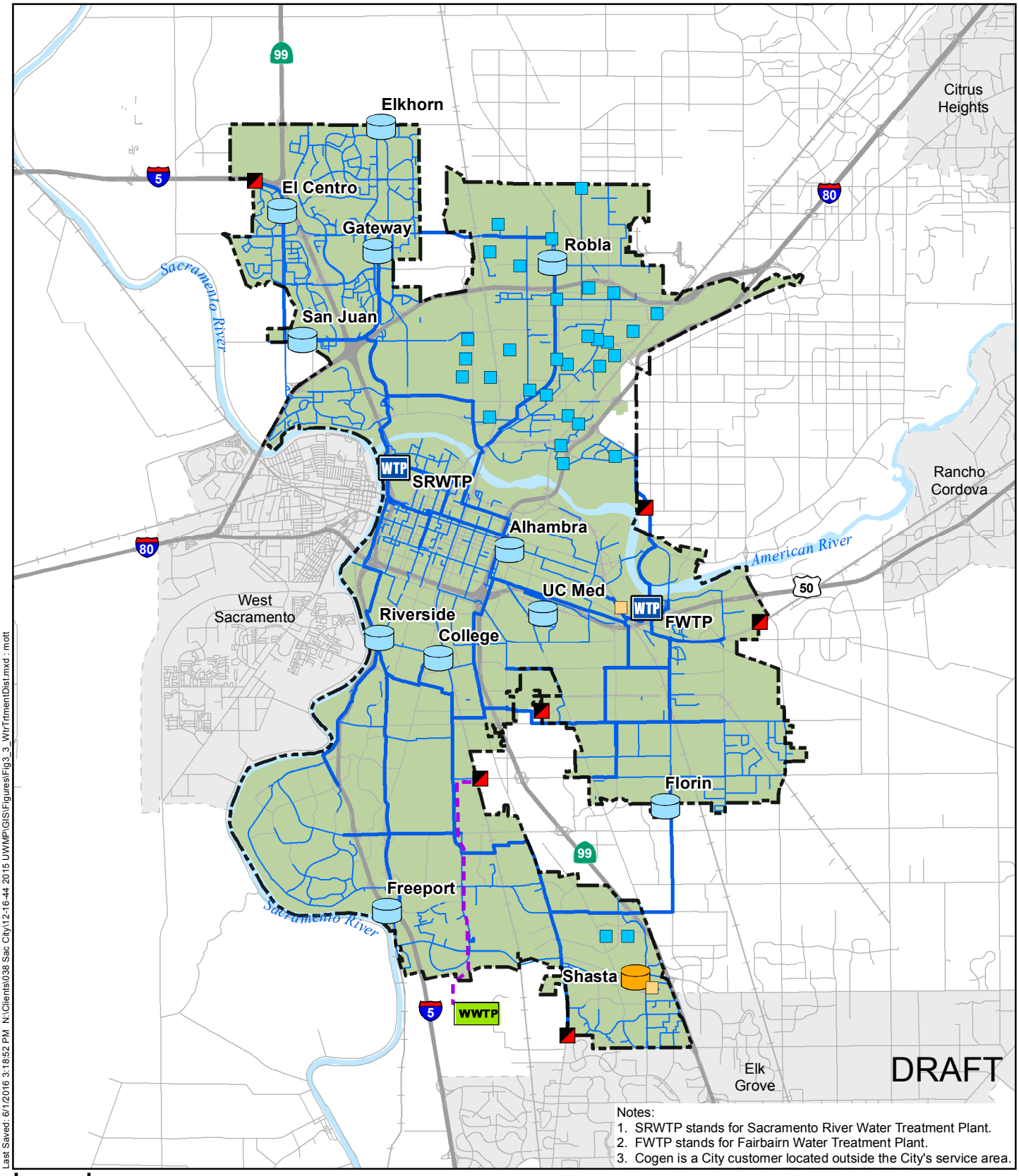


Notes:
1. SRWTP stands for Sacramento River Water Treatment Plant.
2. FWTP stands for Fairbairn Water Treatment Plant.
3. Cogen is a City customer located outside the City's service area.

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## Legend

- Interties
- Municipal Well
- Planned Municipal Well
- Treatment Plant
- Existing Storage Tank
- Planned Storage Tank

**Potable Water Pipeline Diameter**

- 12 - 24 Inches
- 24 - 72 Inches
- Planned Recycled Pipeline
- City Limits
- City Retail Area

N

0 1.25 2.5
Scale in Miles

City of SACRAMENTO

WEST YOST ASSOCIATES

**Figure 3-3**

**Water Treatment and Distribution System**

City of Sacramento
2015 Urban Water Management Plan

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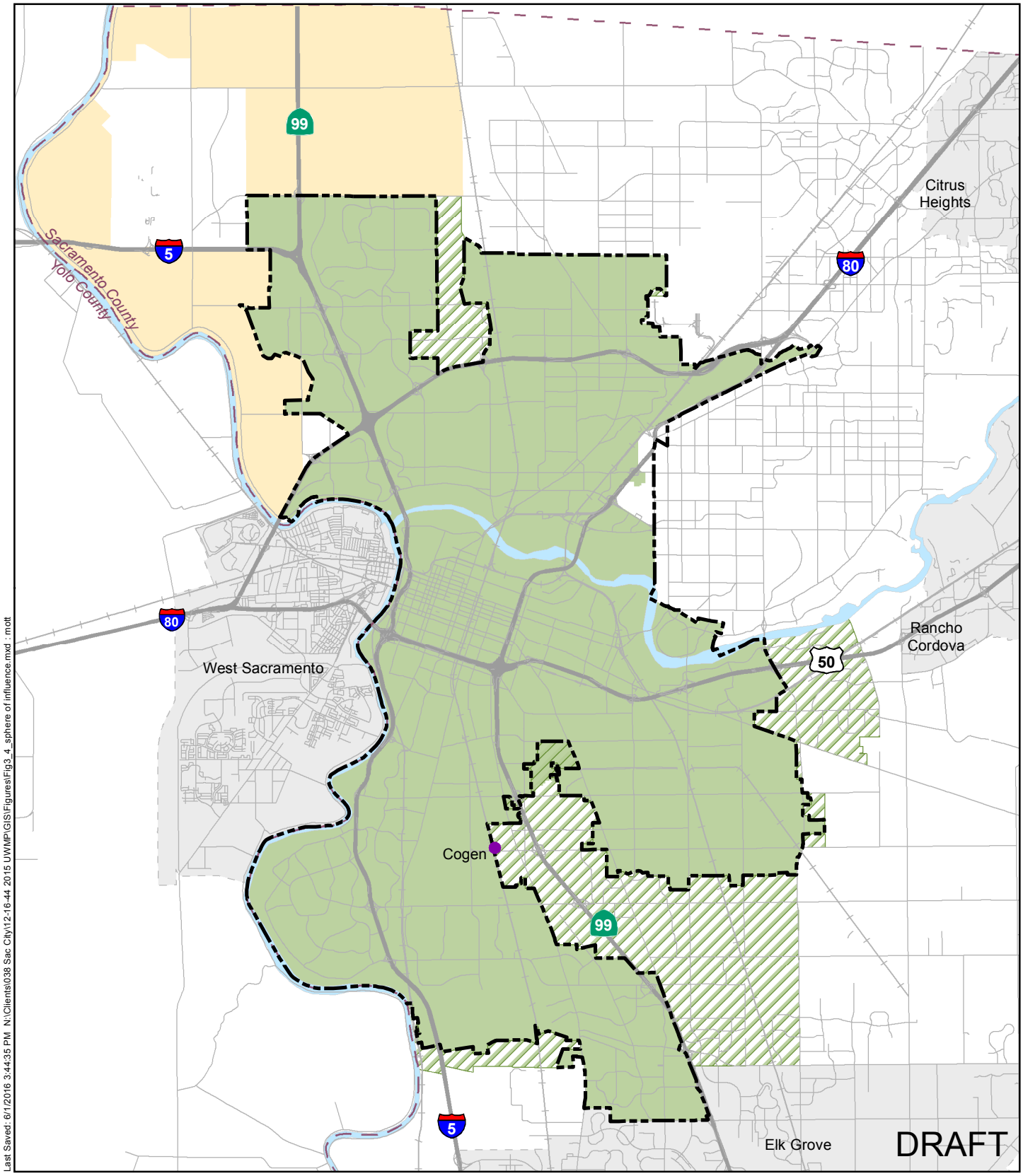


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## Legend

- City Limits
- City Retail Service Area
- Sphere of Influence
- Natomas Joint Vision Study Area

N

0 1.25 2.5

Scale in Miles

Notes:
The Cogeneration Facility (Cogen) is a City customer located outside the City's service area.

City of SACRAMENTO

WEST YOST ASSOCIATES

**Figure 3-4**

**Sphere of Influence**

City of Sacramento
2015 Urban Water
Management Plan

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This chapter describes and quantifies the City's historical, current and projected water uses to the extent that records are available. The terms "water use" and "water demand" are used interchangeably and refer to water conveyed by a distribution system and used by the City and its customers for any purpose.

## 4.1 RECYCLED VERSUS POTABLE AND RAW WATER DEMAND

Recycled water is municipal wastewater that has been treated to a specified quality to enable it to be used again. Recycled water is addressed comprehensively in Section 6.5.

Potable water is water that is safe to drink and which typically has had various levels of treatment and disinfection.

Raw water is untreated water that is used in its natural state or with minimal treatment. The City does not deliver raw water to any retail customers within its service area.

## 4.2 RETAIL WATER USES BY SECTOR

This section describes the City's retail water use by customer type, or sector, including historical, current, and the projected water uses through 2040. The City is not fully metered; therefore, demands are estimated for each sector using a proportion of metered to non-metered accounts.

The City delivers water to the following sectors: single-family residential, multi-family residential, commercial (including industrial), institutional, landscape irrigation customers, and other. Water supplied to wholesale and wheeling customers is discussed in Section 4.3. The remaining demand is captured in the distribution system loss sector. The City uses the following definitions for each sector, as outlined in the DWR Guidebook:

- **Single-family residential:** A single-family dwelling unit. A parcel with a free-standing building containing one dwelling unit that may include a detached secondary dwelling.
- **Multi-family residential:** Multiple dwelling units contained within one building or several buildings within one complex.
- **Institutional (and governmental):** A water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.
- **Landscape:** Water connections supplying water solely for landscape irrigation. Such landscapes may be associated with multi-family, commercial, industrial, or institutional/governmental sites, but are considered a separate water use sector if the connection is solely for landscape irrigation.
- **Distribution System Losses:** Distribution system water losses are the physical water losses from the water distribution system and the supplier's storage facilities, up to the point of customer consumption.

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- **Other (Commercial/Industrial):** The City reports commercial and industrial demand sectors as a single demand sector that includes water users that provide or distribute a product or service and water users that are primarily a manufacturer or processor of materials as defined by the North American Industry Classification System (NAICS) code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development.
- **Other:** Demand that is not covered in the above demand sectors which include such volume as parcels recently recoded as vacant, metered construction water, or metered water utilized for water main cleaning.

### 4.2.1 Historical Retail Water Use

The estimated retail water use by sector for the City for 2011 through 2014 is summarized in Table 4-1.

**Table 4-1. Retail: Historical Drinking Water Demand by Water Use Sector, AF**

| Water Use Sector | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|
| Single-Family | 48,442 | 52,819 | 54,749 | 40,554 |
| Multi-Family | 21,638 | 21,958 | 22,533 | 15,105 |
| Other (Commercial/Industrial) | 17,703 | 19,216 | 20,210 | 18,146 |
| Institutional (and governmental) | 5,133 | 5,528 | 5,805 | 4,598 |
| Landscape | 5,130 | 5,172 | 5,641 | 3,678 |
| Other | 198 | 158 | 165 | 189 |
| Losses | 10,378 | 9,402 | 8,100 | 12,953 |
| Total | 108,621 | 114,253 | 117,203 | 95,222 |

### 4.2.2 Current Retail Water Use

The City currently serves 135,830 customer connections as of December 2015. Actual water demand by sector in 2015 is reported in Table 4-2.

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**Table 4-2. Retail: Demands for Potable and Raw Water – Actual (DWR Table 4-1)**

| Use Type | 2015 Actual | | |
|---|---|---|---|
| | Additional Description *(as needed)* | Level of Treatment When Delivered | Volume |
| Single Family | | Drinking Water | 36,024 |
| Multi-Family | | Drinking Water | 14,657 |
| Other | Commercial and Industrial | Drinking Water | 17,054 |
| Institutional/Governmental | | Drinking Water | 3,938 |
| Landscape | | Drinking Water | 3,418 |
| Other | | Drinking Water | 102 |
| Losses | | Drinking Water | 9,639 |
| | | **TOTAL** | 84,832 |
| NOTES: Volumes are in AF. | | | |

### 4.2.3 Projected Retail Water Use

Demand projections provide the basis for sizing and phasing future water facilities to ensure adequate supply is available to all customers. The water demand projections in this UWMP are based on potable water demand projections developed for the City's 2013 Water Supply Master Plan (WSMP). The future demands were developed to include anticipated reduction in future water use as a result of continuing and expanded water conservation efforts by the City. The demand evaluation in the WSMP resulted in a 208 gallons per capita per day (GPCD) demand factor. Given that the City is dominated by residential and commercial water use, the rate of City population growth is a good measure for assessing future water use. Population projections for the City's service area were obtained from the 2035 General Plan as described in Chapter 3.

Because not all of the City is metered, an accurate estimate of the City's water losses cannot be calculated. For planning purposes, the City estimates 10 percent for system losses. The water loss percentage may change in the future and can be more accurately estimated after all of the City's customers are fully metered.

It is expected that the distribution of water demand by sector type will not change significantly in the future. Therefore, the average percentage of each customer classification that existed from 2011 through 2015 was assumed to remain constant throughout the planning horizon of this UWMP with two exceptions. First, the demands for NJV were included in single-family residential demands in 2040. Second, the demands in the commercial and industrial sector are expected to be reduced by 1,000 AFY by recycled water starting in 2020. Table 4-3 summarizes the projected total water demand.

**Table 4-3. Retail: Demands for Potable and Raw Water – Projected (DWR Table 4-2)**

| Use Type | Additional Description *(as needed)* | Projected Water Use *Report To the Extent that Records are Available* | | | | |
|---|---|---|---|---|---|---|
| | | 2020 | 2025 | 2030 | 2035 | 2040-opt |
| Single Family | | 54,354 | 57,582 | 61,699 | 65,815 | 72,899 |
| Multi-Family | | 23,097 | 24,469 | 26,218 | 27,967 | 29,889 |
| Other | Commercial and Industrial | 20,873 | 22,172 | 23,829 | 25,485 | 27,305 |
| Institutional/Governmental | | 5,995 | 6,351 | 6,805 | 7,259 | 7,758 |
| Landscape | Drinking Water | 5,374 | 5,693 | 6,100 | 6,507 | 6,954 |
| Other | | 214 | 227 | 243 | 259 | 277 |
| Losses | | 12,323 | 13,055 | 13,988 | 14,921 | 15,947 |
| | **TOTAL** | 122,229 | 129,548 | 138,882 | 148,213 | 161,029 |

NOTES: Volumes are in AF.
Demands for each use type are generally based on the average percentage of each customer classification for 2011 through 2015.
Single Family demands for 2040 include NJV demand projections.
Commercial and Industrial demands for 2020 through 2040 reflect 1,000 AFY of demand offset by recycled water at the Cogen Facility.

## 4.3 WHOLESALE WATER USE

The City's water rights and supply facilities provide regional benefits by making water available to areas adjacent to the City. The City currently provides wholesale and wheeling service to a number of neighboring agencies. In general, wholesale water service is where the City sells water collected under the *City's entitlements* to other agencies. Wholesale water deliveries are discussed below. Wheeling service is where the City diverts, treats, and conveys water to another agency *using another agencies' entitlements*. Wheeled water is not considered a City water demand because it does not reduce the amount of water entitled to the City and therefore wheeled water use is not included as a demand in this UWMP.

The City has historically delivered and has agreements to provide more than 3,000 AFY to wholesale customers. Therefore, the City is required to report the demands for wholesale customers separately from their retail customers in accordance with the DWR Guidebook. The wholesale customers are described in Chapter 3.

### 4.3.1 Historical Wholesale Water Use

The City's historical water wholesale deliveries for 2011 through 2014 are summarized in Table 4-4.

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**Table 4-4. Wholesale: Historical Water Deliveries by Water Use Sector, AF**

| Water Use Sector | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|
| Sales to other agencies | 5,279 | 8,075 | 2,286 | 262 |

### 4.3.2 Current Wholesale Water Use

The City delivered wholesale water to SCWA, Cal Am, and FVWC in 2015. Actual wholesale water demand by wholesale customer in 2015 is reported in Table 4-5.

**Table 4-5. Wholesale: Demands for Potable and Raw Water – Actual (DWR Table 4-1)**

| Use Type | 2015 Actual | | |
|---|---|---|---|
| | Additional Description *(as needed)* | Level of Treatment When Delivered | Volume |
| Sales to other agencies | SCWA - Airport | Drinking Water | 227 |
| Sales to other agencies | Cal Am - Parkway | Drinking Water | 639 |
| Sales to other agencies | Cal Am - Rosemont | Drinking Water | 332 |
| Sales to other agencies | FVWC | Drinking Water | 1 |
| | | **TOTAL** | 1,199 |
| NOTES: Volumes are in AF. | | | |

### 4.3.3 Projected Wholesale Water Use

In the future, the City may expand its role as a wholesaler for the benefit of other water purveyors and their customers in the region. Projected wholesale demands shown in Table 4-6 are based on two future supply scenarios: 1) an estimate that includes existing contract sales, and 2) likely estimate of future wholesale demands. The likely estimate is based on other agencies' master plans, communications that other agencies have had with the City, or by judgment of the City staff, as reported in the 2013 Water Supply Master Plan.

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### Table 4-6. Existing and Likely Projected Wholesale Water Deliveries, AFY

| Agency | Existing, AF | | | | Likely, AF | | | |
|---|---|---|---|---|---|---|---|---|
| | Wet | Average | Drier | Driest | Wet | Average | Drier | Driest |
| SCWA - Airport and Metro Air Park | 1,420 | 1,420 | 1,420 | 1,420 | 5,293 | 5,293 | 5,293 | 5,293 |
| SCWA - Zone 40 Wholesale | | | | | 10,644 | 10,644 | 10,644 | 10,644 |
| SSWD - Arden | 22,404 | 3,500 | 1,400 | 0 | 22,404 | 3,500 | 1,400 | 0 |
| Cal Am - Arden | 4,831 | 4,831 | 4,831 | 4,831 | 913 | 913 | 913 | 913 |
| Cal Am - Rosemont | | | | | 6,160 | 6,160 | 6,160 | 6,160 |
| Cal Am - Parkway | | | | | 4,480 | 4,480 | 4,480 | 4,480 |
| FVWC | 3,629 | 3,629 | 3,629 | 3,629 | 8,692 | 8,692 | 8,692 | 8,692 |
| Total | 32,284 | 13,380 | 11,280 | 9,882 | 58,586 | 39,682 | 37,582 | 36,182 |

Projected wholesale water demands shown in Table 4-7 are based on likely sales.

### Table 4-7. Wholesale: Demands for Potable and Raw Water – Projected (DWR Table 4-2)

| Use Type | Additional Description *(as needed)* | Projected Water Use *Report To the Extent that Records are Available* | | | | |
|---|---|---|---|---|---|---|
| | | 2020 | 2025 | 2030 | 2035 | 2040 *(opt)* |
| Sales to other agencies | SCWA - Airport and Metro Air Park | 3,456 | 5,036 | 5,293 | 5,293 | 5,293 |
| Sales to other agencies | SCWA - Zone 40 | 5,322 | 7,983 | 10,644 | 10,644 | 10,644 |
| Sales to other agencies | SSWD - Arden | 22,404 | 22,404 | 22,404 | 22,404 | 22,404 |
| Sales to other agencies | Cal Am - Arden | 457 | 685 | 913 | 913 | 913 |
| Sales to other agencies | Cal Am - Rosemont | 3,080 | 4,620 | 6,160 | 6,160 | 6,160 |
| Sales to other agencies | Cal Am - Parkway | 2,240 | 3,360 | 4,480 | 4,480 | 4,480 |
| Sales to other agencies | FVWC | 3,629 | 3,629 | 8,692 | 8,692 | 8,692 |
| | **TOTAL** | 40,588 | 47,717 | 58,586 | 58,586 | 58,586 |
| NOTES: Volumes are in AF. | | | | | | |

## 4.4 TOTAL WATER USE

Total annual retail water use in five year increments through the year 2040 are shown in Table 4-8. Recycled water demand is addressed separately in Section 6.5.

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**Table 4-8. Retail: Total Water Demands (DWR Table 4-3)**

| | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 *(opt)* |
|---|---|---|---|---|---|---|
| Potable and Raw Water *From Tables 4-1 and 4-2* | 84,832 | 122,229 | 129,548 | 138,882 | 148,213 | 161,029 |
| Recycled Water Demand* *From Table 6-4* | 0 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| **TOTAL WATER DEMAND** | 84,832 | 123,229 | 130,548 | 139,882 | 149,213 | 162,029 |
| NOTES: Volumes are in AF. Table references refer to DWR table numbers. | | | | | | |

Total annual wholesale water use in five year increments through the year 2040 are shown in Table 4-9. As will be discussed in Section 6.5, recycled water is not planned to be treated or distributed by the City to wholesale customers.

**Table 4-9. Wholesale: Total Water Demands (DWR Table 4-3)**

| | 2015 | 2020 | 2025 | 2030 | 2035 | 2040*(opt)* |
|---|---|---|---|---|---|---|
| Potable and Raw Water *From Tables 4-1 and 4-2* | 1,199 | 40,588 | 47,717 | 58,586 | 58,586 | 58,586 |
| Recycled Water Demand* *From Table 6-4* | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL WATER DEMAND** | 1,199 | 40,588 | 47,717 | 58,586 | 58,586 | 58,586 |
| NOTES: Volumes are in AF. Table references refer to DWR table numbers. | | | | | | |

### 4.4.1 Total Water Use Beyond 2040

To meet the 20-year planning requirement for future water supply assessments (Senate Bill 610), the City has decided to include demand projections to the year 2045 in its 2015 UWMP. The City's projected 2045 retail demands, are 174,841 AF potable water and 1,000 AF recycled water for a total retail demand of 175,841 AF. The City's projected 2045 wholesale water demand is 58,586 AF. The future projections are anticipated to evolve over time with the implementation of conservation measures and will be reevaluated when long range planning documents are updated.

## 4.5 DISTRIBUTION SYSTEM WATER LOSSES

System losses are the difference between the actual volume of water treated and delivered into the distribution system and the actual metered consumption. Such apparent losses are always present in a water system due to pipe leaks, unauthorized connections or use, faulty meters, unmetered services such as fire protection and training, and system and street flushing.

The City uses the American Water Works Association (AWWA) method to annually evaluate its distribution system losses. For the 2015 fiscal year, the City's water losses were estimated to be approximately 8,777 AFY. A copy of the City's 2015 Water Audit worksheet is provided in Appendix E.

Table 4-10 summarizes the system losses for the most recent 12-month period available. The most recent 12-month period began on July 1, 2014.

**Table 4-10. Retail: 12 Month Water Loss Audit Reporting (DWR Table 4-4)**

| Reporting Period Start Date | Volume of Water Loss* |
|---|---|
| 07/2014 | 8,777 |
| ** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.* | |
| NOTES: Volume is in AF. Volume is reported based on Fiscal Year instead of Calendar Year. | |

Losses from the City's wholesale water distribution system are included in the retail water distribution system reporting. The City's distribution system for retail and wholesale customers is a single system and not separated. Therefore, Table 4-11 assumes a wholesale loss of 0 AF to avoid over counting system losses. In addition, the City's wholesale customers will report their individual system water losses in their UWMPs.

**Table 4-11. Wholesale: 12 Month Water Loss Audit Reporting (DWR Table 4-4)**

| Reporting Period Start Date | Volume of Water Loss* |
|---|---|
| 07/2014 | 0 |
| ** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.* | |
| NOTES: Water loss audit reporting for the City's wholesale customers is included in the Retail water loss audit reporting as the City's distribution system for wholesale and retail customers is a single system. | |

## 4.6 ESTIMATING FUTURE WATER SAVINGS

The DWR Guidebook suggests that urban water suppliers consider the passive savings from codes, standards, ordinances, or transportation and land use plans. Such water savings decrease the water use for new and future customers. The City's 2013 WSMP evaluated the existing and projected water demands. The future water demands assumed continuing and expanded water conservation in the projections. A big contributing factor to the conservation includes the City's accelerated

meter program. The future demand was calculated using a demand factor of 208 GPCD which is less than the 2020 target discussed in Chapter 5.

For the purposes of this 2015 UWMP, as indicated in Table 4-12, the City analyzed passive savings.

**Table 4-12. Retail Only: Inclusion in Water Use Projections (DWR Table 4-5)**

| | |
|---|---|
| Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) | Yes |
| If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc… utilized in demand projections are found. | 4-8 |
| Are Lower Income Residential Demands Included In Projections? | Yes |

## 4.7 WATER USE FOR LOWER INCOME HOUSEHOLDS

This section includes a discussion of projected water use for low income households in the City's service area. As shown in Table 4-12 the City has included estimation of water demand for low income housing in its 2015 UWMP.

A lower income household has an income below 80 percent of an area median income, adjusted for family size. Projected water demands for low-income single-family and multi-family residential water uses are included in the total water demands described in Section 4.2.

The City is a member of SACOG and participates in the Regional Housing Needs Plan (RHNP) which allocates participating cities and counties their "fair share" of the region's projected housing needs. The RHNP is updated every five years and provides the housing units that a city or county must plan for within a 7.5-year time period. The SACOG 2013-2021 RHNP was adopted September 20, 2012. This information is used by cities and counties to update their General Plan Housing Elements.

The City's 2013-2021 Housing Element includes the number of existing lower income households. The Housing Element indicates approximately 48 percent of the City's households are Low Income (19 percent), Very-Low Income (13 percent), or Extremely-Low Income (16 percent). The City assumes that gross per capita water demand is equal for all residential housing units regardless of income. Therefore, an estimated 24,327 AF (48 percent) of the City's residential water deliveries in 2015 (50,681 AF) were to lower income households. The City assumes that lower income households will continue to represent approximately 48 percent of the City's total residential customers through 2040.

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## 4.8 CLIMATE CHANGE

Although the DWR Guidebook suggests that urban water suppliers consider the potential effects related to climate change in their 2015 UWMPs, there are currently no specific requirements related to addressing the potential impacts of climate change. Because the City has not completed any studies regarding the impacts of climate change on system demands, the City has decided to not complete this section for this 2015 UWMP.

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In November 2009, Senate Bill X7-7 (SB X7-7), The Water Conservation Act of 2009, was signed into law by Governor Arnold Schwarzenegger as part of a comprehensive water legislation package. The Water Conservation Act addresses both urban and agricultural water conservation. The legislation sets a goal of achieving a 20 percent statewide reduction in urban per capita water use by the year 2020 (i.e., "20 by 2020"), and directs urban retail water suppliers to establish an "interim" per capita water use target to be met by 2015 and a "final" per capita water use target to be met by 2020.

It should be noted that wholesale water suppliers are not required to establish and meet baselines and targets for daily per capita water use, nor are wholesalers required to complete the SB X7-7 Verification Forms. However, wholesale agencies are required to provide an assessment of present and proposed programs and policies that will help the retail water supplier achieve their SB X7-7 water use reduction targets. A discussion of the City's programs and policies for water conservation is provided in Chapter 9 Demand Management Measures. Therefore, the remainder of this chapter will only focus on SB X7-7 baselines and targets for the City's retail water service area.

The City's compliance with SB X7-7 was first addressed in the City's 2010 UWMP. The City's baseline per capita water use was determined, and urban water use targets for 2015 and 2020 were established and adopted. SB X7-7 included a provision that an urban water supplier may update its 2020 urban water use target in its 2015 UWMP, and may use a different target method than was used in 2010. Also, the SB X7-7 methodologies developed by DWR in 2011 noted that water suppliers may revise population estimates for baseline years when the 2010 Census information became available (as described below, the 2010 Census data was not finalized until 2012). The DWR Guidebook indicates that there were significant discrepancies between the CDoF estimated 2010 population (based on 2000 U.S. Census data) and the actual 2010 population (based on 2010 U.S. Census data). Therefore, if a water supplier did not use 2010 Census data for their baseline population calculations in the 2010 UWMP, DWR has determined that these water suppliers must recalculate their baseline population for the 2015 UWMP using 2000 and 2010 Census data, and baseline and 2015 and 2020 urban water use targets must be modified accordingly.

This chapter provides a review and update of the City's baseline per capita water use, 2015 interim per capita water use target, and 2020 final per capita water use target in accordance with the requirements described in the DWR Guidebook and based on the 2010 Census population data. The City calculated baselines and targets on an individual reporting basis in accordance with SB X7-7 legislation requirements and *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (DWR, 2016).

The City has achieved compliance with its 2015 interim target, as discussed below, and is well positioned to achieve its 2020 final target. The City's baselines, targets, and compliance with SB X7-7 are provided in Appendix F.

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## 5.1 UPDATING CALCULATIONS FROM 2010 UWMP

> *CWC 10608.20 (g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).*
>
> *Methodologies DWR 2016, Methodology 2 Service Area Population Page 25 - Water suppliers may revise population estimates for baseline years between 2000 and 2010 when 2010 census information becomes available. DWR will examine discrepancy between the actual population estimate and DOF's projections for 2010; if significant discrepancies are discovered, DWR may require some or all suppliers to update their baseline population estimates.*
>
> *DWR 2015 Guidebook, Required Use of 2010 U.S. Census Data page 5-5 – if an agency did not use 2010 Census data for their baseline population calculations in the 2010 UWMP…DWR has determined that these agencies must recalculate their baseline populations for the 2015 UWMPs using 2000 and 2010 Census data. This may affect the baseline and target GPCD values calculated in the 2010 UWMP, which must be modified accordingly in the 2015 UWMP.*

Population data from the 2010 United States Census were not made available until 2012, after the City submitted its 2010 UWMP. Therefore, the City updated population, baselines, and targets for this 2015 UWMP to reflect 2010 Census data. The following sections describe these updates.

## 5.2 BASELINE PERIODS

SB X7-7 requires each urban water retailer to determine its baseline daily per capita water use, measured in gallons per capita per day (Baseline GPCD), over a 10-year or 15-year baseline period. The 10-year baseline period is defined as a continuous 10-year period ending no earlier than December 31, 2004 and no later than December 31, 2010. SB X7-7 also defines that for those urban water retailers that met at least 10 percent of their 2008 water demand using recycled water, the urban water retailers can extend the Baseline GPCD calculation for a maximum of a continuous 15-year baseline period, ending no earlier than December 31, 2004 and no later than December 31, 2010. In 2008, the City delivered no recycled water. Therefore, the City's Baseline GPCD has been calculated over a 10-year period. The 10-year baseline period that the City has selected is 1996 through 2005 (see Appendix F). This is the same 10-year baseline period reported in the City's 2010 UWMP.

SB X7-7 also requires each urban water retailer to determine a 5-year baseline per capita water demand, which DWR calls the Target Confirmation, calculated over a continuous 5-year period ending no earlier than December 31, 2007 and no later than December 31, 2010. The City's 5-year Target Confirmation is calculated for the period 2003 through 2007 (see Appendix F). This is the same 5-year period reported in the City's 2010 UWMP.

## 5.3 SERVICE AREA POPULATION

> *DWR 2015 Guidebook, Required Use of 2010 U.S. Census Data page 5-5 – if an agency did not use 2010 Census data for their baseline population calculations in the 2010 UWMP…DWR has determined that these agencies must recalculate their baseline populations for the 2015 UWMPs using 2000 and 2010 Census data. This may affect the baseline and target GPCD values calculated in the 2010 UWMP, which must be modified accordingly in the 2015 UWMP.*

This section includes a discussion of the City's service area population including 2000 and 2010 U.S. Census data. Population reported in the City's 2010 UWMP did not include 2010 U.S. Census data because the full Census data set was not available until 2012.

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The CDoF uses U.S. Census data, combined with changes to the housing stock, estimated occupancy of housing units, and the number of persons per household to estimate annual population within jurisdictional boundaries. Because the City's current water service area is substantially the same as the City limits, CDoF population data for the City of Sacramento is valid for use as the service area population.

CDoF updated the estimated population from 2001 through 2010 following an analysis of 2010 Census data. Updates to the historical service area population during the 10- and 5-year baseline years are shown in Table 5-1.

**Table 5-1. Historical Retail Service Area Population**

| Year | Previous Population[a] | Updated Population[b] |
|---|---|---|
| 1996 | 384,090 | 384,090 |
| 1997 | 387,440 | 387,440 |
| 1998 | 401,411 | 401,411 |
| 1999 | 400,665 | 400,665 |
| 2000 | 407,018 | 407,018 |
| 2001 | 415,281 | 412,918 |
| 2002 | 427,637 | 423,084 |
| 2003 | 436,470 | 429,918 |
| 2004 | 445,353 | 436,799 |
| 2005 | 466,488 | 442,662 |
| 2006 | 458,773 | 445,774 |
| 2007 | 467,120 | 452,711 |

[a] Source: City of Sacramento 2010 UWMP

[b] Source: 1996-2000 population data from California Department of Finance Table 2: Historical City, County and State Population Estimates, 1991-2000, with 1990 and 2000 Census Counts. 2001-2007 population data from California Department of Finance Table 2: E-4 Population Estimates for Cities, Counties, and State, 2001-2010 with 2000 and 2010 Census Counts.

## 5.4 GROSS WATER USE

Annual gross water use is the water that enters the City's distribution system over a 12-month period (calendar year) with certain exclusions. This section discusses the City's annual gross water use for each year in the baseline periods, as well as 2015, in accordance with Methodology 1: Gross Water of DWR's *Methodologies* document.

> *CWC 10608.12 (g) "Gross Water Use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of 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*

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> *(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.*
>
> *California Code of Regulations Title 23 Division 2 Chapter 5.1 Article Section 596 (a) An urban retail water supplier that has a substantial percentage of industrial water use in its service area is eligible to exclude the process water use of existing industrial water customers from the calculation of its gross water use to avoid a disproportionate burden on another customer sector*

Annual gross water use for the baseline periods and 2015 are summarized in Appendix F. The values reported in Appendix F are the same as documented in the City's 2010 UWMP.

## 5.5 BASELINE DAILY PER CAPITA WATER USE

As indicated above, daily per capita water use is reported in GPCD. Annual gross water use is divided by annual service area population to calculate the annual per capita water use for each year in the baseline periods. As discussed above, the City has used updated population data in this 2015 UWMP.

As shown in Appendix F, the City's 10-year base daily per capita water use is 282 GPCD. This value is three (3) GPCD greater than the value calculated in the 2010 UWMP.

The City's 5-year base daily per capita water use is 274 GPCD. This value is five (5) GPCD greater than the value calculated in the 2010 UWMP.

## 5.6 2015 AND 2020 TARGETS

SB X7-7 requires a state-wide average 20 percent reduction of urban per capita water use by the year 2020. Therefore, the City must set an interim (2015) water use target and a final (2020) water use target using one of four methods defined by SB X7-7 and DWR. Three of these methods are defined in Water Code Section 10608.20(a)(1), and the fourth method was developed by DWR. The 2020 water use target is calculated using one of the following four methods:

- Method 1: 80 percent of the City's base daily per capita water use;
- Method 2: Per capita daily water use estimated using the sum of performance standards applied to indoor residential use; landscaped area water use; and commercial, industrial, and institutional uses;
- Method 3: 95 percent of the applicable State hydrologic region target as stated in the State's April 30, 2009, draft 20x2020 Water Conservation Plan; or
- Method 4: An approach that considers the water conservation potential from (1) indoor residential savings, (2) metering savings, (3) commercial, industrial and institutional savings, and (4) landscape and water loss savings.

The 2015 interim targets for each of the target methods are calculated based on the midpoint of the City's 10-year Base Daily Per Capita Water Use and the 2020 targets calculated for each of the respective target methods. The interim and final targets are summarized in Table 5-2. A detailed analysis of the four methods is included in Appendix F.

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**Table 5-2. Baselines and Targets Summary (DWR Table 5-1)**

| Baseline Period | Start Year | End Year | Average Baseline GPCD* | 2015 Interim Target * | Confirmed 2020 Target* |
|---|---|---|---|---|---|
| 10-15 year | *1996* | *2005* | *282* | *253* | *225* |
| 5 Year | *2003* | *2007* | *274* | | |
| *All values are in Gallons per Capita per Day (GPCD). | | | | | |

Urban water suppliers must verify that their 2020 final water use targets are at least a 5 percent reduction from the 5-year baseline GPCD. As shown in Appendix F, the maximum target allowed for the 2020 final target is 260 GPCD.

As shown in Appendix F, Target Method 1 results in the highest allowable SB X7-7 final (2020) target (225 GPCD by 2020). The Method 1 target is lower than the minimum water reduction, therefore Method 1 is valid target for the City. The City' SB X7-7 per capita water use 2020 final target is 225 GPCD. The updated 2020 target is 2 GPCD greater than the target determined for the 2010 UWMP due to the updated population data from CDoF.

The 2015 interim target is the midpoint between the City's 10-Year Base Daily Per Capita Water Use (282 GPCD) and the final 2020 target (225 GPCD). Therefore, the City's interim 2015 target is 253 GPCD.

For this 2015 UWMP, the City has selected the same target method as was used in the 2010 UWMP (Method 1). The City understands that this target method may not be changed in any amendments to the 2015 UWMP or 2020 UWMP.

## 5.7 RECENT DAILY PER CAPITA WATER USE

The City's GPCD from 2011 through 2015 demonstrate how well the City's customers have responded to the recent drought and requests by the City to reduce water use. As shown in Table 5-3, City customers reduced water use below the SB X7-7 interim and final targets.

**Table 5-3. City of Sacramento 2011-2015 Per Capita Water Use**

| Year | Population | GPCD |
|---|---|---|
| 2011 | 469,493 | 217 |
| 2012 | 469,895 | 217 |
| 2013 | 472,679 | 221 |
| 2014 | 475,871 | 179 |
| 2015 | 480,105 | 158 |

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## 5.8 2015 COMPLIANCE DAILY PER CAPITA WATER USE

The City has calculated its actual 2015 water use for the 2015 calendar year in accordance with Methodology 4 of DWR's *Methodologies* document. As shown in Table 5-4, urban per capita water use in 2015 was 158 GPCD, which is well below the 2015 interim water use target of 253 GPCD. Therefore, the City has met its interim 2015 water use target. The complete set of SB X7-7 verification tables used to document this compliance is included in Appendix F.

**Table 5-4. 2015 Compliance (DWR Table 5-2)**

| Actual 2015 GPCD* | 2015 Interim Target GPCD* | **Optional Adjustments to 2015 GPCD** *From Methodology 8* | | | | | 2015 GPCD* *(Adjusted if applicable)* | Did Supplier Achieve Targeted Reduction for 2015? Y/N |
|---|---|---|---|---|---|---|---|---|
| | | Extraordinary Events* | Economic Adjustment* | Weather Normalization* | TOTAL Adjustments* | Adjusted 2015 GPCD* | | |
| 158 | 253 | 0 | 0 | 0 | 0 | 158 | 158 | Yes |
| **All values are in Gallons per Capita per Day (GPCD).* | | | | | | | | |

As detailed in DWR's *Methodologies* document, there are allowable adjustments that can be made to an agency's gross water use in 2015 for unusual weather, land use changes, or extraordinary institutional water use. The City has elected not to make the adjustments allowed by Water Code Section 10608.24 because these exceptions are not needed to demonstrate compliance with SB X7-7 for 2015. Water use in 2015 in the City's service area was significantly reduced as compared to recent years as a result of increased water conservation efforts by the City and its customers in response to the severe drought conditions statewide.

The City has information on their retail potable water demand (in AF) and per capita water use (in GPCD) going back to 1914 as shown in Figure 5-1. The City's compliance with SB X7-7 is also demonstrated on Figure 5-2 which shows the City's historical and projected annual potable water use (in AF) and per capita water use (in GPCD) from 1996 to 2045 in comparison to the SB X7-7 2015 and 2020 targets. As shown, in addition to the City's 2015 per capita water use being well below the SB X7-7 2015 target, the City's projected future per capita potable water use, based on the City's 2013 WSMP, is also below the SB X7-7 2020 target. Future GPCD and water use projections continue to be assessed as the City's water conservation efforts are implemented, and in some cases intensified.

## 5.9 REGIONAL ALLIANCE

The City has chosen to comply with the requirements of SB X7-7 on an individual basis. The City has elected not to participate in a regional alliance.

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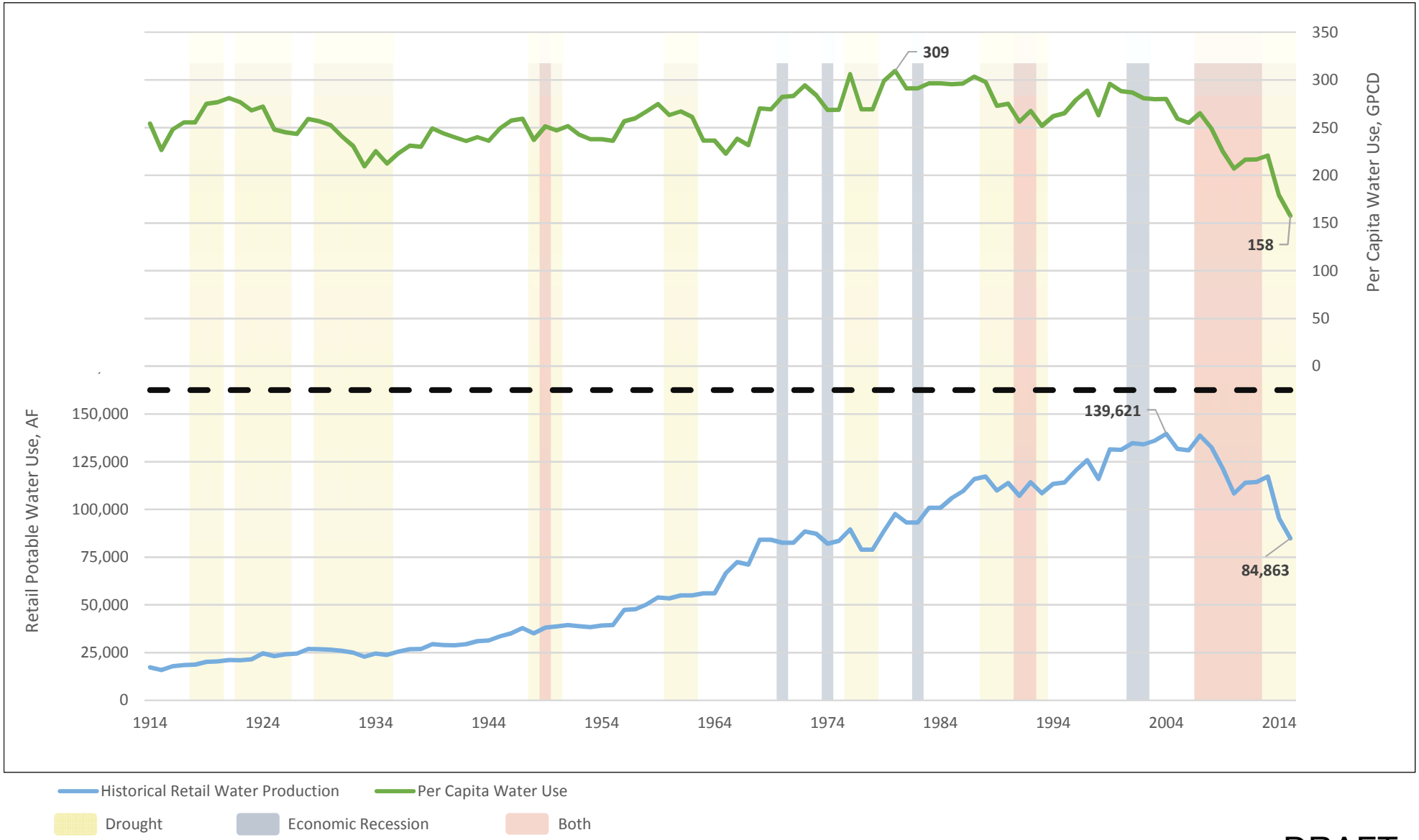


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**Figure 5-1**

**Sacramento Historical Per Capita Water Use**

City of Sacramento
2015 Urban Water Management Plan

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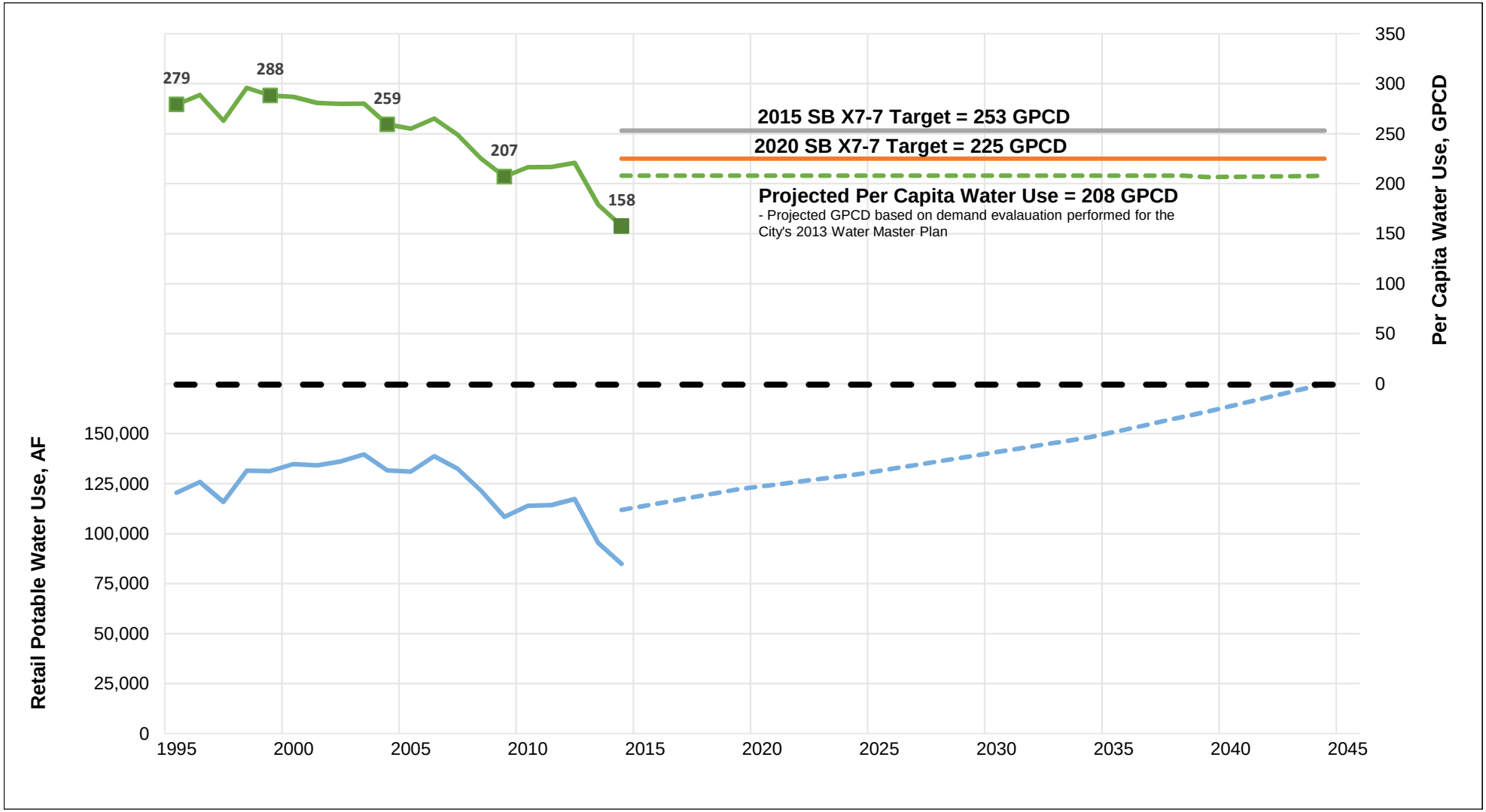


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**Figure 5-2**

**Sacramento Historical & Projected Per Capita Water Use and SB X7-7 Targets**

City of Sacramento
2015 Urban Water Management Plan

Note:
City GPCD projections are anticipated to evolve and be updated over time with the implementation of conservation measures and long range planning documents.

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This Chapter describes the City's water supply portfolio, including surface water supply, groundwater supply, recycled water, and stormwater. This section includes a description of each water source, limitations on each water source, water quality information, and water exchange opportunities.

The City obtains its retail and wholesale water supply from a combination of groundwater and surface water sources. These sources, along with the other projected future supplies are described in this chapter. The City also wheels water to neighboring water agencies. Wheeled water is not collected under the City's water entitlements. Therefore, wheeled water supply is not considered a City water supply, and wheeled water volumes are not addressed in this UWMP.

## 6.1 PURCHASED OR IMPORTED WATER

The City does not purchase or import water from a wholesale water supplier, and does not plan to do so in the future in normal supply conditions. However, the City does have mutual aid agreements with neighboring water purveyors that can be used to purchase non-firm water on an as-needed emergency basis. The mutual aid agreements are not reported as a supply source because they are non-firm and for emergency aid, as discussed in Section 7.5.

## 6.2 GROUNDWATER

The City currently draws groundwater from two subbasins of the Sacramento Valley Groundwater Basin. This section describes the history and management strategies of the subbasins as well as the volume of groundwater pumped by the City.

### 6.2.1 Groundwater Basin Description

The City overlies two subbasins of the Sacramento Valley Groundwater Basin (the North American Subbasin, located north of the American River, and South American Subbasin, located south of the American River). The North American Subbasin is bounded by Bear River to the north, Feather River to the west, the Sacramento and American Rivers to the south, and a north-south line extending from the Bear River to Folsom Lake to the east. The South American Subbasin is bounded by the Sierra Nevada to the east, the Sacramento River to the west, the American River to the north, and the Cosumnes and Mokelumne Rivers to the south. The locations of the subbasins are shown in Figure 6-1.

The various geologic formations that constitute the water-bearing deposits underlying both the North and South American subbasins are described in the 2003 Update to the DWR Bulletin 118. These formations include an upper, unconfined aquifer system, and a lower, semi-confined aquifer. The upper aquifer system consists of the Modesto, Riverbank, Turlock Lake, Victor, Fair Oaks, and Laguna Formations, along with Arroyo Seco and South Fork Gravels; the lower aquifer consists primarily of the Mehrten Formation.

It should be noted that as part of the Water Forum process, a groundwater model was developed by SCWA. The model defined a Central Basin boundary which took into account the hydrogeologic boundaries and the political boundaries of organized water purveyors/districts, cities, and the County of Sacramento. Essentially, the Central Basin boundary overlies the DWR

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South American Subbasin; however, the boundaries are slightly different because the Central Basin boundary was developed from the Sacramento County groundwater model grid. The portion of the South American subbasin underlying the City of Sacramento is considered to be the Central Basin.

### 6.2.2 Groundwater Management

The number and type of groundwater users differs significantly between the subbasins. The North American Subbasin consists mainly of cities, water districts, and water agencies, while the South American Subbasin consists of approximately 6,000 private irrigation and residential users in addition to cities, water districts, and water agencies. The management of each subbasin is discussed below.

#### 6.2.2.1 Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act of 2014 (SGMA) was passed in September 2014 as a three-bill legislative package composed of AB 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley). The legislation provides a framework for sustainable management of groundwater supplies by local authorities, with a limited role for state intervention when necessary to protect the resource. The legislation lays out a process and a timeline for local authorities to achieve sustainable management of groundwater basins. It also provides tools, authorities and deadlines to take the necessary steps to achieve the goal. For local agencies involved in implementation, the requirements are significant and can be expected to take years to accomplish. The SWRCB may intervene if local agencies do not form a Groundwater Sustainability Agency (GSA) and/or fail to adopt and implement a Groundwater Sustainability Plan (GSP).

The SGMA implementation steps and deadlines are shown in Table 6-1.

**Table 6-1. Sustainable Groundwater Management Act Implementation Steps and Deadlines**

| Implementation Step | Implementation Measure | Deadlines |
|---|---|---|
| Step One | Local agencies must form local GSAs within two years | • June 30, 2017 |
| Step Two | Agencies in basins deemed high- or medium-priority must adopt GSPs within five to seven years, depending on whether a basin is in critical overdraft | • January 31, 2020 for critically overdrafted basins<br>• January 31, 2022 for high- and medium-priority basins not currently in overdraft |
| Step Three | Once plans are in place, local agencies have 20 years to fully implement them and achieve the sustainability goal | • January 31, 2040 for critically overdrafted basins<br>• January 31, 2042 for high- and medium-priority basins not currently in overdraft |

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SGMA applies to basins or subbasins designated by the DWR as high or medium priority basins, based on a statewide ranking that uses criteria including population and extent of irrigated agriculture dependent on groundwater. The final Basin Prioritization findings indicate that 127 of California's 515 groundwater basins and subbasins are high and medium priority basins. These high and medium priority basins account for 96 percent of California's annual groundwater pumping and supply 88 percent of the population which resides over the groundwater basins. The ranking for the North American and South American subbasins of the Sacramento Valley groundwater basin is shown in Table 6-2. As shown, both basins have been ranked as a high priority basin.

**Table 6-2. Groundwater Basin Prioritization for Sustainable Groundwater Management Act[(a)]**

| Rank[(b)] | Basin Number | Basin Name | Overall Basin Ranking Score | Overall Basin Priority |
|---|---|---|---|---|
| 24 | 5-21.64 | Sacramento Valley/North American Subbasin | 22.5 | High |
| 29 | 5-21.65 | Sacramento Valley/South American Subbasin | 22.3 | High |

(a) CASGEM Groundwater Basin Prioritization Results, run version May 26, 2014.
(b) Out of a total of 515 basins, of which 127 were high- or medium-priority basins.

New requirements for groundwater management under SGMA do not apply to this 2015 UWMP, but will be addressed in the 2020 UWMP.

#### 6.2.2.2 Management of the North American Subbasin

The City has invested substantial time and resources to participate in the following regional planning activities affecting the management of groundwater resources in the North American Subbasin:

- Sacramento Groundwater Authority
- Sacramento Water Forum
- American River Basin Cooperating Agencies Regional Water Master Plan
- Sacramento Metropolitan Water Authority (SMWA)
- Regional Water Authority (RWA) (successor to the SMWA)

The Sacramento Groundwater Authority (SGA) was formed as a joint powers authority in 1998 to collectively manage Sacramento County's portion of the North American Subbasin. SGA is governed by a joint powers agreement between the City of Sacramento, Sacramento County, City of Folsom and the City of Citrus Heights, who each have police power to manage and protect the underlying groundwater basin. Appointed representatives of fourteen local water purveyors (including a City representative) and a representative from both the agricultural and private pumpers serve as the Board of Directors to the SGA. The members of the SGA collectively provide high quality, reliable water supply to over 500,000 people, in addition to irrigation supply.

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On December 11, 2014, the SGA adopted the SGA Groundwater Management Plan (GMP) to help establish a framework for maintaining a sustainable groundwater resource for the various purveyors overlying the groundwater basin within Sacramento County and north of the American River. A copy of the SGA GMP (December 2014) can be found on the SGA website http://www.sgah2o.org/sga/files/GMP_SGA_2014_Final.pdf.

On October 20, 2015, the SGA notified DWR that it would be the GSA for the North American Subbasin and will undertake the development of the GSP for the subbasin. A copy of the notification can be found in Appendix G.

#### 6.2.2.3 Management of the South American Subbasin

The City has also invested substantial time and resources to participate in the following regional planning activities affecting the management of groundwater resources in the South American Subbasin:

- Sacramento Central Groundwater Authority (SCGA)
- Sacramento Water Forum
- RWA
- SMWA (predecessor to the RWA)

The South American Subbasin consists of major water purveyors and more than 6,000 private agricultural and residential users. In 2002, the Central Sacramento County Groundwater Forum was formed to fulfill an element of the Water Forum Agreement, and was aimed at developing recommendations for the management of the Central Sacramento Groundwater Basin, which is a portion of the South American Subbasin. As described above, the City overlies a portion of the Central Sacramento Groundwater Basin, although, as noted previously, the City is not a major groundwater pumper in this area.

The SCGA was formed on September 20, 2006, and is a joint powers authority, similar to the SGA as a form of governance. The SCGA adopted its Central Sacramento County Groundwater Management Plan on November 8, 2006. The SCGA GMP (November 2006) can be found on the SCGA website http://www.scgah2o.org/documents/CSCGMP_final.pdf.

### 6.2.3 Overdraft Conditions

The basin is not adjudicated. Neither subbasin has been described to be in overdraft in DWR Bulletin 118, nor has Bulletin 118 projected either basin to become overdrafted with the current management of the subbasins.

### 6.2.4 Historical Groundwater Pumping

As discussed in Chapter 3, the City operates 20 active municipal supply wells and five irrigation wells north of the American River, and operates two active municipal supply wells and nine irrigation wells south of the American River. The City is also in the process of completing two new wells south of the American River. Hence, the City pumps groundwater from both subbasins,

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although more than 90 percent of the amount pumped by the City is pumped from the North American subbasin. Historical retail groundwater pumpage from 2011 through 2015 from each subbasin is shown in Table 6-3.

**Table 6-3. Retail: Groundwater Volume Pumped (DWR Table 6-1)**

| Groundwater Type | Location or Basin Name | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| Alluvial Basin | North American Subbasin | 17,210 | 13,305 | 11,462 | 13,261 | 12,509 |
| Alluvial Basin | South American Subbasin | 602 | 1,057 | 1,106 | 1,132 | 970 |
| | **TOTAL** | 17,811 | 14,363 | 12,568 | 14,393 | 13,479 |
| NOTES: Volumes are in AF. | | | | | | |

The City's wholesale agreements primarily rely on surface water. However, SCWA's Airport and Metro Air Park receive groundwater from the City. The groundwater supply is pumped from the North American Subbasin. The groundwater historically supplied to SCWA is summarized in Table 6-4. It should be noted that in the future, when Hodge Flow Criteria are in effect (Section 6.3.2), the City may produce supplemental groundwater to meet the demands of Cal Am's wholesale agreement.

**Table 6-4. Wholesale: Groundwater Volume Pumped (DWR Table 6-1)**

| Groundwater Type | Location or Basin Name | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| Alluvial Basin | North American Subbasin | 298 | 254 | 266 | 238 | 227 |
| | **TOTAL** | 298 | 254 | 266 | 238 | 227 |
| NOTES: Volumes are in AF. | | | | | | |

## 6.3 SURFACE WATER

The City uses surface water from the Sacramento and American Rivers. This section describes the City's water rights. Current and projected surface water supply is summarized in Tables 6-16 through 6-19.

Surface water is currently diverted at two locations: from the American River downstream of the Howe Avenue Bridge, and from the Sacramento River downstream of the confluence of the American and Sacramento Rivers (Figure 3-3). The City's current authorized POU for water diverted under the Sacramento River permit includes all the land within the City Limits, which may change over time with annexations. The POU for water diverted under the American River permits includes not only the City limits, but also areas adjacent to the City that include portions of service areas of several other water purveyors. Figure 3-2 illustrates the City's current POU for these water supply sources.

### 6.3.1 Surface Water Entitlements

The City has multiple surface water entitlements, consisting of five appropriative water right permits issued by the SWRCB, pre-1914 rights and a water rights settlement contract with the USBR. Each water right permit is summarized in Table 6-5 and is discussed in more detail below.

**Table 6-5. City of Sacramento State Water Right Permits Summary**

| Application Permit and License No. | Priority Date | River Source | Maximum Amount Specified | | Purpose of Use | Period of Use | Place of Use | Deadline to Perfect by Full Use |
|---|---|---|---|---|---|---|---|---|
| | | | cfs | AFY | | | | |
| A. 1743<br>P. 992 | 3/30/1920 | Sacramento | 225[a] | 81,800[a] | Municipal | Jan 1 to Dec 31 | City of Sacramento | 12/31/2030 |
| A. 12140<br>P. 11358 | 10/29/1947 | American | 675[b] | 245,000[c] | Municipal | Nov 1 to Aug 1 | 79,500 acres within and adjacent to City | 12/31/2030 |
| A. 12321<br>P. 11359 | 2/13/1948 | Tributaries of American | | | Municipal | Nov 1 to Aug 1[d] | 96,000 acres within and adjacent to City | 12/31/2030 |
| A. 12622<br>P. 11360 | 7/28/1948 | Tributaries of American | | | Municipal | Nov 1 to Aug 1[d] | 96,000 acres within and adjacent to City | 12/31/2030 |
| A. 16060<br>P. 11361 | 9/22/1954 | Tributaries of American | | | Municipal | Nov 1 to Aug 1 | 79,500 acres within and adjacent to City | 12/31/2030 |

[a] See Articles 9 and 10 of Contract No. 14-06-200-6497 dated 6-28-57 between City and U.S. Bureau of Reclamation.
[b] Combined total 675 cfs diversion. See Articles 9 and 10 of Contract No. 14-06-200-6497 dated 6-28-57 between City and U.S. Bureau of Reclamation.
[c] Combined total 245,000 acre - ft/yr diversion. See above contract articles listed in footnote (b).
[d] Year-round period for re-diversion of water previously diverted by Sacramento Municipal Utility District (SMUD) Upper American River Reservoirs.

#### 6.3.1.1 Sacramento River

The City has pre-1914 and post-1914 appropriative rights for water from the Sacramento River.

The City has used Sacramento River water since 1854 and claims a pre-1914 appropriative right to divert 75 cubic feet per second (cfs) from the Sacramento River.

The City's post-1914 Sacramento River permit (Permit 992) authorizes the City to take water from the Sacramento River by direct diversion, and has a priority date of March 30, 1920. Permit 992 authorizes the City to divert up to 81,800 AFY with a maximum flow of 225 cfs. Permit 992 allows the City to use water diverted from the Sacramento River within the city limits of the City of Sacramento (see Figure 3-2) as this area changes from time to time through annexations.

#### 6.3.1.2 American River

The City has four water right permits authorizing diversions of American River water. The combined POU for American River water is shown in Figure 3-2.

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American River Permits 11358 and 11361 authorize the City to divert water from the American River by direct diversion, with a combined maximum allowable rate of diversion of 675 cfs, with priority dates of October 29, 1947, and September 22, 1954, respectively.

The other two American River permits (Permits 11359 and 11360) authorize re-diversion for consumptive uses of American River tributary water previously diverted by the Sacramento Municipal Utility District's (SMUD's) Upper American River Project (UARP). Permits 11359 and 11360 have priority dates of February 13, 1948, and July 29, 1948, respectively, and the POU for both permits is 96,000 acres within and adjacent to the City. The combined maximum allowable diversion under these permits includes re-diversion of up to 1,510 cfs of UARP direct diversion water and up to 589,000 AFY of UARP stored water.

#### 6.3.1.3 U.S. Bureau of Reclamation Settlement Contract

The City has a water rights settlement contract (Settlement Contract) entered into in 1957 by the City and USBR. At that time, the SWRCB was deciding how to allocate water rights on the American River among numerous competing applicants, including the City and USBR. The City and USBR had protested each other's applications. This contract settled their differences and enabled both parties to drop their protests to the benefit of both parties. In the Settlement Contract, the City agreed to limitations on the City's rate and amount of diversion under its water rights permits in exchange for the USBR's agreement to operate its facilities to assure the City a permanent reliable supply of surface water under the City's permits.

The City agreed to limit its total combined diversions of the Sacramento and American River to a Maximum Combined Diversion, as outlined in Schedule A. Additionally, the City agreed to limit its diversions of Sacramento River water to a maximum of 225 cfs and a maximum amount of 81,800 AFY and to limit its diversions of American River water to a maximum of 675 cfs and up to a maximum amount of 245,000 AFY in the year 2030 in accordance with Schedule B (Appendix H), as long as it did not divert more than the Maximum Combined Diversion from both sources.

In return, the Settlement Contract requires USBR to make available in the rivers at all times enough water to enable the agreed-upon diversions by the City pursuant to the City's water rights. The City agreed to make an annual payment to USBR for Folsom Reservoir storage capacity used to meet USBR's obligations under the contract, beginning with payment for 8,000 acre feet of storage capacity in 1963 and building up, more or less linearly, to payment for the use of 90,000 acre feet of storage capacity in 2030. The Settlement Contract is permanent and not subject to deficiencies. The Settlement Contract, in conjunction with the City's water rights, provides the City with a very reliable and secure water supply.[1]

[1] The descriptions and discussion in this UWMP of the City's water rights and water right settlement contract are provided solely for informational purposes, and nothing in this UWMP is intended to, nor shall any provision of this UWMP be interpreted, to modify or affect in any way such rights and contract.

Table 6-6 presents the City's maximum allowed diversion, as specified in Schedule A, from the Sacramento and American Rivers combined, and the maximum allowed diversion from the American River by itself. The maximum allowed diversion from the Sacramento River is 81,800 AFY during any year, but the total combined diversion from both rivers cannot exceed the total requirement specified in Schedule A.

**Table 6-6. Maximum Annual Diversion Allowed to the Year 2040, AFY[(a)]**

| Year | Maximum Diversion from Sacramento River[(b)] | Maximum Diversion from the American River[(c)] | Maximum Combined Diversion |
|---|---|---|---|
| 2015 | 81,800 | 189,000 | 252,000 |
| 2020 | 81,800 | 208,500 | 278,000 |
| 2025 | 81,800 | 228,000 | 304,000 |
| 2030 | 81,800 | 245,000 | 326,800 |
| 2035 | 81,800 | 245,000 | 326,800 |
| 2040 | 81,800 | 245,000 | 326,800 |

(a) Data obtained from Schedule A of the 1957 Water Rights Settlement Contract between the USBR and the City
(b) City may divert up to 81,800 AFY from the Sacramento River as long as the total combined diversion from both the Sacramento and American Rivers does not exceed the Maximum Combined Diversion
(c) The City may divert up to the Maximum Diversion from the American River as long as the total combined diversion from both the Sacramento and American Rivers does not exceed the Maximum Combined Diversion

### 6.3.2 Water Forum Agreement

The Water Forum was started in 1993 by a group of water managers, local governments, business leaders, agricultural leaders, environmentalists, and citizen groups with two "co-equal" goals: to provide a reliable and safe water supply through the year 2030, and to preserve the wildlife, fishery, recreational, and aesthetic values of the Lower American River. In 1999, after six years of intense interest-based negotiation, the Water Forum participants approved the 2000 Water Forum Agreement (WFA).

As part of the WFA, each purveyor signed a purveyor specific agreement (PSA) that specified that purveyor's Water Forum commitments. A copy of the City's PSA is provided in Appendix I. The City's PSA limits the quantity of water diverted from the American River to the FWTP during two conditions: extremely dry years (i.e., "Conference Years") and periods when river flows are below the so-called "Hodge Flow Criteria" issued by Judge Richard Hodge in the *Environmental Defense Fund v. East Bay Municipal Utility District* litigation. A copy of the Hodge Flow Criteria is included in the City's WFA PSA (Appendix I). These two conditions, collectively referred to as the "PSA Limitations," are described in more detail below.

The WFA does not impact the amount of water available to the City under its American River entitlements. However, it requires a reduction of American River diversions at the FWTP during the two conditions. When diversions are limited at the FWTP, the City may divert its American River water right south of the confluence through the City's existing Sacramento River diversion point.

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#### 6.3.2.1 Extremely Dry Years (Conference Years)

The PSA defines extremely dry years (i.e., "Conference Years") as years in which DWR projects an annual unimpaired flow into Folsom Reservoir of 550,000 AFY or less, or the projected March through November unimpaired flow into Folsom Reservoir is less than 400,000 AFY. During extremely dry years, the City has agreed to limit its diversions for water treated at the FWTP to 155 cfs and 50,000 AFY.

Conference Years have occurred on the American River only three times over the period of record historical hydrology. These years were water years 1924, 1977, and 2015. A water year is the 12-month period, starting October 1 and ending on September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. For example, the year ending September 30, 2015 is called the "2015 water year".

#### 6.3.2.2 Hodge Flow Conditions

The Water Forum parties agreed to use Hodge Flow Criteria as a minimum flow that would preserve and protect the instream resources of the lower American River. The City agreed to restrict its diversions of American River water to the FWTP during periods when flows in the Lower American River are less than the Hodge Flow Criteria. Appendix C of the WFA defines these criteria, which is provided in Appendix I of this UWMP.

Specifically, the PSA allows the diversion of American River water to the FWTP of up to 310 cfs (200 MGD), provided the flow passing the FWTP is greater than the Hodge Flow Criteria and extremely dry year conditions do not exist. During periods when the flow passing the FWTP is less than the Hodge Flow Criteria, diversions to the FWTP are limited, as shown in Table 6-7.

**Table 6-7. Maximum Rate of Diversion to the FWTP During Hodge Flow Years**

| Period | Maximum Diversion, cfs | Maximum Diversion, MGD |
|---|---|---|
| January through May | 120 | 77.6 |
| June through August | 155 | 100.2 |
| September | 120 | 77.6 |
| October through December | 100 | 64.6 |

[a] Diversion limits obtained from the City's PSA, which is included in Section 5 of the WFA.

The maximum annual diversion to the FWTP during a year when flows passing the FWTP are below Hodge Flow Criteria every day of the year (a hypothetical Hodge Flow year), and assuming the FWTP is down for maintenance one month of the year, is approximately 82,260 AFY.

## 6.4 STORMWATER

The City does not currently employ any active stormwater recovery measures, and does not have plans to do so.

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## 6.5 WASTEWATER AND RECYCLED WATER

For the purposes of this UWMP, "recycled water" is defined as municipal wastewater that has been treated and discharged from a wastewater facility for beneficial reuse. The City does not currently use recycled water and is currently evaluating retail recycled water opportunities for the future. The City does not plan to wholesale recycled water within the planning horizon of this UWMP. This section describes the projected collection, treatment, and distribution of wastewater and recycled water by the City and other water purveyors in the region.

### 6.5.1 Recycled Water Coordination

The City and the Sacramento Area Sewer District (SASD) operate the wastewater collection systems within the service area through three separate systems: the City's Combined Sewer System (CSS) and Separated Sewer System (SSS), and the SASD's SSS. Most of the wastewater collected from the CSS (94.2 percent of combined wastewater and stormwater flows in fiscal year 2014/2015) and all of the wastewater collected in the two SSS is delivered to the Sacramento Regional Wastewater Treatment Plant (SRWWTP). The SRWWTP is operated by the Sacramento Regional County Sanitation District (Regional San, formerly referred to as SRCSD). Regional San is responsible for the treatment and disposal of the majority of the City's municipal wastewater.

The City collaborated with Regional San and the SPA, a significant City water customer, on recycled water planning for a January 2015 Recycled Water Feasibility Study (RWFS). A copy of the regional RWFS can be found on Regional San's website at http://www.regionalsan.com/sites/main/files/file-attachments/20150109_srcsd-spa-saccity_rwfs_complete.pdf and the executive summary to the RWFS is in Appendix J. Following completion of this study, the City and Regional San executed a Principles of Agreement (Appendix K) for a Water Recycling Program in April 2016 which serves as an interim document that describes the proposed institutional structure for the Regional San and City Water Recycling Program. Regional San and the SPA, in coordination with the City, cooperated in the development of a Phase 1 water recycling project that will initially deliver recycled water via a new transmission pipeline from the SRWWTP to the Cogen Facility. This transmission pipeline, in concurrence with the City, was upsized to provide additional capacity to serve potential future recycled water users within the City.

### 6.5.2 Wastewater Collection, Treatment, and Disposal

The City currently collects and transports wastewater through two systems: CSS and the SSS. Both systems are discussed in more detail in the following sections. The SSS is operated by the City and SASD. As shown in Table 6-8, about 43,500 AF of wastewater was collected in the City's service area in 2015.

The City conveys most of its wastewater to the SRWWTP. The SRWWTP's treatment system, flows, disposal, and recycled water activities are discussed in the following sections.

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**Table 6-8. Retail: Wastewater Collected Within Service Area in 2015 (DWR Table 6-2)**

| | | | | | | |
|---|---|---|---|---|---|---|
| 100 | Percentage of 2015 service area covered by wastewater collection system *(optional)* | | | | | |
| 100 | Percentage of 2015 service area population covered by wastewater collection system *(optional)* | | | | | |
| **Wastewater Collection** | | | **Recipient of Collected Wastewater** | | | |
| Name of Wastewater Collection Agency | Wastewater Volume Metered or Estimated? | Volume of Wastewater Collected from UWMP Service Area 2015 | Name of Wastewater Treatment Agency Receiving Collected Wastewater | Treatment Plant Name | Is WWTP Located Within UWMP Area? | Is WWTP Operation Contracted to a Third Party? *(optional)* |
| City of Sacramento | Estimated | 278 | City of Sacramento | Combined Wastewater Treatment Plant | Yes | |
| City of Sacramento | Estimated | 22,822 | Regional County Sanitation District | Sacramento Regional Wastewater Treatment Plant | No | |
| Sacramento Area Sewer District | Estimated | 20,460 | Regional County Sanitation District | Sacramento Regional Wastewater Treatment Plant | No | |
| **Total Wastewater Collected from Service Area in 2015:** | | 43,560 | | | | |
| NOTES: Volumes are in AF. Combined wastewater treatment plant includes flow from stormwater as it is a combined system. | | | | | | |

### 6.5.2.1 Combined Sewer System

Constructed between the late 1800's and 1946, the CSS serves residences and businesses within 11,240 acres of the City: approximately 7,540 acres generally within the Downtown, East Sacramento and Land Park communities contribute sanitary sewage and storm drainage flows (combined sewer) to the CSS; and 3,700 acres generally within the communities of East Sacramento, River Park and Tahoe Park contribute only sanitary sewage flows to the CSS. Pipes within the latter communities once conveyed combined sewer but the sanitary sewer and storm drainage flows were separated in the 1950's in an effort to improve operational efficiency by diverting storm drainage into its own system. Figure 6-2 illustrates the approximate area served by the CSS.

The CSS is composed of about 345 miles of 4 to 120 inch diameter pipes that drain to the west to two large pump station facilities known as Pump Station 1/1A/1B and Pump Station 2/2A, located near the Sacramento River. Pump Stations 1B and 2A are the primary pumping stations at each facility, operating continuously throughout the year, while Pump Stations 1/1A and 2 only operate during large storms. Other City facilities include an off-line storage facility known a Pioneer Reservoir that also serves as a primary treatment plant and the Combined Wastewater Treatment Plant (CWTP), another primary treatment plant with a capacity of 130 MGD. Pioneer Reservoir has a peak hydraulic capacity of approximately 350 MGD and a treatment capacity of about 250 MGD.

The City has an agreement with the Regional San whereby the City can convey a maximum of 60 MGD to the SRWWTP for secondary treatment prior to discharge to the Sacramento River. This capacity is sufficient to treat all CSS dry weather sanitary flows (about 17 to 18 MGD) and stormwater from low-intensity storms. During moderate to large storms when the CSS flows are greater than 60 MGD, the flows greater than 60 MGD are routed to CWTP and/or Pioneer Reservoir for temporary storage. When flows exceed storage capacity, the excess flows are released to the Sacramento River after receiving primary treatment, including chlorination and de-chlorination. When the storage and treatment capacities are reached, additional CSS flows are discharged directly to the Sacramento River from Sump 1 and/or Sump 2. Primary treatment is a mechanical settling process that removes oil and about 50 percent of the settleable solids.

Any CSS effluent treated at the CWTP and Pioneer Reservoir will not meet the quality standards for recycled water use, as the CWTP only consists of primary treatment. Additionally, the plants operate only very intermittently as needed during large storm events and therefore do not provide a reliable supply to potential water customers.

As shown in Table 6-9, Pioneer Reservoir treated 278 AF wastewater in 2015 that was discharged. CWTP had no discharges in 2015.

**Table 6-9. Retail: Wastewater Treatment and Discharge Within Service Area in 2015 (DWR Table 6-3)**

| Wastewater Treatment Plant Name | Discharge Location Name or Identifier | Discharge Location Description | Wastewater Discharge ID Number *(optional)* | Method of Disposal | Does This Plant Treat Wastewater Generated Outside the Service Area? | Treatment Level* | 2015 volumes | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Wastewater Treated | Discharged Treated Wastewater | Recycled Within Service Area | Recycled Outside of Service Area |
| Pioneer | Pioneer (EFF-006) | Sacramento River | | River or creek outfall | No | | 278 | 278 | 0 | 0 |
| Combined Wastewater Treatment Plant | CWTP | Sacramento River | | River or creek outfall | No | | 0 | 0 | 0 | 0 |
| | | | | | | | 278 | 278 | 0 | 0 |

NOTES: Volumes are in AF. Pioneer and CWTP provide primary treatment only during large storm events.

### 6.5.2.2 Separated Sewer System

In addition to the City's CSS, the City maintains a separated sewer system (SSS) within about 60 percent of the geographical area outside the CSS. The balance of the City residents and businesses are served by SASD, which also serves most of the Sacramento County. The system is composed of about 482 miles of 4 to 36 inch diameter pipe and thirty-five individual pump stations. Figure 6-2 illustrates the area served by the SSS.

Flows conveyed by the City's SSS are routed to the SRWWTP for treatment and disposal via an interceptor system consisting of large diameter pipes and pump stations. The interceptor system and the SRWWTP, located just south of the City limits, are owned and operated by Regional San.

#### 6.5.2.3 Description of the SRWWTP

Regional San owns and operates the SRWWTP, which treats and discharges wastewater generated by the Cities of Sacramento, Citrus Heights, Elk Grove, Rancho Cordova, Folsom, and urbanized areas of the County of Sacramento. The SRWWTP is located south of the City limits in Elk Grove, California as shown in Figure 6-2.

The SRWWTP provides secondary treatment consisting of mechanical bar screens, aerated grit removal, primary sedimentation, pure oxygen activated sludge aeration, secondary clarification, chlorine disinfection, and dechlorination.

Tertiary treatment is currently provided to a portion of the secondary treated wastewater for recycled water use. The SRWWTP currently houses Regional San's Water Reclamation Facility (WRF) which consists of a tertiary treatment plant, pump station, and storage reservoir. The WRF was originally designed to produce up to 5 MGD of tertiary effluent, and is permitted to produce up to 10 MGD.

SRWWTP's new National Pollutant Discharge Elimination System (NPDES) permit and Waste Discharge Requirements require Regional San to treat all effluent to Title 22 tertiary standards in the future. Regional San will begin operations of a tertiary treatment facility to produce 181 MGD of tertiary treated effluent by 2020.

#### 6.5.2.4 Wastewater Disposal

The recycled water currently produced at SRWWTP's WRF meets Title 22 California Code of Regulations recycled water requirements. Regional San generates wholesale recycled water and SCWA retails the recycled water to recycled water customers in Elk Grove. As of January 2015, less than 1 percent of SRWWTP's wastewater supplies were tertiary treated and put to beneficial use.

Except for water diverted for recycled use, treated wastewater from the SRWWTP is discharged to the Sacramento River near the town of Freeport. The SRWWTP is currently permitted to discharge an average dry weather flow (ADWF) of 181 MGD, and a daily peak wet weather flow of 392 MGD.

### 6.5.3 Recycled Water System

The City does not utilize recycled water at this time; recycled water produced at the SRWWTP is only delivered to customers outside of the City's service area. However, Regional San is currently implementing Phase 1 described in the RWFS and constructing a 6-mile recycled water pipeline from SRWWTP to deliver recycled water to the SPA Cogen Facility located near the intersection of Franklin Boulevard and 47$^{th}$ Avenue. The Cogen Facility is located outside of the City, but within the City's American River POU, and currently receives potable water from the City for its cooling tower water needs. When the pipeline is complete in 2017, the Cogen Facility will receive 1,000 AFY of recycled water, as shown in Table 6-10. The City is currently evaluating additional recycled water opportunities inside its service area for use of up to 1,723 AFY of recycled water. One of the potential recycled projects being evaluated is detailed in the RWFS as Alternative 3.

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A map showing Alternative 3 from the RWFS is included as the recommended project in the RWFS executive summary located in Appendix J.

**Table 6-10. Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area (DWR Table 6-4)**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Name of Agency Producing (Treating) the Recycled Water: | | Sacramento Regional County Sanitation District | | | | | | |
| Name of Agency Operating the Recycled Water Distribution System: | | To be determined | | | | | | |
| Supplemental Water Added in 2015 | | None | | | | | | |
| Source of 2015 Supplemental Water | | Not Applicable | | | | | | |
| Beneficial Use Type | General Description of 2015 Uses | Level of Treatment | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 (opt) |
| Agricultural irrigation | | | | | | | | |
| Landscape irrigation (excludes golf courses) | | | | | | | | |
| Golf course irrigation | | | | | | | | |
| Commercial use | | | | | | | | |
| Industrial use | | Tertiary | 0 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Geothermal and other energy production | | | | | | | | |
| Seawater intrusion barrier | | | | | | | | |
| Recreational impoundment | | | | | | | | |
| Wetlands or wildlife habitat | | | | | | | | |
| Groundwater recharge (IPR)* | | | | | | | | |
| Surface water augmentation (IPR)* | | | | | | | | |
| Direct potable reuse | | | | | | | | |
| Other *(Provide General Description)* | | | | | | | | |
| | | **Total:** | 0 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| **IPR - Indirect Potable Reuse* | | | | | | | | |
| NOTES: The Cogen Facility will receive 1,000 AFY of recycled water. The City is evaluating additional opportunities for future use of recycled water in service area. | | | | | | | | |

The City does not currently distribute or provide supplemental treatment to wholesale recycled water, and does not plan to do so in the future. Therefore, DWR Table 6-3 Wholesale and DWR Table 6-4 Wholesale are not included.

### 6.5.4 Recycled Water Beneficial Uses

The City does not currently beneficially use recycled water but is evaluating potential future beneficial uses of recycled water. The potential future beneficial uses of recycled water within the City may include irrigation of parks, golf courses, and schools as is described in Alternative 3 of the January 2015 RWFS. In addition, recycled water will be used to offset the use of potable water at the Cogen Facility for its cooling tower water needs, as described in Section 6.5.3.

#### 6.5.4.1 Planned Versus Actual Use of Recycled Water

Recycled water was not used in 2010 nor projected for use in 2015. Therefore, Table 6-11 and Table 6-12 are intentionally blank.

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**Table 6-11. Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual (DWR Table 6-5)**

| ☑ | Recycled water was not used in 2010 nor projected for use in 2015.<br>The supplier will not complete the table below. | |
|---|---|---|
| **Use Type** | **2010 Projection for 2015** | **2015 Actual Use** |
| Agricultural irrigation | | |
| Landscape irrigation (excludes golf courses) | | |
| Golf course irrigation | | |
| Commercial use | | |
| Industrial use | | |
| Geothermal and other energy production | | |
| Seawater intrusion barrier | | |
| Recreational impoundment | | |
| Wetlands or wildlife habitat | | |
| Groundwater recharge (IPR) | | |
| Surface water augmentation (IPR) | | |
| Direct potable reuse | | |
| Other | | |
| **Total** | 0 | 0 |
| NOTES: Table intentionally blank. | | |

**Table 6-12. Wholesale: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual (DWR Table 6-5)**

| ☑ | Recycled water was not used or distributed by the supplier in 2010, nor projected for use or distribution in 2015.<br>The wholesale supplier will not complete the table below. | |
|---|---|---|
| Name of Receiving Supplier or Direct Use by Wholesaler | 2010 Projection for 2015 | 2015 actual use |
| **Total** | 0 | 0 |
| NOTES: Table intentionally blank. | | |

### 6.5.5 Actions to Encourage and Optimize Future Recycled Water Uses

Though the City is currently evaluating the feasibility of implementing a recycled water program within its service area, recycled water is not currently planned to be implemented within the City's service area before 2020. Therefore, Table 6-13 is intentionally blank. The City has executed a Principles of Agreement with Regional San which describes the proposed institutional structure for the Regional San and City Water Recycling Program (K). An update on the City's recycled water plans will be included in the 2020 UWMP.

**Table 6-13. Retail: Methods to Expand Future Recycled Water Use (DWR Table 6-6)**

| | | | |
|---|---|---|---|
| ☑ | Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation. | | |
| 6-15 | Provide page location of narrative in UWMP | | |
| Name of Action | Description | Planned Implementation Year | Expected Increase in Recycled Water Use |
| | | | |
| | | **Total** | 0 |
| NOTES: Although the City is evaluating recycled water opportunities, the City does not currently have plans to use recycled water within its service area. | | | |

## 6.6 DESALINATED WATER OPPORTUNITIES

The City is not considering the development or use of desalinated water or brackish groundwater; there is no source of sea water or brackish groundwater near the City.

## 6.7 EXCHANGES OR TRANSFERS

The City currently does not receive exchange or transfer water from other water suppliers, but does have interties with other water suppliers that can be used for temporary water transfers. The City's emergency interties with neighboring water purveyors are discussed below and in Chapters 7 and 8.

The City participated in two previous water transfer efforts. In 2002, the City participated in a Bureau-approved pilot program to make surface water available to the Environmental Water Account by reducing surface water diversions. In 2009, the City participated in the Drought Water Bank and used groundwater in lieu of surface water. The City is making improvements to its groundwater production infrastructure to increase capacity available for drought bank or similar transfers.

## 6.8 FUTURE WATER PROJECTS

Though the City has sufficient water supply to meet projected water demand during various hydrologic conditions throughout the planning horizon of this UWMP, the City continues to evaluate and plan projects to improve the delivery reliability of its existing water supplies.

Tables 6-14 and 6-15 indicate that all of the City's future water supply projects or programs are incompatible with DWR tables and, therefore, are described in narrative in this section.

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### Table 6-14. Retail: Expected Future Water Supply Programs (DWR Table 6-7)

| | | | | | | |
|---|---|---|---|---|---|---|
| ☑ | Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format. | | | | | |
| 6-17 | Provide page location of narrative in the UWMP | | | | | |
| Name of Future Projects or Programs | Joint Project with other agencies? | | Description (if needed) | Planned Implementation Year | Planned for Use in Year Type | Expected Increase in Water Supply to Agency |
| | | | | | | |
| NOTES: Table intentionally blank. Please see Section 6.8 - Future Water Projects. | | | | | | |

### Table 6-15. Wholesale: Expected Future Water Supply Programs (DWR Table 6-7)

| | | | | | | |
|---|---|---|---|---|---|---|
| ☑ | Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format. | | | | | |
| 6-17 | Provide page location of narrative in the UWMP | | | | | |
| Name of Future Projects or Programs | Joint Project with other agencies? | | Description *(if needed)* | Planned Implementation Year | Planned for Use in Year Type | Expected Increase in Water Supply to Agency |
| | | | | | | |
| NOTES: Table intentionally blank. Please see Section 6.8 - Future Water Projects. | | | | | | |

### 6.8.1 Surface Water

The City is completing a rehabilitation project to increase the reliable treatment capacity of SRWTP to allow treatment of the full permitted supply of 160 MGD. This project will be completed in 2016.

The City is also a participant in the River Arc Study which is evaluating the feasibility of a regional surface water supply project on the Sacramento River. This effort is in the early planning stages. An update on the City's plans to participate in a regional surface water supply project will be included in the 2020 UWMP.

### 6.8.2 Recycled Water

As stated in previous sections, the City is currently evaluating recycled water opportunities inside its retail service area, but, at the time of preparation of this UWMP, decisions for future recycled water projects were not yet finalized.

### 6.8.3 Groundwater

The City is actively rehabilitating its groundwater facilities to improve the firm pumping capacity of many existing wells. The City also recently constructed one new well. The City will continue to evaluate the condition of its wells and rehabilitate as needed. The City will also evaluate the need for additional groundwater supplies in the future.

## 6.9 SUMMARY OF EXISTING AND PLANNED SOURCES OF WATER

The City's actual retail and wholesale water supplies in 2015 are summarized in Table 6-16 and Tables 6-17. The City's projected future water supplies through 2040 are summarized in Table 6-18 and Table 6-19.

**Table 6-16. Retail: Water Supplies – Actual (DWR Table 6-8)**

| Water Supply | Additional Detail on Water Supply | 2015 | | |
|---|---|---|---|---|
| | | Actual Volume | Water Quality | Total Right or Safe Yield *(optional)* |
| Surface water | Sacramento River | 39,511 | Drinking Water | |
| Surface water | American River | 30,956 | Drinking Water | |
| Groundwater | | 13,706 | Drinking Water | |
| Other | Mutual Aid | 659 | Drinking Water | |
| | **Total** | 84,832 | | 0 |
| NOTES: Volumes are in AF. | | | | |

**Table 6-17. Wholesale: Water Supplies – Actual (DWR Table 6-8)**

| Water Supply | Additional Detail on Water Supply | 2015 | | |
|---|---|---|---|---|
| | | Actual Volume | Water Quality | Total Right or Safe Yield *(optional)* |
| Surface water | American River | 972 | Drinking Water | |
| Groundwater | | 227 | Drinking Water | |
| | **Total** | 1,199 | | 0 |
| NOTES: Volume in AF. | | | | |

### Table 6-18. Retail: Water Supplies – Projected (DWR Table 6-9)

| Water Supply | Additional Detail on Water Supply | Projected Water Supply *Report To the Extent Practicable* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2020 | | 2025 | | 2030 | | 2035 | | 2040 *(opt)* | |
| | | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* |
| Surface water | Sacramento River | 81,800 | 81,800 | 81,800 | 81,800 | 81,800 | 81,800 | 81,800 | 81,800 | 81,800 | 81,800 |
| Surface water | American River | 171,368 | 208,500 | 185,319 | 228,000 | 191,707 | 245,000 | 191,707 | 245,000 | 191,707 | 245,000 |
| Groundwater | | 21,749 | 25,205 | 20,169 | 25,205 | 19,912 | 25,205 | 19,912 | 25,205 | 19,912 | 25,205 |
| Recycled Water | | 1,000 | | 1,000 | | 1,000 | | 1,000 | | 1,000 | |
| **Total** | | 275,917 | 315,505 | 288,288 | 335,005 | 294,419 | 352,005 | 294,419 | 352,005 | 294,419 | 352,005 |

NOTES: Volumes are in AF.
- The City may divert up to 81,800 AFYof Sacramento River water as long as the total combined diversion from both the Sacramento and American Rivers does not exceed the Maximum Combined Diversion specified in Schedule A. The Sacramento River water is available to the City for all hydrologic years.
- The City may divert up to the Maximum Diversion from the American River as long as the total combined diversion from both the Sacramento and American Rivers does not exceed the Maximum Combined Diversion specified in Schedule A. American River water right can be diverted south of the confluence through the City's existing Sacramento River diversion point.
- Groundwater volume based on the City's firm capacity which is 90-percent of the total well capacities.

### Table 6-19. Wholesale: Water Supplies – Projected (DWR Table 6-9)

| Water Supply | Additional Detail on Water Supply | Projected Water Supply *Report To the Extent Practicable* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2020 | | 2025 | | 2030 | | 2035 | | 2040 *(opt)* | |
| | | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* |
| Surface water | American River | 37,132 | | 42,681 | | 53,293 | | 53,293 | | 53,293 | |
| Groundwater | | 3,456 | | 5,036 | | 5,293 | | 5,293 | | 5,293 | |
| **Total** | | 40,588 | 0 | 47,717 | 0 | 58,586 | 0 | 58,586 | 0 | 58,586 | 0 |

NOTES: Volumes are in AF.
Wholesale water supplies are from the City's American River water right except for the SCWA Airport and Metro Park customer and based on projected demands for wholesale customers. SCWA Airport and Metro Park is outside the Sacramento and American River POUs and may be served groundwater and/or surface water diverted under the City's pre-1914 rights.

### 6.9.1 Planned Sources of Water Beyond 2040

To meet the 20-year planning requirement for future water supply assessments the City has decided to included supply projections to the year 2045 in its 2015 UWMP. The City does not anticipate a change in the supply sources available beyond 2040. Therefore, the City's projected retail supply for Sacramento River surface water is 81,800 AF, for American River surface water is 191,707 AF, for groundwater is 19,912 AF, and for recycled water is 1,000 AF. The City's total available retail supply in 2045 is projected to be 294,419 AF. The City also anticipates supplies for wholesale customers will not change. The City's projected wholesale supply available for American River surface water is 53,293 AF and for groundwater is 5,293 AF. The City's total available wholesale supply in 2045 is projected to be 58,586 AF.

## 6.10 CLIMATE CHANGE IMPACTS TO SUPPLY

DWR Guidebook suggests that urban water suppliers consider the potential effects related to climate change in their 2015 UWMPs, but there are currently no specific requirements related to addressing the potential impacts of climate change.

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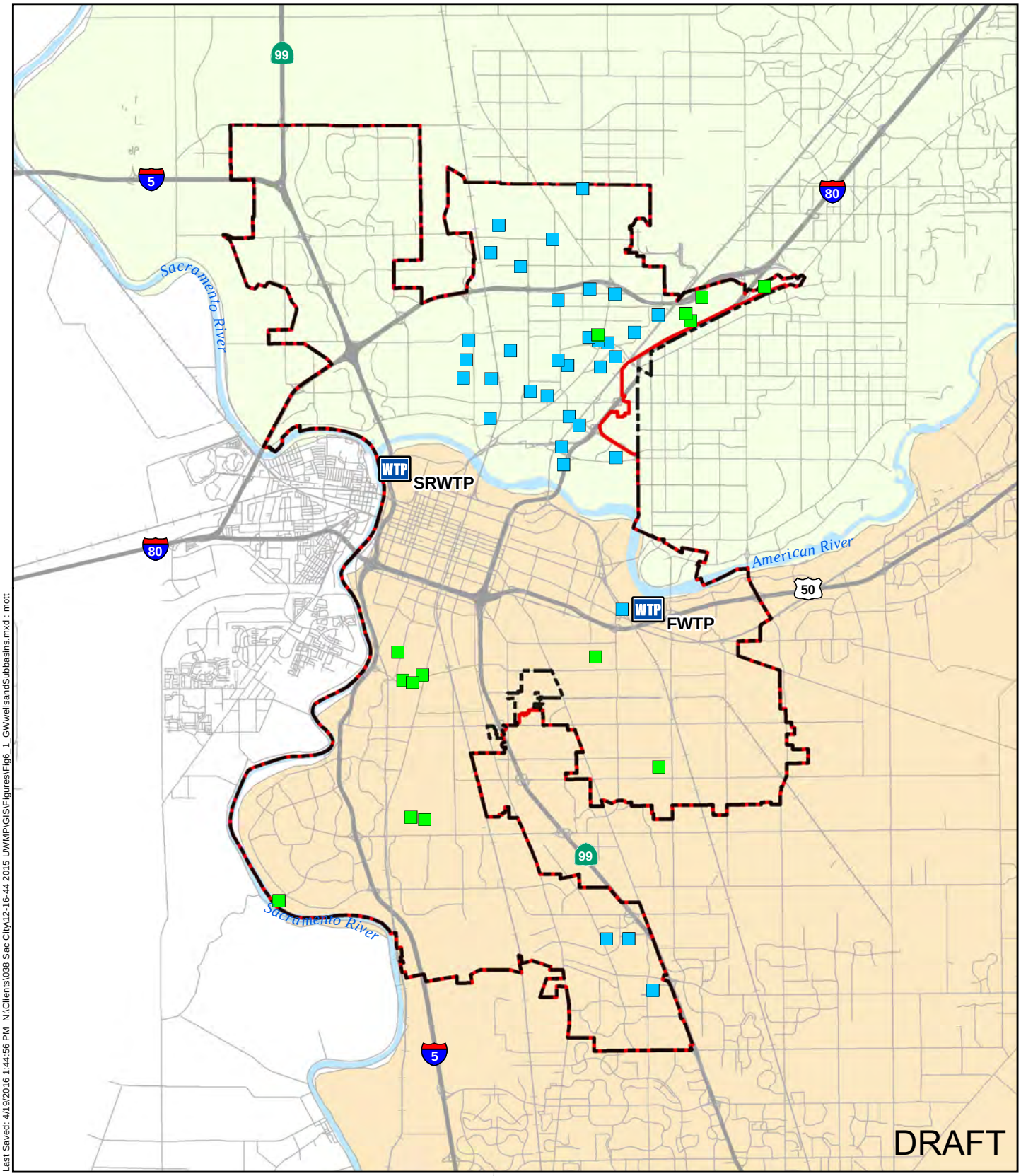


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## Legend

- Irrigation Well
- MunicipalWell
- Treatment Plant
- City Limits
- City Retail Area

**Subbasin Name**

- North American Subbasin
- South American Subbasin

N

0 1.25 2.5

Scale in Miles

Notes:
1. SRWTP stands for Sacramento River Water Treatment Plant.
2. FWTP stands for Fairbairn Water Treatment Plant.

City of SACRAMENTO

WEST YOST ASSOCIATES

**Figure 6-1**

**Groundwater Wells and Subbasins**

City of Sacramento
2015 Urban Water Management Plan

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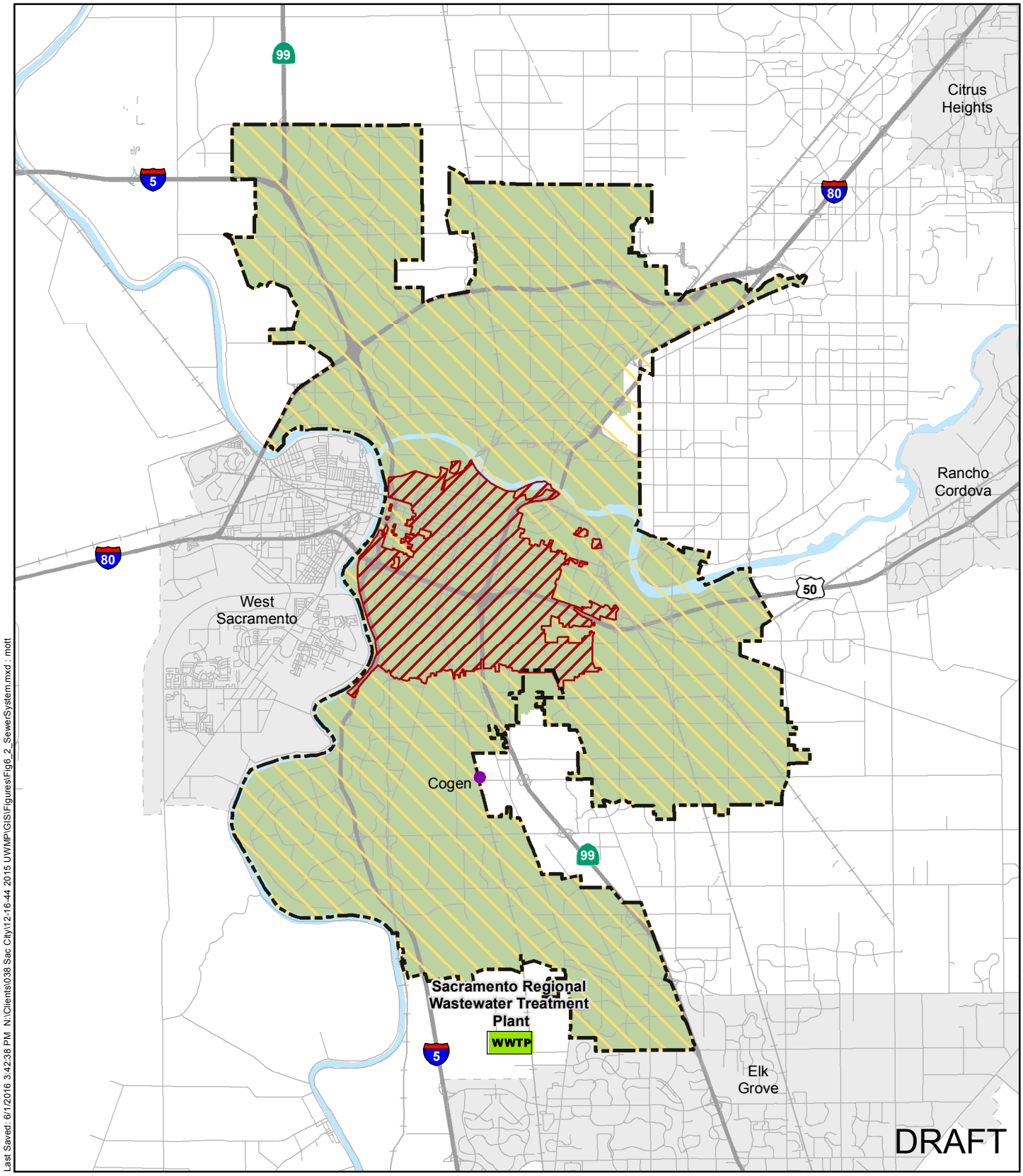


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## Legend

- City Limits
- City Retail Area
- Area Served by the Combined Sewer System
- Area Served by the Separated Sewer System

N

0 1.25 2.5

Scale in Miles

City of SACRAMENTO

WEST YOST ASSOCIATES

**Figure 6-2**

**Combined and Separated Sewer System**

City of Sacramento
2015 Urban Water Management Plan

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This chapter describes the long term reliability and vulnerability of the City's water supplies. The City's implemented, or planned to be implemented, water management tools for increasing the reliability of water supplies are also addressed. Shorter term reliability planning, such as catastrophic supply interruption, is addressed in Chapter 8.

## 7.1 CONSTRAINTS ON WATER SOURCES

There are a variety of constraints that can impact water supply reliability. This section includes a description of potential physical, legal, environmental, water quality, and climatic constraints on the reliability of water supply sources as identified by the City. Descriptions of the City's water supply sources are included in Chapter 6.

### 7.1.1 Physical

A fundamental factor that affects water supply reliability is the hydraulic capacity of supply and distribution system facilities. The current supply and distribution system is considered sufficient for current demands.

The City prepares master documents to evaluate the hydraulic capacity of their distribution system to convey available supply to customers while maintaining minimum service standards. The City completed a Water Supply Master Plan (WSMP) in 2013. The WSMP uses a hydraulic model of the distribution system to determine potential physical constraints to meet existing and future customer demands. The City's system is adequate to meet existing demands, and the City continues to make improvements to meet future demands and improve reliability.

Under the City's wheeling agreement with SCWA, the City draws surface water on behalf of SCWA's entitlement, and wheels the water through the City's existing distribution system to SCWA. Surface water diverted by the City for wheeling customers does not reduce the water available under the City's water rights. Therefore, wheeled water demand and supply volumes are not included in this UWMP. However, wheeled water does increase the physical constraints to the City's delivery system. The City's 2000 wheeling agreement with SCWA is for up to 12,350 AFY supply during all hydrologic conditions, provided that the use of capacity to wheel water to SCWA is made subordinate to any capacity demands associated with supplying City water within the City's POU. The impact of wheeled water on the City's distribution system is evaluated in its WSMP. The hydraulic capacity of the City's distribution system is sufficient to meet retail, wheeling, and wholesale demands.

The City's FWTP reliable treatment and permitted capacity are both 160 MGD. However, physical hydraulic constraints in the system exist. The pipelines conveying water from FWTP to the rest of the system are not able to convey the full 160 MGD and maintain the City's service standards. This limits the getaway capacity (conveyance) from FWTP to approximately 110 MGD. The physical constraint at FWTP does not impact existing customers. The City continues to evaluate options for improving the distribution system capacity at FWTP to ensure the ability to meet future demands.

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The City is completing a rehabilitation at the SRWTP to increase the reliable treatment capacity to match the permitted capacity of 160 MGD. The City's distribution system does not have physical constraints in conveying water from the SRWTP.

No physical constraints exist with the City's groundwater supply.

The City is in the early stages of developing its recycled water supply but does not anticipate any physical constraints in the recycled water system. The City's planned recycled water system is discussed in Section 6.5.

### 7.1.2 Legal

As discussed in Section 6.3, the City has multiple surface water entitlements including five appropriative water rights permits, pre-1914 rights, and a Settlement Contract with USBR. Legal constraints on surface water supplies are addressed below and in Chapter 6.

In the Settlement Contract, the City agreed to limit its rate and amount of diversion under its water rights permits in exchange for the USBR's agreement to operate its facilities to assure the City a reliable supply of surface water under the City's permits. This agreement results in a highly reliable surface water supply to the City. For more information about the Settlement Contract, refer to Section 6.3.1.3.

Existing regulations do not directly limit the use or expansion of groundwater pumping activities by the City.

### 7.1.3 Environmental

The City's WFA PSA limits the quantity of water diverted from the American River at the FWTP during two conditions: extremely dry years (i.e., "Conference Years") and periods when river flows are below the "Hodge Flow Criteria" issued by Judge Richard Hodge in the *Environmental Defense Fund v. East Bay Municipal Utility District* litigation. For more information about the WFA and PSA, refer to Section 6.3.2.

The WFA does not impact the amount of water available to the City under its American River entitlements. However, it requires a reduction of American River diversions at the FWTP for environmental purposes during the Conference Years and Hodge Flow Criteria. When diversions are limited at the FWTP, the City may divert its American River water right south of the confluence through the City's existing Sacramento River diversion point.

Hodge Flow Criteria also impacts the City's wholesale agreements with SSWD and Cal Am. SSWD may receive up to 22,400 AFY from the City during years without Hodge Flow Criteria. However, during any period where flow passing the FWTP meets the Hodge Flow Criteria, wholesale water is not available to SSWD. In years without Hodge Flow Criteria, Cal Am may receive up to 4,831 AFY non-firm supply from the City. In years with Hodge Flow Criteria, the Cal Am agreement utilizes a mix of groundwater and American River water to receive a firm capacity of 2,577 AFY.

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The City's Sacramento River surface water and groundwater supplies have not been impacted by environmental factors, and the City does not anticipate future disruption of supplies as a result of environmental factors. In addition, the City does not anticipate environmental constraints on a future recycled water system. The City's planned recycled water system is discussed in Section 6.5.

### 7.1.4 Water Quality

Water quality for groundwater and surface water supplies are published annually in the City's Consumer Confidence Report (CCR). The most recent CCR is available on the City's website at https://www.cityofsacramento.org/Utilities/Education/water-quality. As shown in the CCR, the City's water supply meets or exceeds all federal and state drinking water standards. In addition, the City takes a proactive approach to water quality and the potential constraints to its water supply sources. The City's Water Quality Laboratory and Research and Development Section conducts water quality evaluations and studies to proactively address water quality conditions, including effects due to drought and climate change. The City conducts source water protection programs to protect the quality of the City's American and Sacramento River water supplies, including regional efforts. Water quality in both rivers can be influenced by a combination of factors including storm events, reservoir releases, irrigated agriculture, livestock, urban runoff, recreation, and various point sources. These influencing factors can impact water quality parameters (e.g., turbidity, coliforms, Giardia and *Cryptosporidium*, organic carbon, and volatile and semi-volatile organic compounds, aluminum, iron, and manganese). Raw and treated water quality is routinely monitored by the City, and the water treatment plants are designed to produce drinking water that meets all applicable drinking water quality regulations. The Sacramento and American River Watershed Sanitary Survey Updates, conducted every five years, also that City's water treatment facilities are able to treat the source water to meet all regulatory requirements. As a result, water quality is not expected to impact supply reliability.

Groundwater underlying the City's service area generally meets primary and secondary drinking water standards for municipal water use, and is described as being a calcium- magnesium-bicarbonate type water, with minor fractions of sodium-magnesium-bicarbonate (DWR Groundwater Bulletin 118).

Many areas of good quality groundwater exist in the subbasins, but the quality of groundwater varies throughout the City with both location and depth. Due to high concentrations of iron and manganese in the lower aquifer system, the upper aquifer system is usually the preferred source of municipal groundwater supply[1].

There are several groundwater contaminant sites in the vicinity of the City's groundwater wells. The sources of the larger plumes include the former Southern Pacific and Union Pacific Railyards, the former McClellan Air Force Base (AFB), the former Mather AFB, and the Aerojet Superfund Site in Rancho Cordova. The combined primary contaminants of concern from these sites include: benzene; methyl-tertiary butyl ether (MTBE); trichloroethene (TCE); tetrachloroethene (PCE);

[1] City of Sacramento, *General Plan Technical Background Report*. June 2005.

cis-1,2-dichloroethene (DCE); 1,4-dioxane; 1,2-dichloroethane; carbon tetrachloride; perchlorate; and n-nitrosodimethylamine (NDMA)[2]. Other localized areas of contamination exist throughout the basin and are generally smaller in scope and extent of contamination. The City also performs regular monitoring of existing and new wells to determine hexavalent chromium (Cr 6) concentrations compared to the new California maximum contaminant level (MCL) of 10 µg/L. As the City has rehabilitated and brought wells into service, some areas have shown elevated levels of Cr 6.

In addition to ambient water quality or potential contaminants, the City's groundwater supply is subject to future regulation. Future regulations regarding arsenic, radon, or other chemicals of concern could potentially limit the City's groundwater supply in the future. As discussed in Chapter 6, the City is participating in several groups to help develop mechanisms to manage and protect the Sacramento area's groundwater resources.

The City will continue to regularly monitor groundwater quality and proactively address future regulations to minimize future water quality impacts to its groundwater supply reliability.

The City is in the early stages of developing its recycled water supply but does not anticipate any water quality constraints in the recycled water system. The City's planned recycled water system is discussed in Section 6.5.

### 7.1.5 Climate

Climatic factors affecting the reliability of a given water supply system generally are a function of seasonal precipitation and runoff characteristics.

The drought of 2015 resulted in a reduction in flow on the Sacramento River, and the City experienced constraints on the function of the SRWTP intake structure. Vortex protector cages, used to increase the reliability of intake structures during low flow conditions, were installed at both the SRWTP and the FWTP in 2015.

The surface water temperatures of the American and Sacramento Rivers are also impacted by drought-related low flow conditions. The City of Sacramento conducted additional water quality evaluations in 2015 regarding unusual water quality conditions in the source water related to drought conditions and climate change. This included evaluation of phenomena that can be related to increased water temperature, lower river flows, and higher mean residence time, including treated water disinfection by-product (DBP) formation, presence of blue-green algae (also known as cyanobacteria), and presence of cyanotoxins (which can be released by cyanobacteria). Increased DBP formation has seen locational running annual averages increase above historic levels and complicate water treatment. While the City did not identify the presence of algal toxins in 2015, algal concentrations were higher than historic levels and present at levels sufficient to complicate water treatment. Though an increase algae growth was observed, the City's river source

[2] EIP Associates, Mintier & Associates, Fehr & Peers, Economic and Planning Systems, Nolte Associates, Wallace Roberts & Todd, City of Sacramento, *General Plan Update – Technical Background Report*. June 2005.



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water did not test positive for algal toxins. The City will continue to track river conditions, conduct evaluations as necessary, and proactively address any impacts that may arise.

The City's groundwater supply has not been impacted by climatic factors and the City does not anticipate constraints on the recycled water system due to climatic factors.

## 7.2 WATER SUPPLY RELIABILITY OPPORTUNTIES

The combination of groundwater and surface water results in a high reliability water source for the City's retail and wholesale customers. As discussed in Chapter 6, the City is actively evaluating a recycled water program and rehabilitating well facilities. If needed, there are several ways the City could further increase its water supply and reliability. These include:

- Rehabilitate and/or expand existing water treatment plants;
- Construct a new water treatment plant,
- Obtain additional water supply through contracts;
- Increase water conservation measures;
- Utilize additional groundwater; and
- Utilize recycled water to offset potable water use.

## 7.3 RELIABILITY BY TYPE OF YEAR

The quantity of supply available from different water supply sources can vary from one year to the next depending on hydrologic conditions. Historical data, where available, were therefore used to develop a projected yield for each water supply source under three conditions: (1) normal water year, (2) single dry year, and (3) multiple dry years. In accordance with the DWR Guidebook, each condition is defined as follows:

- **Normal Water Year:** The year, or an averaged range of years, that most closely represents the average water supply available to the City. The terms "normal" and "average" are used interchangeably.
- **Single Dry Year:** The year with the lowest annual runoff or allocation in the historical sequence.
- **Multiple-Dry Year:** The lowest average runoff or allocation for a consecutive 3-year period in the historical sequence.

The basis of hydrologic years used data from the DWR's WSIHIST which provides the water year classification indices for the Sacramento Valley from 1906 through 2015 and Lower American River flow Management System (CALSIMII) Hodge Criteria from 1922 through 1994. Years that the City identifies as the historical average, single driest year, and driest multi-year period are shown in Table 7-1. These years are also known as the "Base Years", and represent the availability of all of the City's water supplies.

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**Table 7-1. Basis of Water Year Data**

| Water Year Type | Base Year(s) |
|---|---|
| Normal Water Year | 2005 |
| Single Dry Water Year[(a)] | 1977 |
| Multiple-Dry Water Years[(b)] | 1990-1992 |

(a) A single dry year on the Sacramento River is assumed to be equivalent to an extremely dry year (Conference Year) on the American River.
(b) Multiple dry years may result in American River flow rates with Hodge Flow Criteria.

The available supplies for each supply source are discussed below. The supply column specifies the percentage of the water supply expected if there were to be a repeat of the hydrology from that type of year.

### 7.3.1 Sacramento River Supply

The City's pre-1914 and post-1914 Sacramento River entitlements are discussed in Section 6.3. In accordance with the USBR Settlement Contract, the City may divert up to 81,800 AFY of Sacramento River water in any year provided the combined diversion from Sacramento and American Rivers does not exceed the total allowable diversion specified in the USBR Settlement Contract. The availability of Sacramento River water during base years is summarized in Table 7-2.

**Table 7-2. Retail: Basis of Water Year Data – Sacramento River (DWR Table 7-1 (1))**

| Year Type | Base Year *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000* | Available Supplies if Year Type Repeats | |
|---|---|---|---|
| | | ☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ | |
| | | ☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both. | |
| | | Volume Available | % of Average Supply |
| Average Year | 2005 | 81,800 | 100% |
| Single-Dry Year | 1977 | 81,800 | 100% |
| Multiple-Dry Years 1st Year | 1990 | 81,800 | 100% |
| Multiple-Dry Years 2nd Year | 1991 | 81,800 | 100% |
| Multiple-Dry Years 3rd Year | 1992 | 81,800 | 100% |

NOTES: Volumes are in AF.
Source: DWR WSIHIST for Sacramento Valley from 1901 through 2015 used to determine historical year of basis.

### 7.3.2 American River Supply

The American River entitlements are discussed in Section 6.3. Though the water available for diversion at the FWTP is subject to restrictions based on the Hodge Flow Criteria, this does not restrict the City's water right; the City may divert any remaining American River water right at the SRWTP. The availability of American River water during base years is summarized in Table 7-3.

**Table 7-3. Retail: Basis of Water Year Data – American River (DWR Table 7-1 (2))**

| Year Type | Base Year<br>*If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000* | Available Supplies if Year Type Repeats | |
|---|---|---|---|
| | | ☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ | |
| | | ☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both. | |
| | | Volume Available | % of Average Supply |
| Average Year | 2005 | 245,000 | 100% |
| Single-Dry Year | 1977 | 245,000 | 100% |
| Multiple-Dry Years 1st Year | 1990 | 245,000 | 100% |
| Multiple-Dry Years 2nd Year | 1991 | 245,000 | 100% |
| Multiple-Dry Years 3rd Year | 1992 | 245,000 | 100% |

NOTES: Volumes are in AF.
Source: Lower American River Flow Management System (CALSIMII) Hodge Criteria from 1922 through 1994.
Diversion from FWTP is limited to not greater than 155 cfs and not greater than 50,000 AFY for single-dry year.
The remainder of American River entitlements may be diverted at the SRWTP for all year types up to the combined maximum diversion specified in the USBR Settlement Contract. The volumes specified above are based on the Settlement Contract's year 2030 amounts.

### 7.3.3 Groundwater Supply

The City's groundwater supply is not expected to be impacted by drought conditions. The availability of groundwater during base years is summarized in Table 7-4.

**Table 7-4. Retail: Basis of Water Year Data - Groundwater (DWR Table 7-1 (3))**

| Year Type | Base Year *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000* | Available Supplies if Year Type Repeats | |
|---|---|---|---|
| | | ☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ | |
| | | ☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both. | |
| | | Volume Available | % of Average Supply |
| Average Year | 2005 | 25,205 | 100% |
| Single-Dry Year | 1977 | 25,205 | 100% |
| Multiple-Dry Years 1st Year | 1990 | 25,205 | 100% |
| Multiple-Dry Years 2nd Year | 1991 | 25,205 | 100% |
| Multiple-Dry Years 3rd Year | 1992 | 25,205 | 100% |
| NOTES: Volumes are in AF. The City's groundwater supply is not anticipated to be impacted by drought conditions. Volumes shown are for the City's firm groundwater supply. | | | |

### 7.3.4 Recycled Water Supply

The City is currently in the early stages of developing a recycled water program. As discussed in Section 6.5, the City anticipates recycled water to be served by 2020. The City has not historically provided recycled water to its customers, and therefore Table 7-5 is intentionally blank. The future recycled water supply is not expected to be impacted by drought conditions.

**Table 7-5. Retail: Basis of Water Year Data – Recycled Water (DWR Table 7-1 (4))**

| Year Type | Base Year *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000* | Available Supplies if Year Type Repeats | |
|---|---|---|---|
| | | ☑ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location: 7-8 | |
| | | ☐ Quantification of available supplies is provided in this table as either volume only, percent only, or both. | |
| | | Volume Available | % of Average Supply |
| Average Year | | | 100% |

### 7.3.5 Wholesale Water Supply

The City's wholesale surface water and groundwater supply is provided through the City's existing water entitlements which are described above and shown in Tables 7-2, 7-3, and 7-4. Each of the City's wholesale agreements uniquely addresses the various water year types. Therefore, Table 7-6 for wholesale does not include volumes. Likely average year wholesale demands are described in Chapter 6. During a dry year, wholesale water generally is not available to SSWD, and the firm capacity of Cal Am's wholesale agreement (2,580 AFY) can be met with a combination of surface water and groundwater as needed.

**Table 7-6. Wholesale: Basis of Water Year Data (DWR Table 7-1)**

| Year Type | Base Year *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000* | Available Supplies if Year Type Repeats | |
|---|---|---|---|
| | | ☑ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location: 7-10 | |
| | | ☐ Quantification of available supplies is provided in this table as either volume only, percent only, or both. | |
| | | Volume Available | % of Average Supply |
| Average Year | 2005 | | |
| Single-Dry Year | 1977 | | |
| Multiple-Dry Years 1st Year | 1990 | | |
| Multiple-Dry Years 2nd Year | 1991 | | |
| Multiple-Dry Years 3rd Year | 1992 | | |
| NOTES: Table intentionally blank. | | | |

## 7.4 SUPPLY AND DEMAND ASSESSMENT

In order to make the best determination of the reliability of the City's water supplies, the supply for various types of years are quantified and discussed below.

### 7.4.1 Normal Year

The City's base Normal Year includes Hodge Flow Conditions on the American River. During Hodge Flow Conditions, diversion from the American River is limited at the FWTP. The limitations are dependent on the time of year, as explained in Chapter 6. However, remaining American River entitlements may be diverted downstream at the SRWTP. Therefore, the City's water supply in Normal Years is assumed to be:

- The Maximum Combined Diversion specified for the year of surface water,
- 25,205 AF of groundwater, and
- 1,000 AF of recycled water.

As shown in Tables 7-7 and 7-8, the City's Normal Year supplies are adequate to meet projected demands.

**Table 7-7. Retail: Normal Year Supply and Demand Comparison (DWR Table 7-2)**

| | 2020 | 2025 | 2030 | 2035 | 2040 *(Opt)* |
|---|---|---|---|---|---|
| Supply totals *(autofill from Table 6-9)* | 275,917 | 288,288 | 294,419 | 294,419 | 294,419 |
| Demand totals *(autofill from Table 4-3)* | 123,229 | 130,548 | 139,882 | 149,213 | 162,029 |
| Difference | 152,688 | 157,740 | 154,537 | 145,206 | 132,390 |
| NOTES: Volumes are in AF. Table references refer to DWR table numbers. | | | | | |

**Table 7-8. Wholesale: Normal Year Supply and Demand Comparison (DWR Table 7-2)**

| | 2020 | 2025 | 2030 | 2035 | 2040 *(Opt)* |
|---|---|---|---|---|---|
| Supply totals *(autofill from Table 6-9)* | 40,588 | 47,717 | 58,586 | 58,586 | 58,586 |
| Demand totals *(autofill fm Table 4-3)* | 40,588 | 47,717 | 58,586 | 58,586 | 58,586 |
| Difference | 0 | 0 | 0 | 0 | 0 |
| NOTES: Volumes are in AF. Table references refer to DWR table numbers. | | | | | |

### 7.4.2 Single Dry Year

In the City's base Single Dry Year (1977), runoff in the Sacramento Valley decreased by 28 percent. The City's Single Dry Year is assumed to be the equivalent to a Conference Year, as defined in the WFA.

During a Conference Year, diversion from the American River is limited at the FWTP to 155 cfs and 50,000 AFY. However, remaining American River entitlements may be diverted downstream at the SRWTP.

Therefore, the Single Dry Year availability is assumed to be:

- The Maximum Combined Diversion specified for the year of surface water,
- 25,205 AF of groundwater, and
- 1,000 AF of recycled water.

As shown in Tables 7-9 and 7-10, the City's Single Dry Year supplies are adequate to meet projected demands.

**Table 7-9. Retail: Single Dry Year Supply and Demand Comparison (DWR Table 7-3)**

| | 2020 | 2025 | 2030 | 2035 | 2040 (Opt) |
|---|---|---|---|---|---|
| Supply totals | 275,917 | 288,288 | 294,419 | 294,419 | 294,419 |
| Demand totals | 123,229 | 130,548 | 139,882 | 149,213 | 162,029 |
| Difference | 152,688 | 157,740 | 154,537 | 145,206 | 132,390 |
| NOTES: Volumes are in AF. | | | | | |

**Table 7-10. Wholesale: Single Dry Year Supply and Demand Comparison (DWR Table 7-3)**

| | 2020 | 2025 | 2030 | 2035 | 2040 (Opt) |
|---|---|---|---|---|---|
| Supply totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| Demand totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| Difference | 0 | 0 | 0 | 0 | 0 |
| NOTES: Volumes are in AF.<br>Demand is assumed to be 0 AFY for SSWD and 4,831 AFY for Cal Am. | | | | | |

### 7.4.3 Multiple Dry Year

In the City's base Multiple Dry Year period (1990-1992), runoff in the Sacramento Valley decreased by 50 percent, 46 percent, and 48 percent respectively. During the 1990 to 1992 drought, the American River experienced a river flow rate below Hodge Flow Criteria every month except July 1991. For the purposes of this UWMP, it is assumed that Hodge Flow Criteria is occurring during the entire three-year drought period. During Hodge Flow Conditions, diversion from the American River is limited at the FWTP. However, remaining American River entitlements may be diverted downstream at the SRWTP. Therefore, the Multiple Dry Year availability is assumed to be:

- First Year
  - The Maximum Combined Diversion specified for the year of surface water,
    - 25,205 AF of groundwater, and
    - 1,000 AF of recycled water.

- Second Year
  - The Maximum Combined Diversion specified for the year of surface water,
    - 25,205 AF of groundwater, and
    - 1,000 AF of recycled water.
- Third Year
  - The Maximum Combined Diversion specified for the year of surface water,
    - 25,205 AF of groundwater, and
    - 1,000 AF of recycled water

As shown in Tables 7-11 and 7-12, the City's Multiple Dry Year supplies are adequate to meet projected demands.

**Table 7-11. Retail: Multiple Dry Years Supply and Demand Comparison (DWR Table 7-4)**

| | | 2020 | 2025 | 2030 | 2035 | 2040 (Opt) |
|---|---|---|---|---|---|---|
| First year | Supply totals | 275,917 | 288,288 | 294,419 | 294,419 | 294,419 |
| | Demand totals | 123,229 | 130,548 | 139,882 | 149,213 | 162,029 |
| | Difference | 152,688 | 157,740 | 154,537 | 145,206 | 132,390 |
| Second year | Supply totals | 275,917 | 288,288 | 294,419 | 294,419 | 294,419 |
| | Demand totals | 123,229 | 130,548 | 139,882 | 149,213 | 162,029 |
| | Difference | 152,688 | 157,740 | 154,537 | 145,206 | 132,390 |
| Third year | Supply totals | 275,917 | 288,288 | 294,419 | 294,419 | 294,419 |
| | Demand totals | 123,229 | 130,548 | 139,882 | 149,213 | 162,029 |
| | Difference | 152,688 | 157,740 | 154,537 | 145,206 | 132,390 |
| NOTES: Volumes are in AF. | | | | | | |

**Table 7-12. Wholesale: Multiple Dry Years Supply and Demand Comparison (DWR Table 7-4)**

| | | 2020 | 2025 | 2030 | 2035 | 2040 (Opt) |
|---|---|---|---|---|---|---|
| First year | Supply totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| | Demand totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Second year | Supply totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| | Demand totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Third year | Supply totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| | Demand totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| NOTES: Volumes are in AF.<br>Demand is assumed to be 0 AFY for SSWD and 4,831 AFY for Cal Am. | | | | | | |

### 7.4.4 Supply and Demand Assessments Beyond 2040

To meet the 20-year planning requirements for future water supply assessments, the City has decided to include supply and demand assessments to the year 2045 in its 2015 UWMP. As shown in Section 7-4, the City's retail supply and demand comparison for normal, single dry, and multiple dry years show a surplus of supply available.

The City's 2045 projected retail supply is 294,419 AF for all year types and 2045 projected retail demand is 175,841 AF which results in a difference of 118,578 AFof surplus supply. In normal year conditions, the City's 2045 projected wholesale demand and supply totals are both 58,586 AF, for a difference of 0 AF. For multiple dry year conditions, 2045 projected wholesale demand and supply totals are both 35,693 AF, for a difference of 0 AF.

The City has adequate supply available to meet retail and wholesale demands under all supply conditions in 2045.

## 7.5 REGIONAL SUPPLY RELIABILITY

The City and two other local water purveyors have developed mutual aid agreements which allow the City to purchase non-firm emergency supply through existing interties on an as-needed basis. The agreements are non-firm, and not considered a wholesale, import, exchange, or transfer water supply.

As shown in Table 6-16, the City purchased 659 AF of mutual aid water in 2015. Mutual aid agreements are non-firm and therefore not included as a projected water supply.

All water consumed by the City comes from local supply sources. No water is imported from other regions, nor does the City anticipate importing water from other regions throughout the UWMP planning period.

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This chapter describes the City's strategic planning process to prepare for and respond to water shortages. The description includes the actions and stages described in the Water Shortage Contingency Plan (WSCP) that will be implemented in the event of a water supply shortage, the City's ordinance prohibiting water waste, estimated three-year minimum water supply, and the emergency preparedness and plans for catastrophic events.

The City does not have a separate WSCP specific to its wholesale customers. Each of the City's wholesale customers maintain their own WSCPs which will be reported in their respective UWMPs. The City's wholesale agreements address the individual availability of wholesale water to each customer based on any restrictions to the City's American River water rights.

## 8.1 STAGES OF ACTION

The WSCP establishes actions and procedures for managing water supply and water demand during declared water shortages. The City's original WSCP was adopted by City Council on January 28, 1992. The purpose of the WSCP is to minimize non-essential uses of water and conserve remaining supplies for the greatest public benefit. Section 13.04.910 of the City Code authorizes the City Council, by resolution, to declare the existence of a water shortage and impose revised or additional restrictions on water use and consumption reduction methods while the water shortage remains in effect.

On November 20, 2014, the RWA held a workshop with water providers in the Sacramento region to develop a regional water shortage stage template to assist water providers in the development of their WSCPs. A copy of the workshop summary report is included in Appendix L.

With this UWMP, the City updates the names of its water conservation stages to align with the regional water shortage stage template. Table 8-1 and 8-2 include a summary of the four updated stages with their corresponding water use reduction objectives and water supply conditions. Stage 1 is the least prohibitive while Stage 4 is the most prohibitive. The City does not have a separate WSCP specific to its wholesale customers and therefore Table 8-2 is the same as reported for their retail system. Each of the City's wholesale customers maintain their own WSCPs which will be reported in their respective UWMPs.

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**Table 8-1. Retail: Stages of Water Shortage Contingency Plan (DWR Table 8-1)**

| Stage | Complete Both | |
|---|---|---|
| | Percent Supply Reduction[1] | Water Supply Condition |
| 1 | Up to 20% | Water Alert |
| 2 | Up to 30% | Water Warning |
| 3 | Up to 40% | Water Crisis |
| 4 | Up to 50% | Water Emergency |
| [1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.* | | |

**Table 8-2. Wholesale: Stages of Water Shortage Contingency Plan (DWR Table 8-1)**

| Stage | Complete Both | |
|---|---|---|
| | Supply Reduction[1] | Water Supply Condition (*Narrative description*) |
| 1 | Up to 20% | Water Alert |
| 2 | Up to 30% | Water Warning |
| 3 | Up to 40% | Water Crisis |
| 4 | Up to 50% | Water Emergency |
| [1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.* | | |
| NOTES: The City does not have a separate WSCP specific to its wholesale customers. Each of the City's wholesale customers maintain their own WSCPs which will be reported in their respective UWMPs. | | |

Year-round mandatory water conservation efforts are outlined in Article XI (Outdoor Water Conservation) of Chapter 13.04 of the City's Municipal Code (Appendix M). As addressed below, water conservation measures, use restrictions, and consumption reduction methods for each water shortage stage are adopted by resolution. For example, the City passed Resolution No. 2014-0018 on January 14, 2014, which declared the City to be in a water shortage condition, and triggered Stage 2 of the City's WSCP. On April 25, 2014, Governor Jerry Brown signed a proclamation of a continued drought "State of Emergency in California". With the drought continuing into 2015, on April 1, 2015 the Governor issued Executive Order B-29-15 which implemented additional water use restrictions and other measures intended to reduce potable urban water usage statewide by 25 percent through February of 2016. On July 15, 2014, SWRCB adopted drought-related emergency regulations for urban water conservation throughout the state including prohibition of some uses of potable water except where necessary to address an immediate health and safety

need. In response to the Governor's Executive Order and the SRWCB prohibitions, the City adopted Ordinance No. 2015-011 on May 11, 2015 (Appendix N) to update the City's Code to include prohibited water uses that were not already a part of the City's Code, including adding the prohibition of use of potable water in a fountain or decorative feature unless the water is recirculated. In addition, the City adopted Resolution No. 2015-0162 (Appendix N) on June 2, 2015 which declared ongoing Stage 2 water shortage conditions and outlined Stage 2 water conservation measures and water use restrictions above and beyond the current City Code. The City remained in water conservation Stage 2 through 2015.

## 8.2 PROHIBITIONS ON END USES

Waste water runoff is prohibited by the City in Article XI (Outdoor Water Conservation) of Chapter 13.04 of the City Code (Appendix M). To promote water conservation, reduce water use, and increase water use efficiency, the City Code prohibits:

- The use of water to wash down sidewalks, driveways, or parking areas.
- The waste of water from leaky water lines or fixtures.
- Water runoff.
- Residential car washing with a hose unless the hose is equipped with an automatic shutoff nozzle attachment, and the attachment is being used to shut off the flow of water at all times when the hose is not being used to wash the vehicle.
- Outdoor irrigation for residential or commercial purposes between 10 a.m. and 7 p.m. Additionally, while daylight savings time is in effect, irrigation is limited to three days per week when not in a declared water shortage, based on the street address, with no watering allowed on Mondays.[1] Outdoor irrigation is restricted to one day per week when daylight savings time ends. This
- Use of a fountain or decorative feature unless it uses a recycling system.
- Landscape irrigation during and within 48 hours after measurable rainfall.

When the City declares a water shortage, specific water use prohibitions are adopted by resolution. A summary of the restrictions and prohibitions on end users that the City may adopt in different stages of the WSCP are summarized in Table 8-3. The City Council may determine not to impose all available restrictions and prohibitions or may impose prohibitions and restrictions that are not listed in Table 8-3. Consumption reduction methods, or actions taken by the City to reduce water demand, are addressed below and can also be included in water shortage resolutions. It should be noted that the actions included in each stage are cumulative, meaning, for example, that if Stage 3 of the WSCP is implemented, implementation of all of the measures in Stages 1 and 2 is assumed, unless altered by the City Council.

[1] During the water shortage condition declared in 2014 and continuing through 2015, this was reduced to two days per week by resolution.

## 8.3 PENALTIES, CHARGES, OTHER ENFORCEMENT OF PROHIBITIONS

A high level of water use is not necessarily an excessive or wasteful use, but the ability to measure metered water use is a critical part of an effective water management program. Because many of the City's residential customers are unmetered and are billed for water use based on a monthly flat-rate, high levels of water use by an individual residential customer cannot always be identified or billed. However, the number of residential users receiving metered billing will continue to increase as the City completes its water meter program, which is currently scheduled for completion in 2020. High water use levels by non-residential customers can be identified because nearly all of the City's non-residential connections are already billed on a metered basis.

As noted above, the City prohibits numerous water usage practices as a misuse of City water. If any person violates the City's mandatory water conservation measures (as outlined in Article XI of Chapter 13.04 of the City Code or by City Council resolution during a water shortage condition) in any 12-month period, the following applies:

- For the first violation, regardless of water conservation stage, the owner and the occupant (if different than the owner) of the premises where the violation occurred shall be issued a written notice describing the violation and the penalties imposed for subsequent violations.
- For the second violation, in a normal water supply year, the owner and the occupant (if different than the owner) of the premises shall be issued another written notice describing the violation and a penalty charge of $25. This penalty can be removed from the water service bill for the premises if the owner, or the occupant (if different than the owner, and the occupant committed the violation), attends a water conservation seminar offered by the department within sixty (60) days after the date of the penalty notice; provided that only one removal of this penalty shall be allowed for the premises within any twenty-four (24) month period.
- For the third violation in a normal water supply year, the owner and the occupant (if different than the owner) of the premises where the violation occurred shall be issued another written notice describing the violation and a penalty charge of $100.
- For the fourth violation in a normal water supply year, the owner and the occupant (if different than the owner) of the premises where the violation occurred shall be issued another written notice describing the violation and a penalty charge of $500.

The penalty amounts listed above are doubled during a declared water shortage. After the notice of violation is issued, the penalty amount is included on the water service bill for the premises and must be used by the department to fund water conservation programs.

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### Table 8-3. Retail Only: Restrictions and Prohibitions on End Uses (DWR Table 8-2)

| Stage | Restrictions and Prohibitions on End Users | Additional Explanation or Reference *(optional)* | Penalty, Charge, or Other Enforcement? |
|---|---|---|---|
| 1 | Landscape - Prohibit certain types of landscape irrigation | Reduce irrigation of parks and cemeteries. | Yes |
| 2 | Landscape - Other landscape restriction or prohibition | Reduce irrigation of parks and cemeteries. | Yes |
| 2 | Other - Require automatic shut of hoses | Shut-off valves required on all hoses used for irrigation purposes, City parks, and other City facilities | Yes |
| 2 | Landscape - Limit landscape irrigation to specific days | Two day/week irrigation schedule | Yes |
| 2 | Landscape - Other landscape restriction or prohibition | The irrigation of new landscaping shall be subject to the same restrictions as existing landscaping (i.e. the provisions allowing irrigation of new landscaping for a period of 21 days after planting will no longer apply). | Yes |
| 2 | Landscape - Prohibit certain types of landscape irrigation | Irrigation of ornamental turf on public street medians with potable City water will be prohibited | Yes |
| 2 | Other | Prohibit all public water uses not required for health and safety | Yes |
| 3 | Landscape - Limit landscape irrigation to specific days | One day/week irrigation, manual only | Yes |
| 3 | Landscape - Prohibit certain types of landscape irrigation | Prohibit automatic sprinklers | Yes |
| 3 | Landscape - Limit landscape irrigation to specific times | Limit irrigation hours | Yes |
| 3 | Landscape - Prohibit certain types of landscape irrigation | Reduce irrigation of parks and cemeteries. | Yes |
| 3 | Other | Prohibit car washing | Yes |
| 4 | Landscape - Other landscape restriction or prohibition | Prohibit outdoor irrigation of residential turf | Yes |
| 4 | Landscape - Prohibit certain types of landscape irrigation | Reduce irrigation of parks and cemeteries. | Yes |

NOTES:
Revised or additional prohibitions may be adopted by City Council Resolution.
The actions included in each stage are cumulative, meaning, for example, that if Stage 2 of the Water Shortage Contingency Plan is implemented, all of the measures in Stages 1 and 2 shall be implemented, unless altered by the City Council.

## 8.4 CONSUMPTION REDUCTION METHODS

Consumption reduction methods are actions that are taken by the City to reduce water demand in its service area. When the City declares a water shortage, specific consumption reduction methods are adopted by resolution. Each urban water supplier may use any type of consumption reduction method in its WSCP that will reduce water use, is appropriate for the service area, and has the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply. CWC Section 10632 (a)(5) requires the water supplier to provide consumption reduction methods in the most restrictive stages of a water shortage. In the event of a 50 percent reduction for a single year, the City will continue with Normal and Stage 1 through 3 rationing measures, mandate adherence to Stage 4 measures, intensify the public information campaign with regular updates on the emergency, and monitor and enforce compliance.

A summary of the consumption reduction methods the City may adopt at different stages of the WSCP are summarized in Table 8-4. The City Council may determine not to impose all available methods or may include additional consumption reduction methods that are not listed in Table 8-4. Prohibitions on end users, or limitations on customers regarding specific uses of water, are discussed above and can also be included in water shortage resolutions.

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**Table 8-4. Retail Only: Stages of Water Shortage Contingency Plan – Consumption Reduction Methods (DWR Table 8-3)**

| Stage | Consumption Reduction Methods by Water Supplier | Additional Explanation or Reference *(optional)* |
|---|---|---|
| 1 | Other | Declare a Stage 1 water shortage by resolution |
| 1 | Other | Request customers reduce water by 10 to 20 percent |
| 1 | Expand Public Information Campaign | Initiate public information campaign and explain water conservation measures |
| 1 | Increase Water Waste Patrols | |
| 1 | Other | Enforce public fire hydrant use regulations |
| 1 | Other | Enforce irrigation schedule |
| 2 | Other | Declare a Stage 2 water shortage by resolution |
| 2 | Other | Require customers to reduce consumption by up to 30 percent |
| 2 | Expand Public Information Campaign | Intensify the public information campaign to inform customers of the need for water conservation |
| 2 | Increase Water Waste Patrols | |
| 2 | Decrease Line Flushing | Main flushing for emergency purposes only |
| 3 | Other | Declare a Stage 3 water shortage by resolution |
| 3 | Other | Require customers to reduce consumption by up to 40 percent |
| 3 | Expand Public Information Campaign | |
| 3 | Other | Intensify leak detection program |
| 4 | Other | Declare a Stage 4 water shortage by resolution |
| 4 | Other | Require customers to reduce consumption by up to 50 percent |
| 4 | Expand Public Information Campaign | |

NOTES:
Additional consumption reduction methods may be declared by City Council Resolution.
The actions included in each stage are cumulative, meaning, for example, that if Stage 2 of the Water Shortage Contingency Plan is implemented, all of the measures in Stages 1 and 2 shall be implemented, unless altered by the City Council.

## 8.5 DETERMINING WATER SHORTAGE REDUCTIONS

CWC Section 10632 (a)(9) requires the water supplier to develop a mechanism for determining actual reductions in water use in the course of carrying out the urban water supply shortage contingency analysis.

Actual reductions in water use are determined differently for metered and non-metered accounts. The City plans to complete water meter installations on all accounts in 2020. The effectiveness of the City's water conservation program for metered accounts can be determined based on meter readings. For unmetered accounts, and the service area as a whole, reductions in water use must be determined by measuring daily and monthly surface water and groundwater production. The City's water supply and system demands are accurately monitored and tracked at the City's two water treatment plants. Once the City is fully metered and all customers have transitioned to metered billing, water reductions can be determined based on meter readings. The City includes estimates for unmetered usage by extrapolating metered water use per account (grouped by similar services account) to the unmetered accounts. The combined metered and unmetered extrapolated values are compared against overall production measurements and leak detection efforts to validate the method.

Under normal water supply conditions, water production figures are recorded daily by the City. When a water shortage is declared, the water production is tracked to determine if the goals for each stage are being achieved.

Monitoring involves determining the per capita water use for residential users and the water use per account for non-residential customer categories.

## 8.6 REVENUE AND EXPENDITURE IMPACTS

CWC Section 10632 (7) requires an analysis of the impacts of each of the actions taken for conservation and water restriction on the revenues and expenditures of the water supplier.

On March 29, 2016, the City approved Ordinance No. 2016-0015 (Appendix O), amending the City's water rate schedule to establish a rate schedule with annual rate increases through June 2020, which includes a service charge and a uniform volumetric charge for metered water service. This structure attempts to accurately charge customers for the cost of delivered potable water and move the City closer to achieving system reliability and sustainability and meeting industry best practices for system replacement. The rate structure is such that the majority of the City's water revenue is generated from hard costs (cost per connection – i.e., service charges), and not volumetric usage, which means that the City's revenues are not highly dependent on the volume of water its customers use. Billing customers under this rate structure helps mitigate lost revenue from reduced water deliveries during the present drought and future droughts. The City estimates that the impact from the current drought has been a 4 percent drop in revenue cumulatively since January 2014 – totaling $11.3 million. This revenue reduction was sufficiently absorbed through a corresponding short term reduction in Operation and Maintenance (O&M) costs. However, the recently adopted rates account for lost revenue from lower water use and reduce the impact to the City's revenue stream.

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## 8.7 RESOLUTION OR ORDINANCE

The City has passed several ordinances and resolutions to address water conservation.

City Council can amend the City Code by adopting an ordinance. On May 12, 2015, the City adopted Ordinance No. 2015-0011 to amend Article XI (Outdoor Water Conservation) of Chapter 13.04 of the City Code in response to State-wide water conservation requirements. A copy of the ordinance is included in Appendix N. The City Code, including language from previously adopted ordinances is available online at http://www.qcode.us/codes/sacramento/.

City Council can declare a water shortage emergency by adopting a resolution. Prohibitions on end users and consumption reduction methods are both addressed in WCSP resolutions, combining elements of Tables 8-3 and 8-4 above. On January 14, 2014, the City adopted Resolution 2014-0018 to declare Stage 2 water shortage conditions, and define the water use restrictions and consumption reduction methods. On June 17, 2014 the City adopted Resolution 2014-0209 to declare continuing water shortage and implement additional water conservation restrictions. On June 2, 2015, the City approved Resolution 2015-0162 (Appendix N) which details additional conservation measures to be undertaken during the ongoing Stage 2 conditions to address the Governor's Executive Order B-29-15.

In the future, the City may pass a resolution declaring a change in water shortage conditions. As required by Section 10632 (a)(8) of the CWC, a draft resolution that could be adapted as needed in the future is included in Appendix P.

## 8.8 CATASTROPHIC SUPPLY INTERRUPTION

CWC Section 10632 (3) requires actions to be undertaken by the water supplier to prepare for and implement during a catastrophic interruption of water supplies.

### 8.8.1 Emergency Operations Plan

The City is included in Sacramento County's 2013 Emergency Operations Plan (available online: http://www.sacramentoready.org/Documents/SacCountyEOPBasicFinal3_30_13.pdf), with a stated purpose to "provide the basis for a coordinated response before, during, and after a disaster incident affecting the County of Sacramento." The operational priorities are stated in this order: save lives, protect health and safety, protect property, and preserve the environment. The plan contains the following sections:

- Purpose, Scope, Situation and Assumptions
- Concept of Operations
- Organization and Assignment of Responsibilities
- Direction, Control and Coordination
- Information Collection and Dissemination

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- Communications
- Administration, Finance and Logistics
- Preparedness, Training and Exercises

The plan also states that within one day to one week after a disaster event, the water lines in the county must be assessed for detailed damage.

The City's Office of Emergency Services (OES) coordinates the planning, preparedness, communication, response, and recovery during man-made or natural disasters. Additional information on the OES can be located online: http://www.cityofsacramento.org/Emergency-Services. The City has its own Emergency Operations Plan from April 2005. This plan discusses the effects of many disasters, such as floods, earthquakes, power outages, fires, severe heat, and severe cold on the City's water resources. The document states that the City maintains over 120 generators ranging from 9 kW to 3,250 kW. Portable generators could be used at some of the City's water supply facilities in order to maintain a minimum level of water service during the emergency. Both of the City's water treatment plants and all select critical sites of the pump stations have backup generators. None of the City's wells are equipped with backup power although some of the wells have plugs for generators.

### 8.8.2 Emergency Exchanges with Other Agencies

The City provides wholesale water to four of its neighboring agencies and has multiple interties with the agencies as discussed in Section 3.3.2. In addition to the wholesale agreements with these agencies, the City has entered into mutual aid agreements with SSWD and SCWA. These mutual aid agreements allow the City to purchase non-firm water supplies during emergency periods. The City may purchase up to 20 MGD of emergency non-firm supply from SSWD, and up to 8 MGD of emergency non-firm supply from SCWA

There are also approximately 17 additional unmetered physical connections to Fruitridge Vista Water Co, SCWA, Cal Am Water, and Florin County Water Agency. These consist of closed valves on 6-12" diameter water mains. There is not a current estimate for the capacity of these mutual aid connections.

## 8.9 MINIMUM SUPPLY NEXT THREE YEARS

All water agencies are required to provide an estimate of the minimum retail and wholesale water supply available during each of the next three water years, 2016, 2017, and 2018 as shown in Table 8-5 and Table 8-6. The supplies shown in the table are the sum of all the City's supplies expected to be available in the next three years if drought conditions persist (i.e., assuming hydrologic conditions would be similar to historic multiple dry year periods). The minimum retail supply assumes the City's maximum diversion from Sacramento and American River and firm groundwater capacity are available minus the existing wholesale agreements. The minimum wholesale supply assumes Hodge conditions exist along the American River and therefore, SSWD does not receive any wholesale water from the City.

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**Table 8-5. Retail: Minimum Supply Next Three Years (DWR Table 8-4)**

| | 2016 | 2017 | 2018 |
|---|---|---|---|
| Available Water Supply | 273,362 | 278,362 | 283,862 |
| NOTES: Volumes are in AF. Minimum supply is based on the City's Maximum Annual Diversion as shown in the USBR Schedule A Settlement Contract and firm groundwater available minus the existing wholesale demands. | | | |

**Table 8-6. Wholesale: Minimum Supply Next Three Years (DWR Table 8-4)**

| | 2016 | 2017 | 2018 |
|---|---|---|---|
| Available Water Supply | 9,343 | 9,343 | 9,343 |
| NOTES: Volumes are in AF. Volumes shown are based on existing wholesale agreements and Hodge conditions in the American River. | | | |

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This chapter describes the City's historical and existing water conservation program, status of implementation of Demand Management Measures (DMMs), and projected future conservation implementation.

In previous UWMPs, a substantial amount of data was required to document a water supplier's progress in implementing fourteen specific DMMs. In 2014, Assembly Bill 2067 simplified, clarified, and updated reporting requirements for DMMs. Starting with this 2015 UWMP, focus has turned away from detailed descriptions of each of the fourteen DMMs and has turned to key water conservation measures that are being implemented to achieve compliance with SB X7-7. For retail agencies, the number of DMMs has been reduced from fourteen to six (plus an "other" category). For wholesale agencies, the number of DMMs was reduced to three specific measures (plus an "other" category), as well as a requirement for a narrative description of asset management and wholesale supplier assistance programs. A narrative description of the status of the DMMs and how the DMMs will help the water supplier achieve its SB X7-7 water use targets is required.

## 9.1 WATER CONSERVATION PROGRAM OVERVIEW

The California Urban Water Conservation Council (CUWCC) was created to increase efficient water use statewide. CUWCC's goal is to integrate urban water conservation Best Management Practices (BMPs) into the planning and management of California's water resources. A Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) was developed and has been signed by over 150 water suppliers and other concerned parties. The City signed the MOU in 1995 and is therefore a member of the CUWCC. The purpose of the MOU was to expedite implementation of reasonable water conservation measures in urban areas and to establish appropriate assumptions for use in calculating estimates of reliable future water conservation savings. The MOU includes definitions, implementation, requirements, and water savings assumptions for each BMP (another term for DMM).

In accordance with the MOU, the City files bi-annual reports to the CUWCC outlining progress towards implementing the BMPs. CUWCC members can submit their most recent BMP Report with their UWMP to address the urban water conservation issues in the UWMPA. The City's CUWCC Annual Reports for 2013 and 2014 are included in Appendix Q.

The City's Water Conservation Plan was approved by City Council on October 29, 2013, and is included in Appendix R. The Water Conservation Plan is a living document that communicates the City's approach to water conservation implementation to meet its water use reduction targets outlined in Chapter 5 and fulfill the commitments the City has made to its customers and the CUWCC.

## 9.2 RETAIL DEMAND MANAGEMENT MEASURES

The six retail DMMs required for the 2015 UWMP include the following:

- Water waste prevention ordinances
- Metering

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- Conservation pricing
- Public education and outreach
- Programs to assess and manage distribution system real loss
- Water conservation program coordination and staffing support

This section provides a description of the water conservation programs that are currently implemented and those planned to be implemented in the future. For each DMM, the current program is described, followed by a description of how the DMM was implemented over the previous five years and future implementation plans.

### 9.2.1 Water Waste Prevention Ordinances

The City prohibits water waste within its service area. The City adopted a WSCP in 1992 to minimize non-essential uses of water and conserve remaining supplies for the greatest public benefit. In addition, the City Code (Title 13 Public Services, Chapter 13.04 Water Service System, and Water Conservation) defines water waste runoff and associated penalties for violations. A copy of the pertinent sections of the City Code is included in Appendix M and summarized in Section 8.2. The City Code can be amended when the City Council adopts an ordinance. A water conservation ordinance was adopted in December 2009, and was further amended in May 2015 with the passing of Ordinance No. 2015-0011, "*An Ordinance Amending and Adding Various Sections in Chapters 13.04 and 13.12 of the Sacramento City Code, Relating to Water Service Connections, Outdoor Water Conservation, Utility Billing and Collection, and Utility Service Termination*" (Appendix N). The May 2015 ordinance updated the City's Code to include prohibited water uses included in the SWRCB's July 2014 drought-related emergency regulations that were not already a part of the City's Code.

The City Council, by resolution, can declare the existence of a water shortage and adopt revised or additional water use prohibitions and consumption reduction methods above and beyond the existing City Code while the water shortage remains in effect. The City declared Stage 2 water shortage conditions with the passing of Resolution No. 2014-018, "*Declaring Continuing Water Shortage and Implementing Additional Water Conservation Restrictions."* In June 2015, the City declared ongoing Stage 2 water shortage conditions and additional restrictions with the passing of Resolution No. 2015-0162 "*Declaring Continuing Water Shortage and Implementing Additional Water Conservation Measures and Use Restrictions*" (Appendix N). When City Council declares any water shortage stage, the penalties for violating its outdoor use prohibitions are doubled.

The City regularly encourages reporting of water misuse. Residents may call the City's conservation hotline (916-264-5011 or 311 from within the City), use the free 311 app for Android and iPhone, or send an email to 311@cityofsacramento.org.The number of water misuse reports received by the City from 2010 through 2015 is shown in Figure 9-1. A dramatic increase in the number of received reports occurred in 2014 and 2015. This increase in reports is due, in part, to the City's outreach campaign and expanded media coverage during the declared statewide drought.

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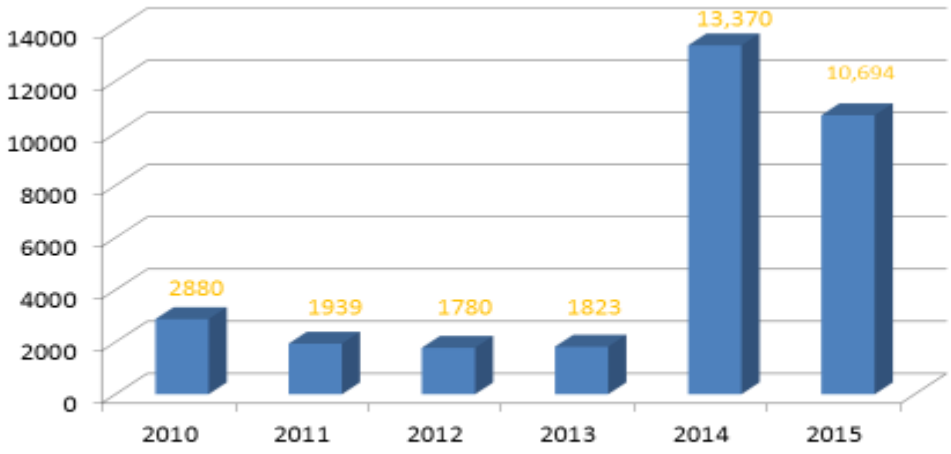
**Figure 9-1. Water Misuse Complaints, 2010-2015**




Implementation of this DMM is ongoing and expected to help the City achieve its water use targets by minimizing the nonessential uses of water so that water is available to be used for human consumption, sanitation, and fire protection.

### 9.2.2 Metering

The City's water system is not fully metered. CWC Section 527 requires the City to install water meters on all service connections on or before January 1, 2025. As of December 2015, the City has installed meters on approximately 65 percent of its customers and is on track to be fully metered by the end of calendar year 2020, four years ahead of the CWC deadline. The CUWCC MOU allows agencies to ask for exemptions during each reporting cycle if a program is not locally cost effective, if adequate funds are not and cannot be reasonably made available from sources accessible to the water supplier, or implementation of the BMP is not within the legal authority of the water provider. The City has filed an exemption to the CUWCC related to this DMM and BMP since it is not fully metered.

Though the City has submitted an exemption claim related to this DMM, it is committed to meeting the metering requirements in the future. Metered customers can be billed for the amount of water that the customer actually uses by implementing a volumetric rate structure. The City has a volumetric rate structure for metered users. Transitioning customers from flat rates to volumetric rates provides a financial incentive for water conservation, as discussed in the Conservation Pricing DMM. As additional metering is achieved, the City will monitor water usage characteristics of residential customers to ensure any new water rate structure is fair to customers and adequately recovers costs.

The City's goal is to be fully metered by the end of the calendar year 2020 with the potential for some construction projects continuing into 2021. The City has accelerated its meter implementation program by installing over 37,000 meters in the past 5 years. Now, over 65 percent of the customers have a meter installed. When current construction projects are completed by July 2016, an additional 5500 meters will be placed bringing the percentage of the City with meters to almost 70%. Table 9-1 shows the total number of installed meters from 2011 through 2015 and the number of new meters installed each year. Additional information on the City's metering program can be found on the City's website http://www.cityofsacramento.org/Utilities/Conservation/Water-Meters.

**Table 9-1. Meter Installations Between 2011 and 2015**

| Year | Total Meters | New Meters Installed[(a)] |
|---|---|---|
| 2011 | 58,772 | 8,204 |
| 2012 | 62,758 | 3,986 |
| 2013 | 63,089 | 331 |
| 2014 | 67,598 | 4,509 |
| 2015 | 87,745 | 20,147 |

(a) New meters installed represent meters physically in the ground. A portion of the meters may not be coded into the City's billing system and are therefore not represented as a metered account in the City's billing information.

Implementation of this DMM is expected to help the City achieve its water use targets by providing accurate water use information to the customers and the City.

### 9.2.3 Conservation Pricing

As mentioned in Chapter 8, the City adopted Ordinance No. 2016-0015 in March 2016, amending the City's water rate schedule through June 30, 2020 (Appendix O). The new rates continue the volumetric component of the City metered water service rates, with four annual rate increases through FY 2019-20.

Because the City is not fully metered and cannot implement volumetric pricing on all customers at this time, the City has submitted an exemption to the CUWCC related to this DMM and BMP. Though the City has submitted an exemption claim, it is committed to meeting the requirements of this BMP and, in time, set rates such that the City can recover up to 70 percent of the City's operating cost through volume sold. The City expects to be 90% metered by 2019 and can then implement volumetric pricing. Transitioning customers from flat rates to metered rates provides a financial incentive for water conservation, and tiered rates are expected to provide further incentive. In anticipation of becoming 90% metered, the City is currently conducting a rate analysis and evaluation of possible tiered water rate structures for possible implementation during fiscal year 2018. Upon completion of the volumetric water rate study, the Department of Utilities will seek recommendations from the Utilities Rate Advisory Commission and will provide updates to the City Council on possible tiered rate strategies and timelines.

Implementation of this DMM is expected to help the City achieve its water use targets.

### 9.2.4 Public Education and Outreach

The City promotes water conservation both independently and in coordination with the RWA.

The City is a long-time member of the RWA, which includes almost all of the region's water agencies and districts. The RWA member agencies share the common goal of collaborating on water management and water supply reliability programs. The City fully participates in the RWA Public Information Campaign which is coordinated with support from the Public Outreach and School Education Committee made up of RWA member agencies' conservation coordinators and Public Information Officers.

In 2010, the RWA and its member agencies announced a new social media public outreach and advertising campaign called "Blue Thumb." In early 2014, with the region and state in a continued drought, the campaign was rebranded to "How Low Can You Go?" In 2015, the regional campaign focused on overcoming myths about water use at home and educating residents about specific actions to reduce water use. The 2015 campaign was titled, "Water Myths Busted!"

RWA outreach over the past five years has focused on helping customers use less water outdoors. A recent RWA regional public opinion survey uncovered gaps in knowledge about where and how much water is used at home. 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, it is estimated that 30 percent is lost due to overwatering or evaporation. The target of the campaign messaging includes a call for customer behavioral changes in watering practices.

RWA's campaign also involves the promotion of the web site BeWaterSmart.info where visitors can find out more information on how to use water wisely. The website was recently expanded to be a more comprehensive water conservation related site.

RWA continues to work with member agencies, including the City, on a regional outreach messages appropriate for the current year's water outlook.

In addition to its efforts with RWA, the City maintains its own outreach efforts. The City's Water Conservation page is available on the City's website at http://www.cityofsacramento.org/Utilities/Conservation. This website provides public information on current conservation issues including:

- **Calendar** with information on several workshops which provide tips on irrigation and the City's water conservation program.
- **Frequently asked questions** which answers questions about drought and water conservation.
- **Rebate** programs offered by the City for both residential and commercial customers which is discussed more in Section 9.3.
- **Restaurant** partner list of local restaurants saving water by only serving water upon request.

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- **Water conservation codes** which provides the latest information on what water shortage stage the City is currently in and the information on the various resolutions and ordinances in place.
- **Water Conservation Services** which lists the City's several programs to help residential and commercial business save water.
- **Water Meters** which provides information on the City's accelerated water meter program.
- **Drought champion program** which is in conjunction with RWA to thank residents and business for their outstanding water conservation efforts.

In addition to the information on its website, the City also utilizes social media, including Facebook, Twitter, and Next Door, to advertise conservation messaging. The City also maintains a blog, the City Express, which also provides public education and outreach on water conservation.

Implementation of this DMM is expected to help the City continue to achieve its water use reduction targets by educating water users about the importance of water use efficiency and avoiding water waste. Please refer to BMP 2.1 in Appendix Q for further information.

### 9.2.5 Programs to Assess and Manage Distribution System Real Loss

A water audit is a process of accounting for water use throughout a water system in order to quantify the unaccounted-for water. Unaccounted-for water is the difference between metered production and metered consumption on a system-wide basis. As the City becomes more fully metered, it is more able to quantify unaccounted-for water. In addition, the City has a robust leak detection program. A fact sheet detailing the leak detection program is included in Appendix S. A leak detection program typically consists of both visual inspection as well as audible inspection. Visual inspection includes the inspection of distribution system appurtenances (e.g., fire hydrants, valves, meters, etc.) to identify obvious signs of leakage. To perform audible leak detection, specialized electronic listening equipment is used to detect the sounds associated with distribution system leakage. This process allows the agency to pinpoint the location of suspected leaks.

The City performs an annual water audit that conforms to the AWWA Method 36. The City's 2015 AWWA Water Loss Audit is included in Appendix E and summarized in Chapter 4.

Shortly after the City and the State declared a water shortage in 2014, the Department of Utilities added a second leak detection team. Adding a second team was highlighted in the City's 2013 Water Conservation Plan and originally planned for in fiscal year 2016. The City was able to accelerate its testing of its pipelines and inspect approximately 1,200 miles of pipeline every two years. In addition, City of Sacramento City Council voted to approve a rate increase beginning in 2016, which will allow the City to accelerate its meter installation program and become fully metered by the end of calendar year 2020. As part of this effort, all of the City's customers will become metered with AMI (Advanced Metering Infrastructure) meters, and older, leaking infrastructure will be replaced, which helps to reduce the gallons lost per service connection per day.

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Implementation of this DMM is ongoing and is a vital element of the City's Water Conservation Plan and will help the City achieve its water use targets by identifying sources of water loss quickly so repairs can be made and losses minimized.

### 9.2.6 Water Conservation Program Coordination and Staffing Support

The City has designated staff to actively develop, promote, enforce, and maintain water conservation programs. When the City originally signed the CUWCC MOU in 1995, a Utility Services Inspector position was created. In 2001, the City transitioned these responsibilities to a Water Conservation Administrator. The Water Conservation Administrator can be reached via email at waterconservation@cityofsacramento.org or by phone at (916)-808-1417.

In addition to managing the City's water conservation program, the Water Conservation Administrator supervises a water conservation program staff of eight full-time employees and two college interns. Full-time employees include three Water Conservation Representatives, three Water Conservation Specialists, one Administrative Technician, and one Customer Service Representative. The Water Conservation Office budget is approximately $3 million per year.

Implementation of this DMM is expected to help the City continue to achieve its water use targets by making implementation of the City's water conservation program a top priority.

## 9.3 OTHER DEMAND MANAGEMENT MEASURES

In addition to the six DMMs described above, the City also implements the following programs:

- Residential High Efficiency Toilet Rebate
- Residential High Efficiency Washing Machine Rebate
- Residential River-Friendly Landscape Rebate
- Residential Water Wise House Calls
- Commercial Water Wise Business Calls
- Commercial Rebates

### 9.3.1 Residential Conservation Programs

The activities of these various residential conservation programs are described in the following sections. Implementation of these programs is expected to help the City achieve its water use targets by reducing the amount of water consumed by its residential customers.

#### 9.3.1.1 Residential High Efficiency Toilet Rebate

The City provides up to $125 for a High Efficiency Toilet (HET). Rebates are subject to pre-inspection prior to toilet replacement. Rebate applications are available on the City's website.

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#### 9.3.1.2 Residential High Efficiency Washing Machine Rebate

The City provides up to a $125 rebate for replacement of an old clothes washer with a new CEE tier 3 or Energy Star® clothes washer. Rebate applications are available on the City's website.

#### 9.3.1.3 Residential River-Friendly Landscape Rebate

The City will rebate up to $1 per square foot for lawn replacement to water-efficient landscaping, up to a maximum of $2,550. The City provides rebates for installation of rain barrels and/or installation of "smart" irrigation system upgrades (such as drip irrigation and EPA WaterSense labeled Smart Irrigation Controllers). Rebates are subject to a post-replacement inspection. Rebate applications are available on the City's website.

#### 9.3.1.4 Residential Water Wise House Calls

The City provides a free home water use inspection service known as the Water Wise House Call Program. Inspections are conducted by trained water conservation technicians, and help identify potential water-savings for the customer. To schedule, customers can call the City's conservation hotline (916-264-5011 or 311 from within the City).

### 9.3.2 Commercial Conservation Programs

The City's programs to reduce commercial, industrial, and institutional customer's water consumption are described in the following sections. Implementation of these non-residential conservation programs is expected to help the City achieve its water use targets by reducing the amount of water consumed by commercial, industrial, and institutional customers.

#### 9.3.2.1 Commercial Water Wise Business Calls

Similar to Water Wise House Calls for residential customers, the City offers Water Wise Business Calls for commercial customers. Free house-calls are conducted by trained water conservation specialists, and help identify potential water-savings for the business. To schedule, businesses can call the City's conservation hotline (916-264-5011 or 311 from within the City).

#### 9.3.2.2 Commercial Rebates

The City offers a variety of rebates for commercial customers, including rebates for:

- Flushometer-style High Efficiency Toilets or Urinals
- Pre-rinse Spray Valves
- Air Cooled Ice Machines
- Cooling tower Controllers
- Connection-less food steamers

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- Dry Vacuum Pumps
- Laminar Flow Restrictors
- Up to $20,000 for installing water saving process improvements

All commercial rebates require a Water Wise Business Call and are subject to additional rules as outlined on the City's website.

## 9.4 WHOLESALE DEMAND MANAGEMENT MEASURES

The three wholesale agency DMMs required for the 2015 UWMP include the following:

- Metering;
- Public education and outreach; and
- Water conservation program coordination and staffing support.

In addition, a narrative of asset management and wholesale supplier assistance programs is required.

For each DMM, the current program is described, followed by a description of how the DMM was implemented over the previous five years.

### 9.4.1 Metering

The City's wholesale water deliveries are fully metered, and calibration is verified on an annual basis. All facilities are fully equipped with SCADA and security alarms, and are maintained by City mechanical, electrical, and instrumentation staff. Maintenance is performed per contract with the receiving wholesale customer.

### 9.4.2 Public Education and Outreach

As discussed in Section 9.2.4, the City fully participates in the RWA Public Information Campaign. The RWA members include three of the City's wholesale customers. The City's public education and outreach materials available its wholesale customers through the City's website.

### 9.4.3 Water Conservation Program Coordination and Staff Support

The City utilizes the same Water Conservation Program staff for wholesale conservation as it does for retail conservation. Retail Water Conservation Program Coordination and Staff Support is addressed in Section 9.2.6.

### 9.4.4 Asset Management

As infrastructure assets continue to age and deteriorate, the need to restore parts of the water system is becoming of higher importance. Significant portions of the water infrastructure including critical pipelines, reservoirs, wells, and treatment plants are approaching, or already passed, their designed life span. As a result, the City is utilizing an asset management process for its capital



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improvement program to systematically prioritize and rank its rehabilitation and replacement needs ensuring long-term infrastructure sustainability and its ability to maintain a reliable and high quality water supply. Much of DOU's asset management strategy focuses on core framework areas such as long-range planning, life-cycle costing, proactive operations and maintenance, long-term funding strategies, and capital replacement plans that provide the foundation for many asset management best practices.

### 9.4.5 Wholesale Supplier Assistance Programs

The City provides conservation assistance to its wholesale customers via participation in the RWA RWEP Advisory Committee. The City actively participates in the Program. The effectiveness of this DMM is determined by the work performed by the Water Conservation Administrator.

## 9.5 PLANNED IMPLEMENTATION TO ACHIEVE WATER USE TARGETS

Water conservation measures are a vital part of the City's overall plan to achieve, reliable, high quality, and cost-effective water supply for its customers. The City oversees its demand management measures and other public outreach activities for both retail and wholesale customers. As described above, the City has implemented a number of water conservation measures that include, but are not limited to the following: public information outreach, water conservation kits, device incentive rebate programs, and water conservation partnerships.

## 9.6 MEMBERS OF THE CALIFORNIA URBAN WATER CONSERVATION COUNCIL

In 1991 (amended September 16, 1999), an MOU regarding urban water conservation in California was made to formalize an agreement between DWR, water agencies, environmental organizations, and other interested groups to implement BMPs and make a cooperative effort to reduce the consumption of California's water resources. This MOU is administered by the CUWCC.

The City signed the MOU in 1995. The City's recent CUWCC compliance reports are included in Appendix Q.

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This chapter provides information regarding the notification, public hearing and adoption of the City's 2015 UWMP.

## 10.1 INCLUSION OF ALL 2015 DATA

Because 2015 is the first compliance year for SB X7-7, the 2015 UWMPs must contain data through the end of 2015. If a water supplier bases its accounting on a fiscal year (July through June) the data must be through the end of the 2015 fiscal year (June 2015). If the water supplier bases its accounting on a calendar year, the data must be through the end of the 2015 calendar year (December 2015).

As indicated in Section 2.4, the City uses a calendar year for water supply and demand accounting, and therefore this 2015 UWMP includes data through December 2015.

## 10.2 NOTICE OF PUBLIC HEARING

The City provided 60-day notice of the preparation of its 2015 UWMP, and notice of the 2015 UWMP Public Hearing to the cities and counties listed in Tables 10-1 and 10-2.

**Table 10-1. Retail: Notification to Cities and Counties (DWR Table 10-1)**

| City Name | 60 Day Notice | Notice of Public Hearing |
|---|---|---|
| Sacramento | ☑ | ☑ |
| **County Name** | **60 Day Notice** | **Notice of Public Hearing** |
| Sacramento County | ☑ | ☑ |

**Table 10-2. Wholesale: Notification to Cities and Counties (DWR Table 10-1)**

| City Name | 60 Day Notice | Notice of Public Hearing |
|---|---|---|
| Sacramento | ☑ | ☑ |
| **County Name** | **60 Day Notice** | **Notice of Public Hearing** |
| Sacramento County | ☑ | ☑ |

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Other agencies notified included the following:

- Sacramento County Water Agency
- Regional Water Authority
- Sacramento Groundwater Authority
- Sacramento Central Groundwater Authority
- California American Water Company
- Sacramento Suburban Water District
- Sacramento Regional County Sanitation District
- Fruitridge Vista Water Company
- Sacramento Water Conservation Advisory Group
- Rio Linda/Elverta Community Water District
- Del Paso Manor Water District
- Natomas Mutual Water Company
- Florin County Water District
- Tokay Park Water District

Public hearing notifications for adopting the Plan were published in the local newspaper and posted at City facilities. Copies of the published Notice of Preparation and Notice of Public Hearing are included in Appendix D.

## 10.3 PUBLIC HEARING AND ADOPTION

The City has encouraged community and public interest involvement in the Plan update through the use of public notices and web-based communication.

The public hearing provided an opportunity for City water users and the general public to become familiar with the 2015 UWMP and ask questions about its water supply, in addition to the City's continuing plans for providing a reliable, safe, high-quality water supply, and the adoption, implementation and economic impact of revised per capita water use targets. Copies of the draft 2015 UWMP were made available for public inspection at the Department of Utilities office, City Clerk's office, and the Central Sacramento public library.

This Plan was adopted by the City Council on June 21, 2016. A copy of the adopted resolution is included in Appendix T.

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## 10.4 PLAN SUBMITTAL

A hard copy of this 2015 UWMP will be submitted to DWR within 30 days of adoption and an electronic copy by July 1, 2016. The adopted 2015 UWMP will be submitted electronically to DWR using the WUEdata submittal tool. A CD or hardcopy of the adopted 2015 UWMP will also be submitted to the California State Library.

No later than 30 days after adoption, a copy of the adopted 2015 UWMP, including the Water Shortage Contingency Plan, will be provided to the cities and counties to which the City provides water.

## 10.5 PUBLIC AVAILABILITY

No later than 30 days after submittal to DWR, copies of this Plan will be available at the D.O.U office, City Clerk's office, and the Central Sacramento Public Library for public review during normal business hours. An electronic copy of this 2015 UWMP will also be available for review and download on the City's website.

## 10.6 AMENDING AN ADOPTED UWMP

If the City amends its 2015 UWMP, copies of amendments or changes to the plans will be submitted to DWR, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

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# APPENDIX A

## Legislative Requirements

- California Water Code – Urban Water Management Planning
- California Water Code – Sustainable Water Use and Demand Reduction

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# California Water Code
# Urban Water Management Planning

**California Water Code Division 6, Part 2.6.**
**Chapter 1. General Declaration and Policy** §10610-10610.4
**Chapter 2. Definitions** §10611-10617
**Chapter 3. Urban Water Management Plans**
Article 1. General Provisions §10620-10621
Article 2. Contents of Plans §10630-10634
Article 2.5. Water Service Reliability §10635
Article 3. Adoption And Implementation of Plans §10640-10645
**Chapter 4. Miscellaneous Provisions** §10650-10656

## Chapter 1. General Declaration and Policy

SECTION 10610-10610.4

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

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

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.

(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

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

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

## Chapter 2. Definitions

SECTION 10611-10617

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

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

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

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

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

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses,

reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

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

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

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

## Chapter 3. Urban Water Management Plans

### Article 1. General Provisions

SECTION 10620-10621

10620. (a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

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

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

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that

share a common source, water management agencies, and relevant public agencies, to the extent practicable.

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

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621. (a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero, except as provided in subdivision (d).

(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before 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.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

(d) Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.

**Article 2. Contents of Plan**

SECTION 10630-10634

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

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

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

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

water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) (1) 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.

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

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

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

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(J) Distribution system water loss.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(3) (A) For the 2015 urban water management plan update, the distribution system water loss shall be quantified for the most recent 12-month period available. For all subsequent updates, the distribution system water loss shall be quantified for each of the five years preceding the plan update.

(B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.

(4) (A) If available and applicable to an urban water supplier, water use projections may display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.

(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:

(i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.

(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) (A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:

(i) Water waste prevention ordinances.

(ii) Metering.

(iii) Conservation pricing.

(iv) Public education and outreach.

(v) Programs to assess and manage distribution system real loss.

(vi) Water conservation program coordination and staffing support.

(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.

(2) For an urban wholesale water supplier, as defined in Section 10608.12, a narrative description of the items in clauses (ii), (iv), (vi), and (vii) of subparagraph (B) of paragraph (1), and a narrative description of its distribution system asset management and wholesale supplier assistance programs.

(g) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water

use, as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs 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.

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

(i) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivision (f) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.

(j) An urban water supplier that relies 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).

10631.1. (a) 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.

(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirement under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

10631.2. (a) In addition to the requirements of Section 10631, an urban water management plan may, but is not required to, include any of the following information:

(1) An estimate of the amount of energy used to extract or divert water supplies.

(2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.

(3) An estimate of the amount of energy used to treat water supplies.

(4) An estimate of the amount of energy used to distribute water supplies through its distribution systems.

(5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.

(6) An estimate of the amount of energy used to place water into or withdraw from storage.

(7) Any other energy-related information the urban water supplier deems appropriate.

(b) The department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems. The department may consider studies and calculations conducted by the Public Utilities Commission in developing the methodology.

10631.5. (a) (1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the federal American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has

submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4) (A) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, "not locally cost effective" means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b) (1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2) (A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

(i) Compliance on an individual basis.

(ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.

(B) The department may require additional information for any determination pursuant to this section.

(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

(c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).

(d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.

(e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

(f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statute, that is enacted before July 1, 2016, deletes or extends that date.

10631.7. The department, in consultation with the California Urban Water Conservation Council, shall convene an independent technical panel to provide information and recommendations to the department and the Legislature on new demand management measures, technologies, and approaches. The panel shall consist of no more than seven members, who shall be selected by the department to reflect a balanced representation of experts. The panel shall have at least one, but no more than two, representatives from each of the following: retail water suppliers, environmental organizations, the business community, wholesale water suppliers, and academia. The panel shall be convened by January 1, 2009, and shall report to the Legislature no later than January 1, 2010, and every five years thereafter. The department shall review the panel report and include in the final report to the Legislature the department's recommendations and comments regarding the panel process and the panel's recommendations.

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

(1) 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 that are applicable to each stage.

(2) 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.

(3) 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.

(4) 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.

(5) 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.

(6) Penalties or charges for excessive use, where applicable.

(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), 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.

(8) A draft water shortage contingency resolution or ordinance.

(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

(b) Commencing with the urban water management plan update due July 1, 2016, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

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

(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

(e) 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.

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

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

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

**Article 2.5. Water Service Reliability**

SECTION 10635

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

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

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

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

**Article 3. Adoption and Implementation of Plans**

SECTION 10640-10645

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

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

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

After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

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

10644. (a) (1) 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.

(2) The plan, or amendments to the plan, submitted to the department pursuant to paragraph (1) shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.

(b) (1) Notwithstanding Section 10231.5 of the Government Code, the department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part.

The report prepared by the department shall identify the exemplary elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

(2) A report to be submitted pursuant to paragraph (1) shall be submitted in compliance with Section 9795 of the Government Code.

(c) (1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report water demand management measures adopted and implemented by specific urban water suppliers, and identified pursuant to Section 10631, that achieve water savings significantly above the levels established by the department to meet the requirements of Section 10631.5.

(2) The department shall distribute to the panel convened pursuant to Section 10631.7 the results achieved by the implementation of those water demand management measures described in paragraph (1).

(3) The department shall make available to the public the standard the department will use to identify exemplary water demand management measures.

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

## Chapter 4. Miscellaneous Provisions

### SECTION 10650-10656

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

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

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

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

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

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

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

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

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

(commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

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# California Water Code
# Sustainable Water Use and Demand Reduction

**California Water Code Division 6, Part 2.55.**

**Chapter 1. General Declarations and Policy** §10608-10608.8
**Chapter 2. Definitions** §10608.12
**Chapter 3. Urban Retail Water Suppliers** §10608.16-10608.44
**Chapter 4. Agricultural Water Suppliers** §10608.48
**Chapter 5. Sustainable Water Management** §10608.50
**Chapter 6 Standardized Data Collection** §10608.52
**Chapter 7 Funding Provisions** §10608.56-10608.60
**Chapter 8 Quantifying Agricultural Water Use Efficiency** §10608.64

## Chapter 1. General Declarations and Policy

SECTION 10608-10608.8

10608. The Legislature finds and declares all of the following:

(a) Water is a public resource that the California Constitution protects against waste and unreasonable use.

(b) Growing population, climate change, and the need to protect and grow California's economy while protecting and restoring our fish and wildlife habitats make it essential that the state manage its water resources as efficiently as possible.

(c) Diverse regional water supply portfolios will increase water supply reliability and reduce dependence on the Delta.

(d) Reduced water use through conservation provides significant energy and environmental benefits, and can help protect water quality, improve streamflows, and reduce greenhouse gas emissions.

(e) The success of state and local water conservation programs to increase efficiency of water use is best determined on the basis of measurable outcomes related to water use or efficiency.

(f) Improvements in technology and management practices offer the potential for increasing water efficiency in California over time, providing an essential water management tool to meet the need for water for urban, agricultural, and environmental uses.

(g) The Governor has called for a 20 percent per capita reduction in urban water use statewide by 2020.

(h) The factors used to formulate water use efficiency targets can vary significantly from location to location based on factors including weather, patterns of urban and suburban development, and past efforts to enhance water use efficiency.

(i) Per capita water use is a valid measure of a water provider's efforts to reduce urban water use within its service area. However, per capita water use is less useful for measuring relative water use efficiency between different water providers. Differences in weather, historical patterns of urban and suburban development, and density of housing in a particular location need to be considered when assessing per capita water use as a measure of efficiency.

10608.4. It is the intent of the Legislature, by the enactment of this part, to do all of the following:

(a) Require all water suppliers to increase the efficiency of use of this essential resource.

(b) Establish a framework to meet the state targets for urban water conservation identified in this part and called for by the Governor.

(c) Measure increased efficiency of urban water use on a per capita basis.

(d) Establish a method or methods for urban retail water suppliers to determine targets for achieving increased water use efficiency by the year 2020, in accordance with the Governor's goal of a 20-percent reduction.

(e) Establish consistent water use efficiency planning and implementation standards for urban water suppliers and agricultural water suppliers.

(f) Promote urban water conservation standards that are consistent with the California Urban Water Conservation Council's adopted best management practices and the requirements for demand management in Section 10631.

(g) Establish standards that recognize and provide credit to water suppliers that made substantial capital investments in urban water conservation since the drought of the early 1990s.

(h) Recognize and account for the investment of urban retail water suppliers in providing recycled water for beneficial uses.

(i) Require implementation of specified efficient water management practices for agricultural water suppliers.

(j) Support the economic productivity of California's agricultural, commercial, and industrial sectors.

(k) Advance regional water resources management.

10608.8. (a) (1) Water use efficiency measures adopted and implemented pursuant to this part or Part 2.8 (commencing with Section 10800) are water conservation measures subject to the protections provided under Section 1011.

(2) Because an urban agency is not required to meet its urban water use target until 2020 pursuant to subdivision (b) of Section 10608.24, an urban retail water supplier's failure to meet those targets shall not establish a violation of law for purposes of any state administrative or judicial proceeding prior to

January 1, 2021. Nothing in this paragraph limits the use of data reported to the department or the board in litigation or an administrative proceeding. This paragraph shall become inoperative on January 1, 2021.

(3) To the extent feasible, the department and the board shall provide for the use of water conservation reports required under this part to meet the requirements of Section 1011 for water conservation reporting.

(b) This part does not limit or otherwise affect the application of Chapter 3.5 (commencing with Section 11340), Chapter 4 (commencing with Section 11370), Chapter 4.5 (commencing with Section 11400), and Chapter 5 (commencing with Section 11500) of Part 1 of Division 3 of Title 2 of the Government Code.

(c) This part does not require a reduction in the total water used in the agricultural or urban sectors, because other factors, including, but not limited to, changes in agricultural economics or population growth may have greater effects on water use. This part does not limit the economic productivity of California's agricultural, commercial, or industrial sectors.

(d) The requirements of this part do not apply to an agricultural water supplier that is a party to the Quantification Settlement Agreement, as defined in subdivision (a) of Section 1 of Chapter 617 of the Statutes of 2002, during the period within which the Quantification Settlement Agreement remains in effect. After the expiration of the Quantification Settlement Agreement, to the extent conservation water projects implemented as part of the Quantification Settlement Agreement remain in effect, the conserved water created as part of those projects shall be credited against the obligations of the agricultural water supplier pursuant to this part.

## Chapter 2 Definitions

SECTION 10608.12

10608.12. Unless the context otherwise requires, the following definitions govern the construction of this part:

(a) "Agricultural water supplier" means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water. "Agricultural water supplier" includes a supplier or contractor for water, regardless of the basis of right, that distributes or sells water for ultimate resale to customers. "Agricultural water supplier" does not include the department.

(b) "Base daily per capita water use" means any of the following:

(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

(c) "Baseline commercial, industrial, and institutional water use" means an urban retail water supplier's base daily per capita water use for commercial, industrial, and institutional users.

(d) "Commercial water user" means a water user that provides or distributes a product or service.

(e) "Compliance daily per capita water use" means the gross water use during the final year of the reporting period, reported in gallons per capita per day.

(f) "Disadvantaged community" means a community with an annual median household income that is less than 80 percent of the statewide annual median household income.

(g) "Gross water use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of 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.

(h) "Industrial water user" means a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development.

(i) "Institutional water user" means a water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.

(j) "Interim urban water use target" means the midpoint between the urban retail water supplier's base daily per capita water use and the urban retail water supplier's urban water use target for 2020.

(k) "Locally cost effective" means that the present value of the local benefits of implementing an agricultural efficiency water management practice is greater than or equal to the present value of the local cost of implementing that measure.

(l) "Process water" means water used for producing a product or product content or water used for research and development, including, but not limited to, continuous manufacturing processes, water used for testing and maintaining equipment used in producing a product or product content, and water used in combined heat and power facilities used in producing a product or product content. Process water does not mean incidental water uses not related to the production of a product or product content, including, but not limited to, water used for restrooms, landscaping, air conditioning, heating, kitchens, and laundry.

(m) "Recycled water" means recycled water, as defined in subdivision (n) of Section 13050, that is used to offset potable demand, including recycled water supplied for direct use and indirect potable reuse, that meets the following requirements, where applicable:

(1) For groundwater recharge, including recharge through spreading basins, water supplies that are all of the following:

(A) Metered.

(B) Developed through planned investment by the urban water supplier or a wastewater treatment agency.

(C) Treated to a minimum tertiary level.

(D) Delivered within the service area of an urban retail water supplier or its urban wholesale water supplier that helps an urban retail water supplier meet its urban water use target.

(2) For reservoir augmentation, water supplies that meet the criteria of paragraph (1) and are conveyed through a distribution system constructed specifically for recycled water.

(n) "Regional water resources management" means sources of supply resulting from watershed-based planning for sustainable local water reliability or any of the following alternative sources of water:

(1) The capture and reuse of stormwater or rainwater.

(2) The use of recycled water.

(3) The desalination of brackish groundwater.

(4) The conjunctive use of surface water and groundwater in a manner that is consistent with the safe yield of the groundwater basin.

(o) "Reporting period" means the years for which an urban retail water supplier reports compliance with the urban water use targets.

(p) "Urban retail water supplier" means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.

(q) "Urban water use target" means the urban retail water supplier's targeted future daily per capita water use.

(r) "Urban wholesale water supplier," means a water supplier, either publicly or privately owned, that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes.

## Chapter 3 Urban Retail Water Suppliers

SECTION 10608.16-10608.44

10608.16.(a) The state shall achieve a 20-percent reduction in urban per capita water use in California on or before December 31, 2020.

(b) The state shall make incremental progress towards the state target specified in subdivision (a) by reducing urban per capita water use by at least 10 percent on or before December 31, 2015.

10608.20.(a) (1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.

(2) It is the intent of the Legislature that the urban water use targets described in paragraph (1) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020.

(b) An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):

(1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.

(2) The per capita daily water use that is estimated using the sum of the following performance standards:

(A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.

(B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.

(C) For commercial, industrial, and institutional uses, a 10-percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.

(3) Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.

(4) A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:

(A) Consider climatic differences within the state.

(B) Consider population density differences within the state.

(C) Provide flexibility to communities and regions in meeting the targets.

(D) Consider different levels of per capita water use according to plant water needs in different regions.

(E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.

(F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.

(c) If the department adopts a regulation pursuant to paragraph (4) of subdivision (b) that results in a requirement that an urban retail water supplier achieve a reduction in daily per capita water use that is greater than 20 percent by December 31, 2020, an urban retail water supplier that adopted the method

described in paragraph (4) of subdivision (b) may limit its urban water use target to a reduction of not more than 20 percent by December 31, 2020, by adopting the method described in paragraph (1) of subdivision (b).

(d) The department shall update the method described in paragraph (4) of subdivision (b) and report to the Legislature by December 31, 2014. An urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may adopt a new urban daily per capita water use target pursuant to this updated method.

(e) An urban retail water supplier shall include in its urban water management plan due in 2010 pursuant to Part 2.6 (commencing with Section 10610) the 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.

(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.

(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).

(h) (1) The department, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part, including, but not limited to, both of the following:

(A) Methodologies for calculating base daily per capita water use, baseline commercial, industrial, and institutional water use, compliance daily per capita water use, gross water use, service area population, indoor residential water use, and landscaped area water use.

(B) Criteria for adjustments pursuant to subdivisions (d) and (e) of Section 10608.24.

(2) The department shall post the methodologies and criteria developed pursuant to this subdivision on its Internet Web site, and make written copies available, by October 1, 2010. An urban retail water supplier shall use the methods developed by the department in compliance with this part.

(i) (1) The department shall adopt regulations for implementation of the provisions relating to process water in accordance with subdivision (l) of Section 10608.12, subdivision (e) of Section 10608.24, and subdivision (d) of Section 10608.26.

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the

Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

(j) (1) An urban retail water supplier is granted an extension to July 1, 2011, for adoption of an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) due in 2010 to allow the use of technical methodologies developed by the department pursuant to paragraph (4) of subdivision (b) and subdivision (h). An urban retail water supplier that adopts an urban water management plan due in 2010 that does not use the methodologies developed by the department pursuant to subdivision (h) shall amend the plan by July 1, 2011, to comply with this part.

(2) An urban wholesale water supplier whose urban water management plan prepared pursuant to Part 2.6 (commencing with Section 10610) was due and not submitted in 2010 is granted an extension to July 1, 2011, to permit coordination between an urban wholesale water supplier and urban retail water suppliers.

10608.22. Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph(3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.

10608.24.(a) Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.

(b) Each urban retail water supplier shall meet its urban water use target by December 31, 2020.

(c) An urban retail water supplier's compliance daily per capita water use shall be the measure of progress toward achievement of its urban water use target.

(d) (1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:

(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.
(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.

(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.

(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in

paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.

(e) When developing the urban water use target pursuant to Section 10608.20, an urban retail water supplier that has a substantial percentage of industrial water use in its service area may exclude process water from the calculation of gross water use to avoid a disproportionate burden on another customer sector.

(f) (1) An urban retail water supplier that includes agricultural water use in an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) may include the agricultural water use in determining gross water use. An urban retail water supplier that includes agricultural water use in determining gross water use and develops its urban water use target pursuant to paragraph (2) of subdivision (b) of Section 10608.20 shall use a water efficient standard for agricultural irrigation of 100 percent of reference evapotranspiration multiplied by the crop coefficient for irrigated acres.

(2) An urban retail water supplier, that is also an agricultural water supplier, is not subject to the requirements of Chapter 4 (commencing with Section 10608.48), if the agricultural water use is incorporated into its urban water use target pursuant to paragraph (1).

10608.26.(a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.

(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.

(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.

(b) In complying with this part, an urban retail water supplier may meet its urban water use target through efficiency improvements in any combination among its customer sectors. An urban retail water supplier shall avoid placing a disproportionate burden on any customer sector.

(c) For an urban retail water supplier that supplies water to a United States Department of Defense military installation, the urban retail water supplier's implementation plan for complying with this part shall consider the conservation of that military installation under federal Executive Order 13514.

(d) (1) Any ordinance or resolution adopted by an urban retail water supplier after the effective date of this section shall not require existing customers as of the effective date of this section, to undertake changes in product formulation, operations, or equipment that would reduce process water use, but may provide technical assistance and financial incentives to those customers to implement efficiency measures for process water. This section shall not limit

an ordinance or resolution adopted pursuant to a declaration of drought emergency by an urban retail water supplier.

(2) This part shall not be construed or enforced so as to interfere with the requirements of Chapter 4 (commencing with Section 113980) to Chapter 13 (commencing with Section 114380), inclusive, of Part 7 of Division 104 of the Health and Safety Code, or any requirement or standard for the protection of public health, public safety, or worker safety established by federal, state, or local government or recommended by recognized standard setting organizations or trade associations.

10608.28.(a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:

(1) Through an urban wholesale water supplier.

(2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).

(3) Through a regional water management group as defined in Section 10537.

(4) By an integrated regional water management funding area.

(5) By hydrologic region.

(6) Through other appropriate geographic scales for which computation methods have been developed by the department.

(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

10608.32. All costs incurred pursuant to this part by a water utility regulated by the Public Utilities Commission may be recoverable in rates subject to review and approval by the Public Utilities Commission, and may be recorded in a memorandum account and reviewed for reasonableness by the Public Utilities Commission.

10608.36. Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

10608.40. Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans

submitted pursuant to Section 10631. The data shall be reported using a standardized form developed pursuant to Section 10608.52.

10608.42.(a) The department shall review the 2015 urban water management plans and report to the Legislature by July 1, 2017, on progress towards achieving a 20-percent reduction in urban water use by December 31, 2020. The report shall include recommendations on changes to water efficiency standards or urban water use targets to achieve the 20-percent reduction and to reflect updated efficiency information and technology changes.

(b) A report to be submitted pursuant to subdivision (a) shall be submitted in compliance with Section 9795 of the Government Code.

10608.43. The department, in conjunction with the California Urban Water Conservation Council, by April 1, 2010, shall convene a representative task force consisting of academic experts, urban retail water suppliers, environmental organizations, commercial water users, industrial water users, and institutional water users to develop alternative best management practices for commercial, industrial, and institutional users and an assessment of the potential statewide water use efficiency improvement in the commercial, industrial, and institutional sectors that would result from implementation of these best management practices. The taskforce, in conjunction with the department, shall submit a report to the Legislature by April 1, 2012, that shall include a review of multiple sectors within commercial, industrial, and institutional users and that shall recommend water use efficiency standards for commercial, industrial, and institutional users among various sectors of water use. The report shall include, but not be limited to, the following:

(a) Appropriate metrics for evaluating commercial, industrial, and institutional water use.

(b) Evaluation of water demands for manufacturing processes, goods, and cooling.

(c) Evaluation of public infrastructure necessary for delivery of recycled water to the commercial, industrial, and institutional sectors.

(d) Evaluation of institutional and economic barriers to increased recycled water use within the commercial, industrial, and institutional sectors.

(e) Identification of technical feasibility and cost of the best management practices to achieve more efficient water use statewide in the commercial, industrial, and institutional sectors that is consistent with the public interest and reflects past investments in water use efficiency.

10608.44. Each state agency shall reduce water use at facilities it operates to support urban retail water suppliers in meeting the target identified in Section 10608.16.

## Chapter 4 Agricultural Water Suppliers

SECTION 10608.48

10608.48.(a) On or before July 31, 2012, an agricultural water supplier shall implement efficient water management practices pursuant to subdivisions (b) and (c).

(b) Agricultural water suppliers shall implement all of the following critical efficient management practices:

(1) Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).

(2) Adopt a pricing structure for water customers based at least in part on quantity delivered.

(c) Agricultural water suppliers shall implement additional efficient management practices, including, but not limited to, practices to accomplish all of the following, if the measures are locally cost effective and technically feasible:

(1) Facilitate alternative land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage.

(2) Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soils.

(3) Facilitate the financing of capital improvements for on-farm irrigation systems.

(4) Implement an incentive pricing structure that promotes one or more of the following goals:

(A) More efficient water use at the farm level.

(B) Conjunctive use of groundwater.

(C) Appropriate increase of groundwater recharge.

(D) Reduction in problem drainage.

(E) Improved management of environmental resources.

(F) Effective management of all water sources throughout the year by adjusting seasonal pricing structures based on current conditions.

(5) Expand line or pipe distribution systems, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage.

(6) Increase flexibility in water ordering by, and delivery to, water customers within operational limits.

(7) Construct and operate supplier spill and tailwater recovery systems.

(8) Increase planned conjunctive use of surface water and groundwater within the supplier service area.

(9) Automate canal control structures.

(10) Facilitate or promote customer pump testing and evaluation.

(11) Designate a water conservation coordinator who will develop and implement the water management plan and prepare progress reports.

(12) Provide for the availability of water management services to water users. These services may include, but are not limited to, all of the following:

(A) On-farm irrigation and drainage system evaluations.

(B) Normal year and real-time irrigation scheduling and crop evapotranspiration information.

(C) Surface water, groundwater, and drainage water quantity and quality data.

(D) Agricultural water management educational programs and materials for farmers, staff, and the public.

(13) Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow more flexible water deliveries and storage.

(14) Evaluate and improve the efficiencies of the supplier's pumps.

(d) Agricultural water suppliers shall include in the agricultural water management plans required pursuant to Part 2.8 (commencing with Section 10800) a report on which efficient water management practices have been implemented and are planned to be implemented, an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future. If an agricultural water supplier determines that an efficient water management practice is not locally cost effective or technically feasible, the supplier shall submit information documenting that determination.

(e) The data shall be reported using a standardized form developed pursuant to Section 10608.52.

(f) An agricultural water supplier may meet the requirements of subdivisions (d) and (e) by submitting to the department a water conservation plan submitted to the United States Bureau of Reclamation that meets the requirements described in Section 10828.

(g) On or before December 31, 2013, December 31, 2016, and December 31, 2021, the department, in consultation with the board, shall submit to the Legislature a report on the agricultural efficient water management practices that have been implemented and are planned to be implemented and an assessment of the manner in which the implementation of those efficient water management practices has affected and will affect agricultural operations, including estimated water use efficiency improvements, if any.

(h) The department may update the efficient water management practices required pursuant to subdivision (c), in consultation with the Agricultural Water Management Council, the United States Bureau of Reclamation, and the board. All efficient water management practices for agricultural water use pursuant to this chapter shall be adopted or revised by the department only after the department conducts public hearings to allow participation of the diverse geographical areas and interests of the state.

(i) (1) The department shall adopt regulations that provide for a range of options that agricultural water suppliers may use or implement to comply with the measurement requirement in paragraph (1) of subdivision (b).

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

## Chapter 5 Sustainable Water Management

Section 10608.50

10608.50.(a) The department, in consultation with the board, shall promote implementation of regional water resources management practices through increased incentives and removal of barriers consistent with state and federal law. Potential changes may include, but are not limited to, all of the following:

(1) Revisions to the requirements for urban and agricultural water management plans.

(2) Revisions to the requirements for integrated regional water management plans.

(3) Revisions to the eligibility for state water management grants and loans.

(4) Revisions to state or local permitting requirements that increase water supply opportunities, but do not weaken water quality protection under state and federal law.

(5) Increased funding for research, feasibility studies, and project construction.

(6) Expanding technical and educational support for local land use and water management agencies.

(b) No later than January 1, 2011, and updated as part of the California Water Plan, the department, in consultation with the board, and with public input, shall propose new statewide targets, or review and update existing statewide targets, for regional water resources management practices, including, but not limited to, recycled water, brackish groundwater desalination, and infiltration and direct use of urban stormwater runoff.

## Chapter 6 Standardized Data Collection

SECTION 10608.52

10608.52.(a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of Section 10608.28.

(b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier's compliance with conservation targets pursuant to Section 10608.24 and an agricultural water supplier's compliance with implementation of efficient water management practices pursuant to subdivision (a) of Section 10608.48. The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.

## Chapter 7 Funding Provisions

Section 10608.56-10608.60

10608.56.(a) On and after July 1, 2016, an urban retail water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(b) On and after July 1, 2013, an agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(c) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for achieving the per capita reductions. The supplier may request grant or loan funds to achieve the per capita reductions to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(d) Notwithstanding subdivision (b), the department shall determine that an agricultural water supplier is eligible for a water grant or loan even though the supplier is not implementing all of the efficient water management practices described in Section 10608.48, if the agricultural water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the efficient water management practices. The supplier may request grant or loan funds to implement the efficient water management practices to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(e) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval documentation demonstrating that its entire service area qualifies as a disadvantaged community.

(f) The department shall not deny eligibility to an urban retail water supplier or agricultural water supplier in compliance with the requirements of this part and Part 2.8 (commencing with Section 108~~0~~0), that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the requirements of this part or Part 2.8 (commencing with Section 10800).

10608.60.(a) It is the intent of the Legislature that funds made available by Section 75026 of the Public Resources Code should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for grants to implement this part. In the allocation of funding, it is the intent of the Legislature that the department give consideration to disadvantaged communities to assist in implementing the requirements of this part.

(b) It is the intent of the Legislature that funds made available by Section 75041 of the Public Resources Code, should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for direct expenditures to implement this part.

## Chapter 8 Quantifying Agricultural Water Use Efficiency

SECTION 10608.64

10608.64. The department, in consultation with the Agricultural Water Management Council, academic experts, and other stakeholders, shall develop a methodology for quantifying the efficiency of agricultural water use. Alternatives to be assessed shall include, but not be limited to, determination of efficiency levels based on crop type or irrigation system distribution uniformity. On or before December 31, 2011, the department shall report to the Legislature on a proposed methodology and a plan for implementation. The plan shall include the estimated implementation costs and the types of data needed to support the methodology. Nothing in this section authorizes the department to implement a methodology established pursuant to this section.

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# APPENDIX B

DWR 2015 Urban Water Management Plan Tables

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| Table 2-1 Retail Only: Public Water Systems | | | |
|---|---|---|---|
| Public Water System Number | Public Water System Name | Number of Municipal Connections 2015 | Volume of Water Supplied 2015 |
| CA3410020 | Sacramento, City of | 135,830 | 86,031 |
| | **TOTAL** | 135,830 | 86,031 |
| NOTES: Volumes are in AF. Volume includes wholesale and retail deliveries. | | | |

| Table 2-2: Plan Identification | | |
|---|---|---|
| **Select Only One** | **Type of Plan** | **Name of RUWMP or Regional Alliance** *if applicable* |
| ☑ | **Individual UWMP** | |
| ☐ | **Regional Urban Water Management Plan (RUWMP)** | |
| NOTES: | | |

| Table 2-3: Agency Identification | |
|---|---|
| Type of Agency (select one or both) | |
| ☑ | Agency is a wholesaler |
| ☑ | Agency is a retailer |
| Fiscal or Calendar Year (select one) | |
| ☑ | UWMP Tables Are in Calendar Years |
| ☐ | UWMP Tables Are in Fiscal Years |
| Units of Measure Used in UWMP (select from Drop down) | |
| Unit | AF |
| NOTES: | |

| Table 2-4 Retail: Water Supplier Information Exchange |
| --- |
| The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631. |
| Wholesale Water Supplier Name |
| NOTES: The City does not rely upon  a wholesale agency for water supply. |

| Table 2-4 Wholesale: Water Supplier Information Exchange (select one) | |
|---|---|
| ☐ | Supplier has informed more than 10 other water suppliers of water supplies available in accordance with CWC 10631. Completion of the table below is optional. If not completed include a list of the water suppliers that were informed. |
| | **Provide page number for location of the list.** |
| ☑ | Supplier has informed 10 or fewer other water suppliers of water supplies available in accordance with CWC 10631.<br>**Complete the table below.** |
| Water Supplier Name | |
| Sacramento County Water Agency | |
| Sacramento Suburban Water District | |
| California American Water Company | |
| Fruitridge Vista Water Company | |
| NOTES: | |

| Table 3-1 Retail: Population - Current and Projected | | | | | | |
|---|---|---|---|---|---|---|
| Population Served | 2015 | 2020 | 2025 | 2030 | 2035 | 2040*(opt)* |
| | 480,105 | 528,866 | 560,278 | 600,339 | 640,381 | 695,830 |

NOTES:
2015 population reported by California Department of Finance.
2020 and 2035 population from 2035 General Plan.
2025 and 2030 population interpolated from 2035 General Plan data.
2040 population projected by the City assuming a growth rate inside the existing service area boundary consistent with 2035 General Plan and the annexation of the Natomas Joint Vision area.

| Table 3-1 Wholesale: Population - Current and Projected | | | | | | |
|---|---|---|---|---|---|---|
| Population Served | 2015 | 2020 | 2025 | 2030 | 2035 | 2040*(opt)* |
| | 362,731 | 404,406 | 442,072 | 480,911 | 520,203 | 561,594 |

NOTES:
Wholesale service area population estimates are provided by wholesale customers. Estimates include areas outside of the American River POU. Projections for Cal Am were not available at time of publishing the Public Draft UWMP. Population projections will be added to the Final UWMP for submittal to DWR.

| Table 4-1 Retail: Demands for Potable and Raw Water - Actual | | | |
|---|---|---|---|
| Use Type | 2015 Actual | | |
| | Additional Description *(as needed)* | Level of Treatment When Delivered | Volume |
| Single Family | | Drinking Water | 36,024 |
| Multi-Family | | Drinking Water | 14,657 |
| Other | Commercial and Industrial | Drinking Water | 17,054 |
| Institutional/Governmental | | Drinking Water | 3,938 |
| Landscape | | Drinking Water | 3,418 |
| Other | | Drinking Water | 102 |
| Losses | | Drinking Water | 9,639 |
| | | **TOTAL** | 84,832 |
| NOTES: Volumes are in AF. | | | |

| Table 4-1 Wholesale: Demands for Potable and Raw Water - Actual | | | |
|---|---|---|---|
| Use Type | 2015 Actual | | |
| | Additional Description *(as needed)* | Level of Treatment When Delivered | Volume |
| Sales to other agencies | SCWA - Airport | Drinking Water | 227 |
| Sales to other agencies | Cal Am - Parkway | Drinking Water | 639 |
| Sales to other agencies | Cal Am - Rosemont | Drinking Water | 332 |
| Sales to other agencies | FVWC | Drinking Water | 1 |
| | | **TOTAL** | 1,199 |
| NOTES: Volumes are in AF. | | | |

| Table 4-2 Retail: Demands for Potable and Raw Water - Projected | | | | | | |
|---|---|---|---|---|---|---|
| Use Type | Additional Description *(as needed)* | Projected Water Use *Report To the Extent that Records are Available* | | | | |
| | | 2020 | 2025 | 2030 | 2035 | 2040-opt |
| Single Family | | 54,354 | 57,582 | 61,699 | 65,815 | 72,899 |
| Multi-Family | | 23,097 | 24,469 | 26,218 | 27,967 | 29,889 |
| Other | Commercial and Industrial | 20,873 | 22,172 | 23,829 | 25,485 | 27,305 |
| Institutional/Governmental | | 5,995 | 6,351 | 6,805 | 7,259 | 7,758 |
| Landscape | Drinking Water | 5,374 | 5,693 | 6,100 | 6,507 | 6,954 |
| Other | | 214 | 227 | 243 | 259 | 277 |
| Losses | | 12,323 | 13,055 | 13,988 | 14,921 | 15,947 |
| | **TOTAL** | 122,229 | 129,548 | 138,882 | 148,213 | 161,029 |

NOTES: Volumes are in AF.
Demands for each use type are generally based on the average percentage of each customer classification for 2011 through 2015.
Single Family demands for 2040 include NJV demand projections.
Commercial and Industrial demands for 2020 through 2040 reflect 1,000 AFY of demand offset by recycled water at the Cogen Facility.

| Table 4-2 Wholesale: Demands for Potable and Raw Water - Projected | | | | | | |
|---|---|---|---|---|---|---|
| Use Type | Additional Description *(as needed)* | Projected Water Use *Report To the Extent that Records are Available* | | | | |
| | | 2020 | 2025 | 2030 | 2035 | 2040 *( opt)* |
| Sales to other agencies | SCWA - Airport and Metro Air Park | 3,456 | 5,036 | 5,293 | 5,293 | 5,293 |
| Sales to other agencies | SCWA - Zone 40 | 5,322 | 7,983 | 10,644 | 10,644 | 10,644 |
| Sales to other agencies | SSWD - Arden | 22,404 | 22,404 | 22,404 | 22,404 | 22,404 |
| Sales to other agencies | Cal Am - Arden | 457 | 685 | 913 | 913 | 913 |
| Sales to other agencies | Cal Am - Rosemont | 3,080 | 4,620 | 6,160 | 6,160 | 6,160 |
| Sales to other agencies | Cal Am - Parkway | 2,240 | 3,360 | 4,480 | 4,480 | 4,480 |
| Sales to other agencies | FVWC | 3,629 | 3,629 | 8,692 | 8,692 | 8,692 |
| | **TOTAL** | 40,588 | 47,717 | 58,586 | 58,586 | 58,586 |
| NOTES: Volumes are in AF. | | | | | | |

| Table 4-3 Retail: Total Water Demands | | | | | | |
|---|---|---|---|---|---|---|
| | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 *(opt)* |
| Potable and Raw Water *From Tables 4-1 and 4-2* | 84,832 | 122,229 | 129,548 | 138,882 | 148,213 | 161,029 |
| Recycled Water Demand* *From Table 6-4* | 0 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| **TOTAL WATER DEMAND** | 84,832 | 123,229 | 130,548 | 139,882 | 149,213 | 162,029 |
| NOTES: Volumes are in AF. Table references refer to DWR table numbers. | | | | | | |

| Table 4-3 Wholesale: Total Water Demands | | | | | | |
|---|---|---|---|---|---|---|
| | 2015 | 2020 | 2025 | 2030 | 2035 | 2040*(opt)* |
| Potable and Raw Water<br>*From Tables 4-1 and 4-2* | 1,199 | 40,588 | 47,717 | 58,586 | 58,586 | 58,586 |
| Recycled Water Demand*<br>*From Table 6-4* | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL WATER DEMAND** | 1,199 | 40,588 | 47,717 | 58,586 | 58,586 | 58,586 |
| NOTES: Volumes are in AF. Table references refer to DWR table numbers. | | | | | | |

| Table 4-4 Retail: 12 Month Water Loss Audit Reporting | |
|---|---|
| Reporting Period Start Date | Volume of Water Loss* |
| 07/2014 | 8,777 |
| ** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.* | |
| NOTES: Volume is in AF. Volume is reported based on Fiscal Year instead of Calendar Year. | |

| Table 4-4 Wholesale: 12 Month Water Loss Audit Reporting | |
|---|---|
| Reporting Period Start Date | Volume of Water Loss* |
| 07/2014 | 0 |
| ** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.* | |
| NOTES: Water loss audit reporting for the City's wholesale customers is included in the Retail water loss audit reporting as the City's distribution system for wholesale and retail customers is a single system. | |

| Table 4-5 Retail Only: Inclusion in Water Use Projections | |
|---|---|
| Are Future Water Savings Included in Projections?<br>(Refer to Appendix K of UWMP Guidebook) | Yes |
| If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc… utilized in demand projections are found. | 4-8 |
| Are Lower Income Residential Demands Included In Projections? | Yes |
| NOTES: | |

| **Table 5-1 Baselines and Targets Summary**<br>*Retail Agency or Regional Alliance Only* | | | | | |
|---|---|---|---|---|---|
| Baseline Period | Start Year | End Year | Average Baseline GPCD* | 2015 Interim Target * | Confirmed 2020 Target* |
| 10-15 year | *1996* | *2005* | *282* | *253* | *225* |
| 5 Year | *2003* | *2007* | *274* | | |
| *All values are in Gallons per Capita per Day (GPCD). | | | | | |
| NOTES: | | | | | |

**Table 5-2: 2015 Compliance**
*Retail Agency or Regional Alliance Only*

| Actual 2015 GPCD* | 2015 Interim Target GPCD* | Optional Adjustments to 2015 GPCD *From Methodology 8* | | | | | 2015 GPCD* *(Adjusted if applicable)* | Did Supplier Achieve Targeted Reduction for 2015? Y/N |
|---|---|---|---|---|---|---|---|---|
| | | Extraordinary Events* | Economic Adjustment* | Weather Normalization* | TOTAL Adjustments* | Adjusted 2015 GPCD* | | |
| 158 | 253 | 0 | 0 | 0 | 0 | 158 | 158 | Yes |

**All values are in Gallons per Capita per Day (GPCD).*

NOTES:

| Table 6-1 Retail: Groundwater Volume Pumped | | | | | | |
|---|---|---|---|---|---|---|
| ☐ | Supplier does not pump groundwater.<br>The supplier will not complete the table below. | | | | | |
| Groundwater Type | Location or Basin Name | 2011 | 2012 | 2013 | 2014 | 2015 |
| Alluvial Basin | North American Subbasin | 17,210 | 13,305 | 11,462 | 13,261 | 12,509 |
| Alluvial Basin | South American Subbasin | 602 | 1,057 | 1,106 | 1,132 | 970 |
| | **TOTAL** | 17,811 | 14,363 | 12,568 | 14,393 | 13,479 |
| NOTES: Volumes are in AF. | | | | | | |

| Table 6-1 Wholesale: Groundwater Volume Pumped | | | | | | |
|---|---|---|---|---|---|---|
| ☐ | Supplier does not pump groundwater.<br>The supplier will not complete the table below. | | | | | |
| Groundwater Type | Location or Basin Name | 2011 | 2012 | 2013 | 2014 | 2015 |
| Alluvial Basin | North American Subbasin | 298 | 254 | 266 | 238 | 227 |
| | **TOTAL** | 298 | 254 | 266 | 238 | 227 |
| NOTES: Volumes are in AF. | | | | | | |

| Table 6-2 Retail: Wastewater Collected Within Service Area in 2015 | | | | | | |
|---|---|---|---|---|---|---|
| ☐ | There is no wastewater collection system. The supplier will not complete the table below. | | | | | |
| 100 | Percentage of 2015 service area covered by wastewater collection system *(optional)* | | | | | |
| 100 | Percentage of 2015 service area population covered by wastewater collection system *(optional)* | | | | | |
| Wastewater Collection | | | Recipient of Collected Wastewater | | | |
| Name of Wastewater Collection Agency | Wastewater Volume Metered or Estimated? | Volume of Wastewater Collected from UWMP Service Area 2015 | Name of Wastewater Treatment Agency Receiving Collected Wastewater | Treatment Plant Name | Is WWTP Located Within UWMP Area? | Is WWTP Operation Contracted to a Third Party? *(optional)* |
| City of Sacramento | Estimated | 278 | City of Sacramento | Combined Wastewater Treatment Plant | Yes | |
| City of Sacramento | Estimated | 22,822 | Regional County Sanitation District | Sacramento Regional Wastewater Treatment Plant | No | |
| Sacramento Area Sewer District | Estimated | 20,460 | Regional County Sanitation District | Sacramento Regional Wastewater Treatment Plant | No | |
| **Total Wastewater Collected from Service Area in 2015:** | | 43,560 | | | | |
| NOTES: Volumes are in AF. Combined wastewater treatment plant includes flow from stormwater as it is a combined system. | | | | | | |

| Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ☐ | No wastewater is treated or disposed of within the UWMP service area.<br>The supplier will not complete the table below. | | | | | | | | | |
| | | | | | | | 2015 volumes | | | |
| Wastewater Treatment Plant Name | Discharge Location Name or Identifier | Discharge Location Description | Wastewater Discharge ID Number *(optional)* | Method of Disposal | Does This Plant Treat Wastewater Generated Outside the Service Area? | Treatment Level* | Wastewater Treated | Discharged Treated Wastewater | Recycled Within Service Area | Recycled Outside of Service Area |
| Pioneer | Pioneer (EFF-006) | Sacramento River | | River or creek outfall | No | | 278 | 278 | 0 | 0 |
| Combined Wastewater Treatment Plant | CWTP | Sacramento River | | River or creek outfall | No | | 0 | 0 | 0 | 0 |
| | | | | | | | 278 | 278 | 0 | 0 |
| NOTES: Volumes are in AF. Pioneer and CWTP provide primary treatment only during large storm events. | | | | | | | | | | |

| Table 6-3 Wholesale: Wastewater Treatment and Discharge Within Service Area in 2015 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ☑ | Wholesale supplier neither distributes nor provides supplemental treatment to recycled water.<br>The supplier will not complete the table below. | | | | | | | | | |
| | | | | | | | 2015 volumes | | | |
| Wastewater Treatment Plant Name | Discharge Location Name or Identifier | Discharge Location Description | Wastewater Discharge ID Number *(optional)* | Method of Disposal | Does This Plant Treat Wastewater Generated Outside the Service Area? | Treatment Level | Wastewater Treated | Discharged Treated Wastewater | Recycled Within Service Area | Recycled Outside of Service Area |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | **Total** | 0 | 0 | 0 | 0 |
| NOTES: Table intentionally blank. | | | | | | | | | | |

| Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ☐ | Recycled water is not used and is not planned for use within the service area of the supplier.<br>The supplier will not complete the table below. | | | | | | | |
| Name of Agency Producing (Treating) the Recycled Water: | | Sacramento Regional County Sanitation District | | | | | | |
| Name of Agency Operating the Recycled Water Distribution System: | | To be determined | | | | | | |
| Supplemental Water Added in 2015 | | None | | | | | | |
| Source of 2015 Supplemental Water | | Not Applicable | | | | | | |
| Beneficial Use Type | General Description of 2015 Uses | Level of Treatment | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 (opt) |
| Agricultural irrigation | | | | | | | | |
| Landscape irrigation (excludes golf courses) | | | | | | | | |
| Golf course irrigation | | | | | | | | |
| Commercial use | | | | | | | | |
| Industrial use | | Tertiary | 0 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Geothermal and other energy production | | | | | | | | |
| Seawater intrusion barrier | | | | | | | | |
| Recreational impoundment | | | | | | | | |
| Wetlands or wildlife habitat | | | | | | | | |
| Groundwater recharge (IPR)* | | | | | | | | |
| Surface water augmentation (IPR)* | | | | | | | | |
| Direct potable reuse | | | | | | | | |
| Other *(Provide General Description)* | | | | | | | | |
| | | **Total:** | 0 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| **IPR - Indirect Potable Reuse* | | | | | | | | |
| NOTES: The Cogen Facility will receive 1,000 AFY of recycled water. The City is evaluating additional opportunities for future use of recycled water in service area. | | | | | | | | |

| Table 6-4 Wholesale: Current and Projected Retailers Provided Recycled Water Within Service Area | | | | | | | |
|---|---|---|---|---|---|---|---|
| ☑ | Recycled water is not directly treated or distributed by the supplier. The supplier will not complete the table below. | | | | | | |
| Name of Receiving Supplier or Direct Use by Wholesaler | Level of Treatment | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 *(opt)* |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | **Total** | 0 | 0 | 0 | 0 | 0 | 0 |
| NOTES: Table intentionally blank. | | | | | | | |

| Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual | | | |
|---|---|---|---|
| ☑ | Recycled water was not used in 2010 nor projected for use in 2015.<br>The supplier will not complete the table below. | | |
| **Use Type** | | **2010 Projection for 2015** | **2015 Actual Use** |
| Agricultural irrigation | | | |
| Landscape irrigation (excludes golf courses) | | | |
| Golf course irrigation | | | |
| Commercial use | | | |
| Industrial use | | | |
| Geothermal and other energy production | | | |
| Seawater intrusion barrier | | | |
| Recreational impoundment | | | |
| Wetlands or wildlife habitat | | | |
| Groundwater recharge (IPR) | | | |
| Surface water augmentation (IPR) | | | |
| Direct potable reuse | | | |
| Other | | | |
| **Total** | | 0 | 0 |
| NOTES: Table intentionally blank. | | | |

| Table 6-5 Wholesale: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual | | |
|---|---|---|
| ☑ | Recycled water was not used or distributed by the supplier in 2010, nor projected for use or distribution in 2015.<br>The wholesale supplier will not complete the table below. | |
| Name of Receiving Supplier or Direct Use by Wholesaler | 2010 Projection for 2015 | 2015 actual use |
| **Total** | 0 | 0 |
| NOTES: Table intentionally blank. | | |

| Table 6-6 Retail: Methods to Expand Future Recycled Water Use | | | |
|---|---|---|---|
| ☑ | Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation. | | |
| 6-15 | Provide page location of narrative in UWMP | | |
| Name of Action | Description | Planned Implementation Year | Expected Increase in Recycled Water Use |
| | | | |
| | | **Total** | 0 |
| NOTES: Although the City is evaluating recycled water opportunities, the City does not currently have plans to use recycled water within its service area. | | | |

| Table 6-7 Retail: Expected Future Water Supply Projects or Programs | | | | | | |
|---|---|---|---|---|---|---|
| ☐ | No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below. | | | | | |
| ☑ | Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format. | | | | | |
| 6-17 | Provide page location of narrative in the UWMP | | | | | |
| Name of Future Projects or Programs | Joint Project with other agencies? | | Description (if needed) | Planned Implementation Year | Planned for Use in Year Type | Expected Increase in Water Supply to Agency |
| | | | | | | |
| NOTES: Table intentionally blank. Please see Section 6.8 - Future Water Projects. | | | | | | |

| Table 6-7 Wholesale: Expected Future Water Supply Projects or Programs | | | | | | |
|---|---|---|---|---|---|---|
| ☐ | No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below. | | | | | |
| ☑ | Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format. | | | | | |
| 6-17 | Provide page location of narrative in the UWMP | | | | | |
| Name of Future Projects or Programs | Joint Project with other agencies? | | Description *(if needed)* | Planned Implementation Year | Planned for Use in Year Type | Expected Increase in Water Supply to Agency |
| | | | | | | |
| NOTES: Table intentionally blank. Please see Section 6.8 - Future Water Projects. | | | | | | |

| Table 6-8 Retail: Water Supplies — Actual | | | | |
|---|---|---|---|---|
| Water Supply | Additional Detail on Water Supply | 2015 | | |
| | | Actual Volume | Water Quality | Total Right or Safe Yield *(optional)* |
| Surface water | Sacramento River | 39,511 | Drinking Water | |
| Surface water | American River | 30,956 | Drinking Water | |
| Groundwater | | 13,706 | Drinking Water | |
| Other | Mutual Aid | 659 | Drinking Water | |
| | **Total** | 84,832 | | 0 |
| NOTES: Volumes are in AF. | | | | |

| Table 6-8 Wholesale: Water Supplies — Actual | | | | |
|---|---|---|---|---|
| Water Supply | Additional Detail on Water Supply | 2015 | | |
| | | Actual Volume | Water Quality | Total Right or Safe Yield *(optional)* |
| Surface water | American River | 972 | Drinking Water | |
| Groundwater | | 227 | Drinking Water | |
| | **Total** | 1,199 | | 0 |
| NOTES: Volume in AF. | | | | |

| Table 6-9 Retail: Water Supplies — Projected | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Water Supply | Additional Detail on Water Supply | **Projected Water Supply** *Report To the Extent Practicable* | | | | | | | | | |
| | | **2020** | | **2025** | | **2030** | | **2035** | | **2040** *(opt)* | |
| | | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* |
| Surface water | Sacramento River | 81,800 | 81,800 | 81,800 | 81,800 | 81,800 | 81,800 | 81,800 | 81,800 | 81,800 | 81,800 |
| Surface water | American River | 171,368 | 208,500 | 185,319 | 228,000 | 191,707 | 245,000 | 191,707 | 245,000 | 191,707 | 245,000 |
| Groundwater | | 21,749 | 25,205 | 20,169 | 25,205 | 19,912 | 25,205 | 19,912 | 25,205 | 19,912 | 25,205 |
| Recycled Water | | 1,000 | | 1,000 | | 1,000 | | 1,000 | | 1,000 | |
| | **Total** | 275,917 | 315,505 | 288,288 | 335,005 | 294,419 | 352,005 | 294,419 | 352,005 | 294,419 | 352,005 |

NOTES: Volumes are in AF.
- The City may divert up to 81,800 AFYof Sacramento River water as long as the total combined diversion from both the Sacramento and American Rivers does not exceed the Maximum Combined Diversion specified in Schedule A. The Sacramento River water is available to the City for all hydrologic years.
- The City may divert up to the Maximum Diversion from the American River as long as the total combined diversion from both the Sacramento and American Rivers does not exceed the Maximum Combined Diversion specified in Schedule A. American River water right can be diverted south of the confluence through the City's existing Sacramento River diversion point.
- Groundwater volume based on the City's firm capacity which is 90-percent of the total well capacities.

| Table 6-9 Wholesale: Water Supplies — Projected | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Water Supply | Additional Detail on Water Supply | Projected Water Supply *Report To the Extent Practicable* | | | | | | | | | |
| | | 2020 | | 2025 | | 2030 | | 2035 | | 2040 *(opt)* | |
| | | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* |
| Surface water | American River | 37,132 | | 42,681 | | 53,293 | | 53,293 | | 53,293 | |
| Groundwater | | 3,456 | | 5,036 | | 5,293 | | 5,293 | | 5,293 | |
| **Total** | | 40,588 | 0 | 47,717 | 0 | 58,586 | 0 | 58,586 | 0 | 58,586 | 0 |

NOTES: Volumes are in AF.
Wholesale water supplies are from the City's American River water right except for the SCWA Airport and Metro Park customer and based on projected demands for wholesale customers. SCWA Airport and Metro Park is outside the Sacramento and American River POUs and may be served groundwater and/or surface water diverted under the City's pre-1914 rights.

| Table 7-1 Retail: Basis of Water Year Data - Sacramento River | | | |
|---|---|---|---|
| **Year Type** | **Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000* | **Available Supplies if Year Type Repeats** | |
| | | ☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ | |
| | | ☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both. | |
| | | **Volume Available** | **% of Average Supply** |
| Average Year | 2005 | 81,800 | 100% |
| Single-Dry Year | 1977 | 81,800 | 100% |
| Multiple-Dry Years 1st Year | 1990 | 81,800 | 100% |
| Multiple-Dry Years 2nd Year | 1991 | 81,800 | 100% |
| Multiple-Dry Years 3rd Year | 1992 | 81,800 | 100% |

NOTES: Volumes are in AF.

Source: DWR WSIHIST for Sacramento Valley from 1901 through 2015 used to determine historical year of basis.

| Table 7-1 Retail: Basis of Water Year Data - American River | | | |
|---|---|---|---|
| **Year Type** | **Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000* | **Available Supplies if Year Type Repeats** | |
| | | ☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ | |
| | | ☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both. | |
| | | **Volume Available** | **% of Average Supply** |
| Average Year | 2005 | 245,000 | 100% |
| Single-Dry Year | 1977 | 245,000 | 100% |
| Multiple-Dry Years 1st Year | 1990 | 245,000 | 100% |
| Multiple-Dry Years 2nd Year | 1991 | 245,000 | 100% |
| Multiple-Dry Years 3rd Year | 1992 | 245,000 | 100% |

NOTES: Volumes are in AF.
Source: Lower American River Flow Management System (CALSIMII) Hodge Criteria from 1922 through 1994.
Diversion from FWTP is limited to not greater than 155 cfs and not greater than 50,000 AFY for single-dry year.
The remainder of American River entitlements may be diverted at the SRWTP for all year types up to the combined maximum diversion specified in the USBR Settlement Contract. The volumes specified above are based on the Settlement Contract's year 2030 amounts.

| Table 7-1 Retail: Basis of Water Year Data - Groundwater | | | |
|---|---|---|---|
| **Year Type** | **Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000* | **Available Supplies if Year Type Repeats** | |
| | | ☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ | |
| | | ☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both. | |
| | | **Volume Available** | **% of Average Supply** |
| Average Year | 2005 | 25,205 | 100% |
| Single-Dry Year | 1977 | 25,205 | 100% |
| Multiple-Dry Years 1st Year | 1990 | 25,205 | 100% |
| Multiple-Dry Years 2nd Year | 1991 | 25,205 | 100% |
| Multiple-Dry Years 3rd Year | 1992 | 25,205 | 100% |
| NOTES: Volumes are in AF. The City's groundwater supply is not anticipated to be impacted by drought conditions. Volumes shown are for the City's firm groundwater supply. | | | |

| Table 7-1 Retail: Basis of Water Year Data - Recycled Water | | | |
|---|---|---|---|
| **Year Type** | **Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000* | **Available Supplies if Year Type Repeats** | |
| | | ☑ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location: 7-8 | |
| | | ☐ Quantification of available supplies is provided in this table as either volume only, percent only, or both. | |
| | | **Volume Available** | **% of Average Supply** |
| Average Year | | | 100% |
| Single-Dry Year | | | |
| Multiple-Dry Years 1st Year | | | |
| Multiple-Dry Years 2nd Year | | | |
| Multiple-Dry Years 3rd Year | | | |
| NOTES: | | | |

| Table 7-1 Wholesale: Basis of Water Year Data | | | |
|---|---|---|---|
| **Year Type** | **Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000* | **Available Supplies if Year Type Repeats** | |
| | | ☑ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location: 7-10 | |
| | | ☐ Quantification of available supplies is provided in this table as either volume only, percent only, or both. | |
| | | **Volume Available** | **% of Average Supply** |
| Average Year | 2005 | | |
| Single-Dry Year | 1977 | | |
| Multiple-Dry Years 1st Year | 1990 | | |
| Multiple-Dry Years 2nd Year | 1991 | | |
| Multiple-Dry Years 3rd Year | 1992 | | |
| NOTES: Table intentionally blank. | | | |

| Table 7-2 Retail: Normal Year Supply and Demand Comparison | | | | | |
|---|---|---|---|---|---|
| | 2020 | 2025 | 2030 | 2035 | 2040 *(Opt)* |
| Supply totals *(autofill from Table 6-9)* | 275,917 | 288,288 | 294,419 | 294,419 | 294,419 |
| Demand totals *(autofill from Table 4-3)* | 123,229 | 130,548 | 139,882 | 149,213 | 162,029 |
| Difference | 152,688 | 157,740 | 154,537 | 145,206 | 132,390 |
| NOTES: Volumes are in AF. Table references refer to DWR table numbers. | | | | | |

| Table 7-2 Wholesale: Normal Year Supply and Demand Comparison | | | | | |
|---|---|---|---|---|---|
| | 2020 | 2025 | 2030 | 2035 | 2040 *(Opt)* |
| Supply totals *(autofill from Table 6-9)* | 40,588 | 47,717 | 58,586 | 58,586 | 58,586 |
| Demand totals *(autofill fm Table 4-3)* | 40,588 | 47,717 | 58,586 | 58,586 | 58,586 |
| Difference | 0 | 0 | 0 | 0 | 0 |
| NOTES: Volumes are in AF. Table references refer to DWR table numbers. | | | | | |

| Table 7-3 Retail: Single Dry Year Supply and Demand Comparison | | | | | |
|---|---|---|---|---|---|
| | 2020 | 2025 | 2030 | 2035 | 2040 (Opt) |
| Supply totals | 275,917 | 288,288 | 294,419 | 294,419 | 294,419 |
| Demand totals | 123,229 | 130,548 | 139,882 | 149,213 | 162,029 |
| Difference | 152,688 | 157,740 | 154,537 | 145,206 | 132,390 |
| NOTES: Volumes are in AF. | | | | | |

| Table 7-3 Wholesale: Single Dry Year Supply and Demand Comparison | | | | | |
|---|---|---|---|---|---|
| | 2020 | 2025 | 2030 | 2035 | 2040 (Opt) |
| Supply totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| Demand totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| Difference | 0 | 0 | 0 | 0 | 0 |

NOTES: Volumes are in AF.
Demand is assumed to be 0 AFY for SSWD and 4,831 AFY for Cal Am.

| Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison | | | | | | |
|---|---|---|---|---|---|---|
| | | 2020 | 2025 | 2030 | 2035 | 2040 (Opt) |
| First year | Supply totals | 275,917 | 288,288 | 294,419 | 294,419 | 294,419 |
| | Demand totals | 123,229 | 130,548 | 139,882 | 149,213 | 162,029 |
| | Difference | 152,688 | 157,740 | 154,537 | 145,206 | 132,390 |
| Second year | Supply totals | 275,917 | 288,288 | 294,419 | 294,419 | 294,419 |
| | Demand totals | 123,229 | 130,548 | 139,882 | 149,213 | 162,029 |
| | Difference | 152,688 | 157,740 | 154,537 | 145,206 | 132,390 |
| Third year | Supply totals | 275,917 | 288,288 | 294,419 | 294,419 | 294,419 |
| | Demand totals | 123,229 | 130,548 | 139,882 | 149,213 | 162,029 |
| | Difference | 152,688 | 157,740 | 154,537 | 145,206 | 132,390 |
| NOTES: Volumes are in AF. | | | | | | |

| Table 7-4 Wholesale: Multiple Dry Years Supply and Demand Comparison | | | | | | |
|---|---|---|---|---|---|---|
| | | 2020 | 2025 | 2030 | 2035 | 2040 (Opt) |
| First year | Supply totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| | Demand totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Second year | Supply totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| | Demand totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Third year | Supply totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| | Demand totals | 17,695 | 24,824 | 35,693 | 35,693 | 35,693 |
| | Difference | 0 | 0 | 0 | 0 | 0 |

NOTES: Volumes are in AF.
Demand is assumed to be 0 AFY for SSWD and 4,831 AFY for Cal Am.

| Table 8-1 Retail: Stages of Water Shortage Contingency Plan | | |
|---|---|---|
| Stage | Complete Both | |
| | Percent Supply Reduction[1] | Water Supply Condition |
| 1 | Up to 20% | Water Alert |
| 2 | Up to 30% | Water Warning |
| 3 | Up to 40% | Water Crisis |
| 4 | Up to 50% | Water Emergency |
| [1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.* | | |
| NOTES: | | |

| Table 8-1 Wholesale: Stages of Water Shortage Contingency Plan | | |
|---|---|---|
| Stage | Complete Both | |
| | Supply Reduction[1] | Water Supply Condition (*Narrative description)* |
| 1 | Up to 20% | Water Alert |
| 2 | Up to 30% | Water Warning |
| 3 | Up to 40% | Water Crisis |
| 4 | Up to 50% | Water Emergency |
| [1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.* | | |
| NOTES: The City does not have a separate WSCP specific to its wholesale customers. Each of the City's wholesale customers maintain their own WSCPs which will be reported in their respective UWMPs. | | |

| Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses | | | |
|---|---|---|---|
| Stage | Restrictions and Prohibitions on End Users | Additional Explanation or Reference *(optional)* | Penalty, Charge, or Other Enforcement? |
| 1 | Landscape - Prohibit certain types of landscape irrigation | Reduce irrigation of parks and cemeteries. | Yes |
| 2 | Landscape - Other landscape restriction or prohibition | Reduce irrigation of parks and cemeteries. | Yes |
| 2 | Other - Require automatic shut of hoses | Shut-off valves required on all hoses used for irrigation purposes, City parks, and other City facilities | Yes |
| 2 | Landscape - Limit landscape irrigation to specific days | Two day/week irrigation schedule | Yes |
| 2 | Landscape - Other landscape restriction or prohibition | The irrigation of new landscaping shall be subject to the same restrictions as existing landscaping (i.e. the provisions allowing irrigation of new landscaping for a period of 21 days after planting will no longer apply). | Yes |
| 2 | Landscape - Prohibit certain types of landscape irrigation | Irrigation of ornamental turf on public street medians with potable City water will be prohibited | Yes |
| 2 | Other | Prohibit all public water uses not required for health and safety | Yes |
| 3 | Landscape - Limit landscape irrigation to specific days | One day/week irrigation, manual only | Yes |
| 3 | Landscape - Prohibit certain types of landscape irrigation | Prohibit automatic sprinklers | Yes |
| 3 | Landscape - Limit landscape irrigation to specific times | Limit irrigation hours | Yes |
| 3 | Landscape - Prohibit certain types of landscape irrigation | Reduce irrigation of parks and cemeteries. | Yes |
| 3 | Other | Prohibit car washing | Yes |
| 4 | Landscape - Other landscape restriction or prohibition | Prohibit outdoor irrigation of residential turf | Yes |
| 4 | Landscape - Prohibit certain types of landscape irrigation | Reduce irrigation of parks and cemeteries. | Yes |

NOTES:
Revised or additional prohibitions may be adopted by City Council Resolution.
The actions included in each stage are cumulative, meaning, for example, that if Stage 2 of the Water Shortage Contingency Plan is implemented, all of the measures in Stages 1 and 2 shall be implemented, unless altered by the City Council.

| Table 8-3 Retail Only:<br>Stages of Water Shortage Contingency Plan - Consumption Reduction Methods | | |
|---|---|---|
| Stage | Consumption Reduction Methods by Water Supplier | Additional Explanation or Reference *(optional)* |
| 1 | Other | Declare a Stage 1 water shortage by resolution |
| 1 | Other | Request customers reduce water by 10 to 20 percent |
| 1 | Expand Public Information Campaign | Initiate public information campaign and explain water conservation measures |
| 1 | Increase Water Waste Patrols | |
| 1 | Other | Enforce public fire hydrant use regulations |
| 1 | Other | Enforce irrigation schedule |
| 2 | Other | Declare a Stage 2 water shortage by resolution |
| 2 | Other | Require customers to reduce consumption by up to 30 percent |
| 2 | Expand Public Information Campaign | Intensify the public information campaign to inform customers of the need for water conservation |
| 2 | Increase Water Waste Patrols | |
| 2 | Decrease Line Flushing | Main flushing for emergency purposes only |
| 3 | Other | Declare a Stage 3 water shortage by resolution |
| 3 | Other | Require customers to reduce consumption by up to 40 percent |
| 3 | Expand Public Information Campaign | |
| 3 | Other | Intensify leak detection program |
| 4 | Other | Declare a Stage 4 water shortage by resolution |
| 4 | Other | Require customers to reduce consumption by up to 50 percent |
| 4 | Expand Public Information Campaign | |

NOTES:
Additional consumption reduction methods may be declared by City Council Resolution.
The actions included in each stage are cumulative, meaning, for example, that if Stage 2 of the Water Shortage Contingency Plan is implemented, all of the measures in Stages 1 and 2 shall be implemented, unless altered by the City Council.

| Table 8-4 Retail: Minimum Supply Next Three Years | | | |
|---|---|---|---|
| | 2016 | 2017 | 2018 |
| Available Water Supply | 273,362 | 278,362 | 283,862 |
| NOTES: Volumes are in AF. Minimum supply is based on the City's Maximum Annual Diversion as shown in the USBR Schedule A Settlement Contract and firm groundwater available minus the existing wholesale demands. | | | |

| Table 8-4 Wholesale: Minimum Supply Next Three Years | | | |
|---|---|---|---|
| | 2016 | 2017 | 2018 |
| Available Water Supply | 9,343 | 9,343 | 9,343 |
| NOTES: Volumes are in AF. Volumes shown are based on existing wholesale agreements and Hodge conditions in the American River. | | | |

| Table 10-1 Retail: Notification to Cities and Counties | | |
|---|---|---|
| City Name | 60 Day Notice | Notice of Public Hearing |
| Sacramento | ☑ | ☑ |
| County Name | 60 Day Notice | Notice of Public Hearing |
| Sacramento County | ☑ | ☑ |
| NOTES: | | |

| Table 10-1 Wholesale: Notification to Cities and Counties (select one) | | |
|---|---|---|
| ☐ | Supplier has notified more than 10 cities or counties in accordance with CWC 10621 (b) and 10642.<br>**Completion of the table below is not required. Provide a separate list of the cities and counties that were notified.** | |
| | Provide the page or location of this list in the UWMP. | |
| ☐ | Supplier has notified 10 or fewer cities or counties.<br>**Complete the table below.** | |
| City Name | 60 Day Notice | Notice of Public Hearing |
| Sacramento | ☑ | ☑ |
| County Name | 60 Day Notice | Notice of Public Hearing |
| Sacramento County | ☑ | ☑ |
| | | |
| NOTES: | | |

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# APPENDIX C

DWR 2015 Urban Water Management Plan Checklist

DRAFT

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| Appendix C. Urban Water Management Plan Checklist<br>Checklist Arranged by Subject | | | | |
|---|---|---|---|---|
| CWC Section | UWMP Requirement | Subject | Guidebook Location | UWMP Location |
| **10620(b)** | Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier. | Plan Preparation | Section 2.1 | **Section 2.1** |
| **10620(d)(2)** | 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. | Plan Preparation | Section 2.5.2 | **Section 2.5** |
| **10642** | Provide supporting documentation that the water supplier has encouraged 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. | Plan Preparation | Section 2.5.2 | **Section 2.5** |
| **10631(a)** | Describe the water supplier service area. | System Description | Section 3.1 | **Sections 3.1 and 3.2** |
| **10631(a)** | Describe the climate of the service area of the supplier. | System Description | Section 3.3 | **Section 3.3** |
| **10631(a)** | Provide population projections for 2020, 2025, 2030, and 2035. | System Description | Section 3.4 | **Section 3.4** |
| **10631(a)** | Describe other demographic factors affecting the supplier's water management planning. | System Description | Section 3.4 | **Section 3.4.3** |
| **10631(a)** | Indicate the current population of the service area. | System Description and Baselines and Targets | Sections 3.4 and 5.4 | **Section 3.4 and 5.7 Appendix F** |
| **10631(e)(1)** | Quantify past, current, and projected water use, identifying the uses among water use sectors. | System Water Use | Section 4.2 | **Sections 4.2 for Retail and 4.3 for Wholesale** |
| **10631(e)(3)(A)** | Report the distribution system water loss for the most recent 12-month period available. | System Water Use | Section 4.3 | **Section 4.5** |
| **10631.1(a)** | Include projected water use needed for lower income housing projected in the service area of the supplier. | System Water Use | Section 4.5 | **Section 4.7** |
| **10608.20(b)** | Retail suppliers shall adopt a 2020 water use target using one of four methods. | Baselines and Targets | Section 5.7 and App E | **Section 5.6 Appendix F** |
| **10608.20(e)** | Retail suppliers shall 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. | Baselines and Targets | Chapter 5 and App E | **Sections 5.5 to 5.7 Appendix F** |
| **10608.22** | Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply is the suppliers base GPCD is at or below 100. | Baselines and Targets | Section 5.7.2 | **Section 5.6 Appendix F** |
| **10608.24(a)** | Retail suppliers shall meet their interim target by December 31, 2015. | Baselines and Targets | Section 5.8 and App E | **Section 5.8 Appendix F** |
| **1608.24(d)(2)** | If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment. | Baselines and Targets | Section 5.8.2 | **N/A: No Adjustment – See Section 5.8** |
| **10608.36** | Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions. | Baselines and Targets | Section 5.1 | **Section 9.4** |
| **10608.40** | Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form. | Baselines and Targets | Section 5.8 and App E | **Section 5.7 Appendix F** |
| **10631(b)** | Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035. | System Supplies | Chapter 6 | **Chapter 6** |
| **10631(b)** | Indicate whether groundwater is an existing or planned source of water available to the supplier. | System Supplies | Section 6.2 | **Section 6.2** |
| **10631(b)(1)** | Indicate whether a groundwater management plan has 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. | System Supplies | Section 6.2.2 | **Section 6.2.2** |
| **10631(b)(2)** | Describe the groundwater basin. | System Supplies | Section 6.2.1 | **Section 6.2.1** |
| **10631(b)(2)** | Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump. | System Supplies | Section 6.2.2 | **Section 6.2.3** |
| **10631(b)(2)** | For unadjudicated basins, indicate whether or not the department has identified the basin as overdrafted, or projected to become overdrafted. Describe efforts by the supplier to eliminate the long-term overdraft condition. | System Supplies | Section 6.2.3 | **Section 6.2.3** |
| **10631(b)(3)** | 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. | System Supplies | Section 6.2.4 | **Section 6.2.4** |
| **10631(b)(4)** | Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped. | System Supplies | Sections 6.2 and 6.9 | **Section 6.9** |
| **10631(d)** | Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis. | System Supplies | Section 6.7 | **Section 6.7** |

| Appendix C. Urban Water Management Plan Checklist<br>Checklist Arranged by Subject | | | | |
|---|---|---|---|---|
| CWC Section | UWMP Requirement | Subject | Guidebook Location | UWMP Location |
| **10631(g)** | Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years. | System Supplies | Section 6.8 | **Section 6.8** |
| **10631(i)** | Describe desalinated water project opportunities for long-term supply. | System Supplies | Section 6.6 | **Section 6.6** |
| **10631(j)** | Retail suppliers will include documentation that they have provided their wholesale supplier(s) – if any - with water use projections from that source. | System Supplies | Section 2.5.1 | **Section 2.5.1** |
| **10631(j)** | Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types. | System Supplies | Section 2.5.1 | **Section 2.5.1** |
| **10633** | For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area. | System Supplies (Recycled Water) | Section 6.5.1 | **Section 6.5.1** |
| **10633(a)** | Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal. | System Supplies (Recycled Water) | Section 6.5.2 | **Section 6.5.2** |
| **10633(b)** | 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. | System Supplies (Recycled Water) | Section 6.5.2.2 | **Section 6.5.2** |
| **10633(c)** | Describe the recycled water currently being used in the supplier's service area. | System Supplies (Recycled Water) | Section 6.5.3 and 6.5.4 | **Section 6.5.3** |
| **10633(d)** | Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses. | System Supplies (Recycled Water) | Section 6.5.4 | **Section 6.5.4** |
| **10633(e)** | 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. | System Supplies (Recycled Water) | Section 6.5.4 | **Sections 6.5.4 and 6.9** |
| **10633(f)** | Describe the actions 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. | System Supplies (Recycled Water) | Section 6.5.5 | **Section 6.5.5** |
| **10633(g)** | Provide a plan for optimizing the use of recycled water in the supplier's service area. | System Supplies (Recycled Water) | Section 6.5.5 | **Section 6.5.4** |
| **10620(f)** | Describe water management tools and options to maximize resources and minimize the need to import water from other regions. | Water Supply Reliability Assessment | Section 7.4 | **Section 7.5** |
| **10631(c)(1)** | Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage. | Water Supply Reliability Assessment | Section 7.1 | **Section 7.1.5** |
| **10631(c)(1)** | Provide data for an average water year, a single dry water year, and multiple dry water years. | Water Supply Reliability Assessment | Section 7.2 | **Section 7.3** |
| **10631(c)(2)** | For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source. | Water Supply Reliability Assessment | Section 7.1 | **Section 7.1** |
| **10634** | Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability. | Water Supply Reliability Assessment | Section 7.1 | **Section 7.1.4** |
| **10635(a)** | Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years. | Water Supply Reliability Assessment | Section 7.3 | **Section 7.3** |
| **10632(a) and 10632(a)(1)** | Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage. | Water Shortage Contingency Planning | Section 8.1 | **Section 8.1** |
| **10632(a)(2)** | 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. | Water Shortage Contingency Planning | Section 8.9 | **Section 8.9** |
| **10632(a)(3)** | Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies. | Water Shortage Contingency Planning | Section 8.8 | **Section 8.8** |
| **10632(a)(4)** | Identify mandatory prohibitions against specific water use practices during water shortages. | Water Shortage Contingency Planning | Section 8.2 | **Section 8.2** |
| **10632(a)(5)** | Specify consumption reduction methods in the most restrictive stages. | Water Shortage Contingency Planning | Section 8.4 | **Section 8.4** |
| **10632(a)(6)** | Indicated penalties or charges for excessive use, where applicable. | Water Shortage Contingency Planning | Section 8.3 | **Section 8.3** |
| **10632(a)(7)** | Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts. | Water Shortage Contingency Planning | Section 8.6 | **Section 8.6** |
| **10632(a)(8)** | Provide a draft water shortage contingency resolution or ordinance. | Water Shortage Contingency Planning | Section 8.7 | **Appendix P** |

| Appendix C. Urban Water Management Plan Checklist<br>Checklist Arranged by Subject | | | | |
|---|---|---|---|---|
| CWC Section | UWMP Requirement | Subject | Guidebook Location | UWMP Location |
| **10632(a)(9)** | Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis. | Water Shortage Contingency Planning | Section 8.5 | **Section 8.5** |
| **10631(f)(1)** | Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code. | Demand Management Measures | Sections 9.2 and 9.3 | **Sections 9.2 through 9.3** |
| **10631(f)(2)** | Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program. | Demand Management Measures | Sections 9.1 and 9.3 | **Section 9.4** |
| **10631(j)** | CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been found to be in full compliance with the CUWCC MOU. | Demand Management Measures | Section 9.5 | **Section 9.1 and 9.5** |
| **10608.26(a)** | Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets. | Plan Adoption, Submittal, and Implementation | Section 10.3 | **Section 10.3** |
| **10621(b)** | Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. | Plan Adoption, Submittal, and Implementation | Section 10.2.1 | **Section 10.2** |
| **10621(d)** | Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016. | Plan Adoption, Submittal, and Implementation | Sections 10.3.1 and 10.4 | **Section 10.4** |
| **10635(b)** | Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 60 days after the submission of the plan to DWR. | Plan Adoption, Submittal, and Implementation | Section 10.4.4 | **Section 10.4** |
| **10642** | Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan. | Plan Adoption, Submittal, and Implementation | Sections 10.2.2, 10.3, and 10.5 | **Sections 10.2, 10.3, and 10.5 Appendix D** |
| **10642** | The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. | Plan Adoption, Submittal, and Implementation | Sections 10.2.1 | **Section 10.2 Appendix D** |
| **10642** | Provide supporting documentation that the plan has been adopted as prepared or modified. | Plan Adoption, Submittal, and Implementation | Section 10.3.1 | |
| **10644(a)** | Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library. | Plan Adoption, Submittal, and Implementation | Section 10.4.3 | |
| **10644(a)(1)** | Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption. | Plan Adoption, Submittal, and Implementation | Section 10.4.4 | |
| **10644(a)(2)** | The plan, or amendments to the plan, submitted to the department shall be submitted electronically. | Plan Adoption, Submittal, and Implementation | Sections 10.4.1 and 10.4.2 | **Section 10.4** |
| **10645** | Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours. | Plan Adoption, Submittal, and Implementation | Section 10.5 | **Section 10.5** |

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# APPENDIX D

Agency and Public Notices

DRAFT

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**From:** Brett Ewart <BEwart@cityofsacramento.org>
**Sent:** Monday, April 04, 2016 11:24 AM
**To:** rogersdl@saccounty.net
**Cc:** Brenda Estrada
**Subject:** Notice of Preparation of the City of Sacramento's Urban Water Management Plan 2015 Update

Dear Mr. Gill, Interim County Executive

The City of Sacramento (City) is currently in the process of updating its Urban Water Management Plan ("UWMP"). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts.

As an urban water supplier, the City coordinates with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMP update. The City will be reviewing the UWMP and will make amendments and updates, as appropriate.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to BEwart@cityofsacramento.org. Thank you.

Sincerely,

Brett Ewart
Senior Engineer

City of SACRAMENTO
Department of Utilities

1395 35th Ave.
Sacramento, CA 95822
(916) 808-1725
bewart@cityofsacramento.org

**From:** Brett Ewart <BEwart@cityofsacramento.org>
**Sent:** Monday, April 04, 2016 12:57 PM
**To:** petersonmi@saccounty.net
**Cc:** Brenda Estrada
**Subject:** Notice of Preparation of the City of Sacramento's Urban Water Management Plan 2015 Update

To: Michael Peterson, Director
Sacramento County Water Agency

Dear Mr. Peterson,

The City of Sacramento (City) is currently in the process of updating its Urban Water Management Plan ("UWMP"). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts.
As an urban water supplier, the City coordinates with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMP update. The City will be reviewing the UWMP and will make amendments and updates, as appropriate.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to BEwart@cityofsacramento.org. Thank you.

Sincerely,

Brett Ewart
Senior Engineer

City of SACRAMENTO
Department of Utilities

1395 35th Ave.
Sacramento, CA 95822
(916) 808-1725
bewart@cityofsacramento.org

**From:** Brett Ewart <BEwart@cityofsacramento.org>
**Sent:** Monday, April 04, 2016 11:39 AM
**To:** 'John Woodling'
**Cc:** Brenda Estrada
**Subject:** Notice of Preparation of the City of Sacramento's Urban Water Management Plan 2015 Update

Dear Mr. Woodling, Executive Director

The City of Sacramento (City) is currently in the process of updating its Urban Water Management Plan ("UWMP"). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts.

As an urban water supplier, the City coordinates with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMP update. The City will be reviewing the UWMP and will make amendments and updates, as appropriate.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to BEwart@cityofsacramento.org. Thank you.

Sincerely,

Brett Ewart
Senior Engineer

City of SACRAMENTO
Department of Utilities

1395 35th Ave.
Sacramento, CA 95822
(916) 808-1725
bewart@cityofsacramento.org

**From:** Brett Ewart <BEwart@cityofsacramento.org>
**Sent:** Monday, April 04, 2016 11:46 AM
**To:** 'Darrell Eck'
**Cc:** Brenda Estrada
**Subject:** Notice of Preparation of the City of Sacramento's Urban Water Management Plan 2015 Update

To: Mr. Darrel Eck, Executive Director
Sacramento Central Groundwater Authority

Dear Mr. Eck,

The City of Sacramento (City) is currently in the process of updating its Urban Water Management Plan ("UWMP"). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts.

As an urban water supplier, the City coordinates with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMP update. The City will be reviewing the UWMP and will make amendments and updates, as appropriate.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to BEwart@cityofsacramento.org. Thank you.

Sincerely,

Brett Ewart
Senior Engineer

City of SACRAMENTO
Department of Utilities

1395 35th Ave.
Sacramento, CA 95822
(916) 808-1725
bewart@cityofsacramento.org

**From:** Brett Ewart <BEwart@cityofsacramento.org>
**Sent:** Monday, April 04, 2016 11:48 AM
**To:** audie.foster@amwater.com
**Cc:** Brenda Estrada
**Subject:** Notice of Preparation of the City of Sacramento's Urban Water Management Plan 2015 Update

To: Mr. Audi Foster, General Manager
California American Water

Dear Mr. Foster,

The City of Sacramento (City) is currently in the process of updating its Urban Water Management Plan ("UWMP"). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts.

As an urban water supplier, the City coordinates with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMP update. The City will be reviewing the UWMP and will make amendments and updates, as appropriate.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to BEwart@cityofsacramento.org. Thank you.

Sincerely,

Brett Ewart
Senior Engineer

City of SACRAMENTO
Department of Utilities

1395 35th Ave.
Sacramento, CA 95822
(916) 808-1725
bewart@cityofsacramento.org

**From:** Brett Ewart <BEwart@cityofsacramento.org>
**Sent:** Monday, April 04, 2016 11:51 AM
**To:** 'Dan York'
**Cc:** Brenda Estrada
**Subject:** Notice of Preparation of the City of Sacramento's Urban Water Management Plan 2015 Update

To: Dan York, Assistant General Manager
Sacramento Suburban Water District

Dear Mr. York,

The City of Sacramento (City) is currently in the process of updating its Urban Water Management Plan ("UWMP"). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts.

As an urban water supplier, the City coordinates with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMP update. The City will be reviewing the UWMP and will make amendments and updates, as appropriate.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to BEwart@cityofsacramento.org. Thank you.

Sincerely,

Brett Ewart
Senior Engineer

City of SACRAMENTO
Department of Utilities

1395 35th Ave.
Sacramento, CA 95822
(916) 808-1725
bewart@cityofsacramento.org

**From:** Brett Ewart <BEwart@cityofsacramento.org>
**Sent:** Monday, April 04, 2016 11:58 AM
**To:** dobsonc@sacsewer.com
**Cc:** Brenda Estrada
**Subject:** Notice of Preparation of the City of Sacramento's Urban Water Management Plan 2015 Update

To: Christoph Dobson, Director of Policy and Planning
Sacramento Regional County Sanitation District

Dear Mr. Dobson,

The City of Sacramento (City) is currently in the process of updating its Urban Water Management Plan ("UWMP"). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts.
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Sacramento, CA 95822
(916) 808-1725
bewart@cityofsacramento.org

**From:** Brett Ewart <BEwart@cityofsacramento.org>
**Sent:** Monday, April 04, 2016 12:34 PM
**To:** bcook@fvwc.com
**Cc:** Brenda Estrada
**Subject:** Notice of Preparation of the City of Sacramento's Urban Water Management Plan 2015 Update

To: Robert C. Cook Jr., General Manager
Fruitridge Vista Water Company

Dear Mr. Cook,

The City of Sacramento (City) is currently in the process of updating its Urban Water Management Plan ("UWMP"). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts.
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Senior Engineer

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Department of Utilities

1395 35th Ave.
Sacramento, CA 95822
(916) 808-1725
bewart@cityofsacramento.org

**From:** Brett Ewart <BEwart@cityofsacramento.org>
**Sent:** Monday, April 04, 2016 1:02 PM
**To:** William Granger
**Cc:** Brenda Estrada
**Subject:** Notice of Preparation of the City of Sacramento's Urban Water Management Plan 2015 Update

To: Sacramento Water Conservation Advisory Group

Dear Members,

The City of Sacramento (City) is currently in the process of updating its Urban Water Management Plan ("UWMP"). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts.
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Senior Engineer

City of SACRAMENTO
Department of Utilities

1395 35th Ave.
Sacramento, CA 95822
(916) 808-1725
bewart@cityofsacramento.org

**From:** Brett Ewart <BEwart@cityofsacramento.org>
**Sent:** Monday, April 04, 2016 12:54 PM
**To:** mhenrici@rlecwd.com
**Cc:** Brenda Estrada
**Subject:** Notice of Preparation of the City of Sacramento's Urban Water Management Plan 2015 Update

To: Mary Henrici, General Manager
Rio Linda/Elverta CWD

Dear Ms. Henrici,

The City of Sacramento (City) is currently in the process of updating its Urban Water Management Plan ("UWMP"). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts.
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Brett Ewart
Senior Engineer

City of SACRAMENTO
Department of Utilities

1395 35th Ave.
Sacramento, CA 95822
(916) 808-1725
bewart@cityofsacramento.org

**From:** Brett Ewart <BEwart@cityofsacramento.org>
**Sent:** Monday, April 04, 2016 12:11 PM
**To:** Sedwick, Debra (debrasedwick@sbcglobal.net)
**Cc:** Brenda Estrada
**Subject:** RE: Notice of Preparation of the City of Sacramento's Urban Water Management Plan 2015 Update

To: Debra Sedwick, General Manager
Del Paso Manor Water District

Dear Ms. Sedwick,

The City of Sacramento (City) is currently in the process of updating its Urban Water Management Plan ("UWMP"). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts.
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Sincerely,

Brett Ewart
Senior Engineer

City of SACRAMENTO
Department of Utilities

1395 35th Ave.
Sacramento, CA 95822
(916) 808-1725
bewart@cityofsacramento.org

**From:** Brett Ewart <BEwart@cityofsacramento.org>
**Sent:** Monday, April 04, 2016 12:51 PM
**To:** bgray@natomaswater.com
**Cc:** Brenda Estrada
**Subject:** Notice of Preparation of the City of Sacramento's Urban Water Management Plan 2015 Update

To: Brett Gray, General Manager
Natomas Central Mutual Water Company

Dear Mr. Gray,

The City of Sacramento (City) is currently in the process of updating its Urban Water Management Plan ("UWMP"). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts.
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Senior Engineer

City of SACRAMENTO
Department of Utilities

1395 35th Ave.
Sacramento, CA 95822
(916) 808-1725
bewart@cityofsacramento.org

**From:** Brett Ewart <BEwart@cityofsacramento.org>
**Sent:** Monday, April 04, 2016 12:07 PM
**To:** Bedal, Rick (fcwd@sbcglobal.net)
**Cc:** Brenda Estrada
**Subject:** Notice of Preparation of the City of Sacramento's Urban Water Management Plan 2015 Update

To: Rick Bedal, General Manager
Florin County Water District

Dear Mr. Bedal,

The City of Sacramento (City) is currently in the process of updating its Urban Water Management Plan ("UWMP"). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts.
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Brett Ewart
Senior Engineer

City of SACRAMENTO
Department of Utilities

1395 35th Ave.
Sacramento, CA 95822
(916) 808-1725
bewart@cityofsacramento.org

**From:** Brett Ewart <BEwart@cityofsacramento.org>
**Sent:** Monday, April 04, 2016 12:16 PM
**To:** stamm@major.net
**Cc:** Brenda Estrada
**Subject:** Notice of Preparation of the City of Sacramento's Urban Water Management Plan 2015 Update

To: Larry Stamm, Manager
Tokay Park Water Company

Dear Mr. Stamm,

The City of Sacramento (City) is currently in the process of updating its Urban Water Management Plan ("UWMP"). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts.
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Brett Ewart
Senior Engineer

City of SACRAMENTO
Department of Utilities

1395 35th Ave.
Sacramento, CA 95822
(916) 808-1725
bewart@cityofsacramento.org

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# Order Receipt

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| **Notice Type:** | NOTICE OF PUBLIC HEARING (PUBHRG) |
| **Optional Description:** | 2015 Urban Water Management Plan Update |
| **Other Reference Number:** | COS NPH 1626 |
| **Hearing/Closing Date:** | 06/21/2016 |
| **Newspaper Name:** | SACRAMENTO BULLETIN* |
| **Run Dates:** | 06/07/2016 06/14/2016 |

| | |
|---|---|
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Thank you for submitting your order.

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**NOTICE OF PUBLIC HEARING**
**Sacramento City Council**
City Council Chamber, City Hall
915 "I" Street, 1st Floor, Sacramento, CA 95814
www.cityofsacramento.org

**Tuesday, June 21, 2016 at 6:00 PM**

**Hearing Title:** **2015 Urban Water Management Plan Update**

**Location:** **Citywide**

In accordance with the Urban Water Management Planning Act (California Water Code Section 10610 et seq.), the City of Sacramento is required to update its Urban Water Management Plan (UWMP) to meet the California Department of Water Resources (DWR) requirements for a 2015 UWMP.

The City has completed its draft 2015 UWMP update and has scheduled a public hearing for the review of the updated UWMP and method for determining its urban water use targets on Tuesday, June 21, 2016 at 6:00 pm in the City Hall Council Chamber located at 915 I Street, 1st Floor. The document will be considered for adoption following the public meeting.

A copy of the 2015 UWMP can be reviewed by visiting the City's web site at http://www.cityofsacramento.org/Utilities/Resources/Reports. A physical copy is also available at the Sacramento City Clerk's Office, the Department of Utilities Public Counter, and the Sacramento Central City library.

The detailed staff report for this item including attachments and exhibits will be published to the City of Sacramento website by close of business on **Thursday, June 16, 2016**. Visit http://sacramento.granicus.com/ViewPublisher.php?view_id=21 and choose "Upcoming Meetings" then select the appropriate meeting to access the agenda and staff report.

For further information on this matter, please contact: Brett Ewart, Senior Engineer, Department of Utilities, 916-808-1725, bewart@cityofsacramento.org.

This notice is being delivered in the matter required by: California Water Code 10642 and Government Code 6006

Further information may be obtained from the Office of the City Clerk at (916) 808-7200.

/s/
Shirley Concolino
City Clerk

# APPENDIX E

## DWR Water Audit

DRAFT

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# AWWA Free Water Audit Software:
## Reporting Worksheet

WAS v5.0

American Water Works Association.
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? Click to access definition
+ Click to add a comment

**Water Audit Report for:** City of Sacramento Department of Utilities
**Reporting Year:** 2015 | 7/2014 - 6/2015

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

**All volumes to be entered as: ACRE-FEET PER YEAR**

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

### WATER SUPPLIED

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Volume from own sources: | + ? | 7 | 90,292.800 | acre-ft/yr | + ? | 7 | Pcnt: | Value: | | acre-ft/yr |
| Water imported: | + ? | 8 | 766.400 | acre-ft/yr | + ? | 7 | | | | acre-ft/yr |
| Water exported: | + ? | 8 | 625.100 | acre-ft/yr | + ? | 7 | | | | acre-ft/yr |

Enter negative % or value for under-registration
Enter positive % or value for over-registration

**WATER SUPPLIED:** 90,434.100 acre-ft/yr

### AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

| | | | | | Pcnt: | Value: | |
|---|---|---|---|---|---|---|---|
| Billed metered: | + ? | 8 | 50,071.738 | acre-ft/yr | | | |
| Billed unmetered: | + ? | 5 | 30,455.000 | acre-ft/yr | | | |
| Unbilled metered: | + ? | n/a | 0.000 | acre-ft/yr | | | |
| Unbilled unmetered: | + ? | | 1,130.426 | acre-ft/yr | 1.25% | | acre-ft/yr |

**Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed**

Use buttons to select percentage of water supplied **OR** value

**AUTHORIZED CONSUMPTION:** ? 81,657.165 acre-ft/yr

### WATER LOSSES (Water Supplied - Authorized Consumption)

8,776.935 acre-ft/yr

**Apparent Losses**

| | | | | | Pcnt: | Value: | |
|---|---|---|---|---|---|---|---|
| Unauthorized consumption: | + ? | | 226.085 | acre-ft/yr | 0.25% | | acre-ft/yr |

**Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Customer metering inaccuracies: | + ? | 8 | 1,021.872 | acre-ft/yr | 2.00% | | acre-ft/yr |
| Systematic data handling errors: | + ? | | 125.179 | acre-ft/yr | 0.25% | | acre-ft/yr |

**Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed**

**Apparent Losses:** ? 1,373.137 acre-ft/yr

**Real Losses (Current Annual Real Losses or CARL)**

**Real Losses = Water Losses - Apparent Losses:** ? Use Customer Retail Unit Cost to 7,403.799 acre-ft/yr

**WATER LOSSES:** 8,776.935 acre-ft/yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** ? 9,907.362 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

| | | | | |
|---|---|---|---|---|
| Length of mains: | + ? | 8 | 1,686.0 | miles |
| Number of active AND inactive service connections: | + ? | 6 | 143,179 | |
| Service connection density: | ? | | 85 | conn./mile main |

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: + ? (length of service line, beyond the property boundary, that is the responsibility of the utility)

**Average length of customer service line has been set to zero and a data grading score of 10 has been applied**

Average operating pressure: + ? 8 45.0 psi

### COST DATA

| | | | | |
|---|---|---|---|---|
| Total annual cost of operating water system: | + ? | 10 | $82,658,781 | $/Year |
| Customer retail unit cost (applied to Apparent Losses): | + ? | 6 | $1.00 | $/100 cubic feet (ccf) |
| Variable production cost (applied to Real Losses): | + ? | 6 | $82.42 | $/acre-ft |

### WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 69 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

### PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Billed unmetered
3: Customer retail unit cost (applied to Apparent Losses)

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# APPENDIX F

SB X7-7 Compliance and Verification Tables

DRAFT

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| **SB X7-7 Table 0: Units of Measure Used in UWMP*** *(select one from the drop down list)* |
| --- |
| Acre Feet |
| **The unit of measure must be consistent with Table 2-3* |
| NOTES: |

| SB X7-7 Table-1: Baseline Period Ranges | | | |
|---|---|---|---|
| **Baseline** | **Parameter** | **Value** | **Units** |
| 10- to 15-year baseline period | 2008 total water deliveries | 0 | Acre Feet |
| | 2008 total volume of delivered recycled water | - | Acre Feet |
| | 2008 recycled water as a percent of total deliveries | 0.00% | Percent |
| | Number of years in baseline period[1, 2] | 10 | Years |
| | Year beginning baseline period range | 1996 | |
| | Year ending baseline period range[3] | 2005 | |
| 5-year baseline period | Number of years in baseline period | 5 | Years |
| | Year beginning baseline period range | 2003 | |
| | Year ending baseline period range[4] | 2007 | |

*[1] If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period. [2] The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.*

*[3] The ending year must be between December 31, 2004 and December 31, 2010.*

*[4] The ending year must be between December 31, 2007 and December 31, 2010.*

NOTES:

| SB X7-7 Table 2: Method for Population Estimates | |
|---|---|
| **Method Used to Determine Population**<br>(may check more than one) | |
| ☑ | **1. Department of Finance** (DOF)<br>DOF Table E-8 (1990 - 2000) and (2000-2010) and<br>DOF Table E-5 (2011 - 2015) when available |
| ☐ | **2. Persons-per-Connection Method** |
| ☐ | **3. DWR Population Tool** |
| ☐ | **4. Other**<br>DWR recommends pre-review |
| NOTES: | |

| SB X7-7 Table 3: Service Area Population | | |
|---|---|---|
| Year | | Population |
| 10 to 15 Year Baseline Population | | |
| Year 1 | 1996 | 384,090 |
| Year 2 | 1997 | 387,440 |
| Year 3 | 1998 | 401,411 |
| Year 4 | 1999 | 400,665 |
| Year 5 | 2000 | 407,018 |
| Year 6 | 2001 | 412,918 |
| Year 7 | 2002 | 423,084 |
| Year 8 | 2003 | 429,918 |
| Year 9 | 2004 | 436,799 |
| Year 10 | 2005 | 442,662 |
| *Year 11* | | |
| *Year 12* | | |
| *Year 13* | | |
| *Year 14* | | |
| *Year 15* | | |
| 5 Year Baseline Population | | |
| Year 1 | 2003 | 429,918 |
| Year 2 | 2004 | 436,799 |
| Year 3 | 2005 | 442,662 |
| Year 4 | 2006 | 445,774 |
| Year 5 | 2007 | 452,711 |
| 2015 Compliance Year Population | | |
| **2015** | | 480,105 |
| NOTES: | | |

**SB X7-7 Table 4-A: Volume Entering the Distribution System(s)**

Complete one table for each source.

| **Name of Source** | |
|---|---|
| **This water source is:** | |
| ☐ | The supplier's own water source |
| ☐ | A purchased or imported source |

| **Baseline Year** *Fm SB X7-7 Table 3* | | Volume Entering Distribution System | Meter Error Adjustment* *Optional (+/-)* | Corrected Volume Entering Distribution System |
|---|---|---|---|---|
| 10 to 15 Year Baseline - Water into Distribution System | | | | |
| Year 1 | 1996 | 120,424 | | 120,424 |
| Year 2 | 1997 | 125,801 | | 125,801 |
| Year 3 | 1998 | 115,831 | | 115,831 |
| Year 4 | 1999 | 131,402 | | 131,402 |
| Year 5 | 2000 | 131,178 | | 131,178 |
| Year 6 | 2001 | 134,650 | | 134,650 |
| Year 7 | 2002 | 134,090 | | 134,090 |
| Year 8 | 2003 | 135,995 | | 135,995 |
| Year 9 | 2004 | 139,579 | | 139,579 |
| Year 10 | 2005 | 131,626 | | 131,626 |
| Year 11 | 0 | | | - |
| Year 12 | 0 | | | - |
| Year 13 | 0 | | | - |
| Year 14 | 0 | | | - |
| Year 15 | 0 | | | - |
| 5 Year Baseline - Water into Distribution System | | | | |
| Year 1 | 2003 | 135,995 | | 135,995 |
| Year 2 | 2004 | 139,579 | | 139,579 |
| Year 3 | 2005 | 131,626 | | 131,626 |
| Year 4 | 2006 | 130,954 | | 130,954 |
| Year 5 | 2007 | 138,683 | | 138,683 |
| 2015 Compliance Year - Water into Distribution System | | | | |
| **2015** | | 84,832 | | 84,832 |

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES: Volumes are in AF.

| SB X7-7 Table 4: Annual Gross Water Use * | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Baseline Year** *Fm SB X7-7 Table 3* | | **Volume Into Distribution System** *This column will remain blank until SB X7-7 Table 4-A is completed.* | **Deductions** | | | | | **Annual Gross Water Use** |
| | | | **Exported Water** | **Change in Dist. System Storage (+/-)** | **Indirect Recycled Water** *This column will remain blank until SB X7-7 Table 4-B is completed.* | **Water Delivered for Agricultural Use** | **Process Water** *This column will remain blank until SB X7-7 Table 4-D is completed.* | |
| 10 to 15 Year Baseline - Gross Water Use | | | | | | | | |
| Year 1 | 1996 | 120,424 | | | - | | - | 120,424 |
| Year 2 | 1997 | 125,801 | | | - | | - | 125,801 |
| Year 3 | 1998 | 115,831 | | | - | | - | 115,831 |
| Year 4 | 1999 | 131,402 | | | - | | - | 131,402 |
| Year 5 | 2000 | 131,178 | | | - | | - | 131,178 |
| Year 6 | 2001 | 134,650 | | | - | | - | 134,650 |
| Year 7 | 2002 | 134,090 | | | - | | - | 134,090 |
| Year 8 | 2003 | 135,995 | | | - | | - | 135,995 |
| Year 9 | 2004 | 139,579 | | | - | | - | 139,579 |
| Year 10 | 2005 | 131,626 | | | - | | - | 131,626 |
| *Year 11* | 0 | - | | | - | | - | - |
| *Year 12* | 0 | - | | | - | | - | - |
| *Year 13* | 0 | - | | | - | | - | - |
| *Year 14* | 0 | - | | | - | | - | - |
| *Year 15* | 0 | - | | | - | | - | - |
| **10 - 15 year baseline average gross water use** | | | | | | | | **130,058** |
| 5 Year Baseline - Gross Water Use | | | | | | | | |
| Year 1 | 2003 | 135,995 | | | - | | - | 135,995 |
| Year 2 | 2004 | 139,579 | | | - | | - | 139,579 |
| Year 3 | 2005 | 131,626 | | | - | | - | 131,626 |
| Year 4 | 2006 | 130,954 | | | - | | - | 130,954 |
| Year 5 | 2007 | 138,683 | | | - | | - | 138,683 |
| **5 year baseline average gross water use** | | | | | | | | **135,367** |
| 2015 Compliance Year - Gross Water Use | | | | | | | | |
| **2015** | | 84,832 | - | | - | | - | **84,832** |

* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3

NOTES:

| SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD) | | | | |
|---|---|---|---|---|
| **Baseline Year** *Fm SB X7-7 Table 3* | | Service Area Population *Fm SB X7-7 Table 3* | Annual Gross Water Use *Fm SB X7-7 Table 4* | Daily Per Capita Water Use (GPCD) |
| 10 to 15 Year Baseline GPCD | | | | |
| Year 1 | 1996 | 384,090 | 120,424 | 280 |
| Year 2 | 1997 | 387,440 | 125,801 | 290 |
| Year 3 | 1998 | 401,411 | 115,831 | 258 |
| Year 4 | 1999 | 400,665 | 131,402 | 293 |
| Year 5 | 2000 | 407,018 | 131,178 | 288 |
| Year 6 | 2001 | 412,918 | 134,650 | 291 |
| Year 7 | 2002 | 423,084 | 134,090 | 283 |
| Year 8 | 2003 | 429,918 | 135,995 | 282 |
| Year 9 | 2004 | 436,799 | 139,579 | 285 |
| Year 10 | 2005 | 442,662 | 131,626 | 265 |
| *Year 11* | 0 | - | - | |
| *Year 12* | 0 | - | - | |
| *Year 13* | 0 | - | - | |
| *Year 14* | 0 | - | - | |
| *Year 15* | 0 | - | - | |
| **10-15 Year Average Baseline GPCD** | | | | **282** |
| 5 Year Baseline GPCD | | | | |
| **Baseline Year** *Fm SB X7-7 Table 3* | | Service Area Population *Fm SB X7-7 Table 3* | Gross Water Use *Fm SB X7-7 Table 4* | Daily Per Capita Water Use |
| Year 1 | 2003 | 429,918 | 135,995 | 282 |
| Year 2 | 2004 | 436,799 | 139,579 | 285 |
| Year 3 | 2005 | 442,662 | 131,626 | 265 |
| Year 4 | 2006 | 445,774 | 130,954 | 262 |
| Year 5 | 2007 | 452,711 | 138,683 | 273 |
| **5 Year Average Baseline GPCD** | | | | **274** |
| 2015 Compliance Year GPCD | | | | |
| **2015** | | 480,105 | 84,832 | **158** |

NOTES: Volumes are in AF.

| **SB X7-7 Table 6**: Gallons per Capita per Day<br>*Summary From Table SB X7-7 Table 5* | |
|---|---|
| 10-15 Year Baseline GPCD | 282 |
| 5 Year Baseline GPCD | 274 |
| 2015 Compliance Year GPCD | 158 |
| NOTES: | |

| **SB X7-7 Table 7: 2020 Target Method**<br>*Select Only One* | | |
|---|---|---|
| Target Method | | Supporting Documentation |
| ☑ | Method 1 | SB X7-7 Table 7A |
| ☐ | Method 2 | SB X7-7 Tables 7B, 7C, and 7D<br>*Contact DWR for these tables* |
| ☐ | Method 3 | SB X7-7 Table 7-E |
| ☐ | Method 4 | Method 4 Calculator |
| NOTES: | | |

| **SB X7-7 Table 7-A: Target Method 1**<br>20% Reduction | |
|---|---|
| 10-15 Year Baseline<br>GPCD | **2020 Target<br>GPCD** |
| 282 | **225** |
| NOTES: | |

| SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target | | | |
|---|---|---|---|
| 5 Year Baseline GPCD *From SB X7-7 Table 5* | Maximum 2020 Target[1] | Calculated 2020 Target[2] | **Confirmed 2020 Target** |
| 274 | 260 | 225 | **225** |

*[1] Maximum 2020 Target is 95% of the 5 Year Baseline GPCD* *[2] 2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.*

NOTES:

| SB X7-7 Table 8: 2015 Interim Target GPCD | | |
|---|---|---|
| Confirmed 2020 Target *Fm SB X7-7 Table 7-F* | 10-15 year Baseline GPCD *Fm SB X7-7 Table 5* | **2015 Interim Target GPCD** |
| 225 | 282 | **253** |
| NOTES: | | |

| SB X7-7 Table 9: 2015 Compliance | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Actual 2015 GPCD | 2015 Interim Target GPCD | Optional Adjustments *(in GPCD)* Enter "0" if Adjustment Not Used | | | TOTAL Adjustments | Adjusted 2015 GPCD | 2015 GPCD *(Adjusted if applicable)* | **Did Supplier Achieve Targeted Reduction for 2015?** |
| | | Extraordinary Events | Weather Normalization | Economic Adjustment | | | | |
| 158 | 253 | - | - | - | 0 | 158 | 158 | **YES** |

NOTES:

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# APPENDIX G

Sacramento Groundwater Authority Notification

DRAFT

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**Sacramento Groundwater Authority**
*Managing Groundwater Resources in Northern Sacramento County*

5620 Birdcage Street, Suite 180
Citrus Heights, CA 95610

Tel: (916) 967-7692
Fax: (916) 967-7322
www.sgah2o.org

California American Water
Carmichael Water District
Citrus Heights Water District
City of Folsom
City of Sacramento
County of Sacramento
Del Paso Manor Water District
Fair Oaks Water District
Golden State Water Company
Natomas Central Mutual Water Company
Orange Vale Water Company
Rio Linda / Elverta Community Water District
Sacramento Suburban Water District
San Juan Water District
Agricultural and Self-Supplied Representative

October 20, 2015

Mr. Mark Nordberg
GSA Project Manager
California Department of Water Resources
901 P Street, Room 213A
P.O. Box 942836
Sacramento, CA 94236

By US Mail and email to Mark.Nordberg@water.ca.gov

Dear Mr. Nordberg, Mark

This letter serves as notice that the Sacramento Groundwater Authority intends to be the Groundwater Sustainability Agency (GSA) for a portion of the North American Groundwater Subbasin (Number 5-21.64) as defined in Bulletin 118 (2003). This notice is submitted in compliance with Water Code Section 10723(d).

Sacramento Groundwater Authority is a joint powers agency created in 1998 to manage groundwater through an agreement among the County of Sacramento and the Cities of Sacramento, Folsom, and Citrus Heights. Consistent with its jurisdictional boundary, SGA intends to be the GSA for the portion of the North American subbasin located in Sacramento County. The area is bounded by the American River on the south, the Sacramento River on the west, the Sacramento-Placer County boundary on the north and the edge of the alluvial groundwater basin on the east. A map of the SGA jurisdictional area and the area for which SGA intends to serve as the GSA is enclosed as Exhibit A.

Pursuant to Water Code Section 10723(b), SGA published notice as required by Government Code Section 6066 (Exhibit B), and held a public hearing on October 8, 2015 as a part of its regular board meeting (agenda attached as Exhibit C). Immediately following the public hearing, the board of directors of SGA adopted Resolution 2015-02 (enclosed as Exhibit D).

In compliance with Water Code Section 10723.2, SGA will consider the interests of all beneficial uses and users of groundwater. Exhibit E contains a discussion and list of water users and other stakeholders that have been notified and will continue to be

informed as SGA undertakes development of a groundwater sustainability plan (as required by Water Code Section 10723.8(a)(4)). SGA has established and will maintain a list of persons interested in receiving notices of its activities, as required in Water Code Section 10723.4. SGA staff has held a series of meetings with local agencies and water users in the remaining portion of the North American Subbasin and will continue to coordinate in the future. No other entities have yet elected to be a GSA within the subbasin. In taking the action to serve as the GSA, the SGA did not adopt any new bylaws, ordinances, or authorities.

If you have any questions regarding the election to be the GSA for the portion of the North American Subbasin in Sacramento County, please contact me at (916) 967-7692.

Sincerely,

John Woodling
Executive Director
Sacramento Groundwater Authority

Exhibit A – Proposed Area for Which SGA will serve as the Groundwater Sustainability Agency

Excerpt from Figure 3 of 2014 SGA Groundwater Management Plan

Includes geographic coverage of adjoining groundwater management planning areas.

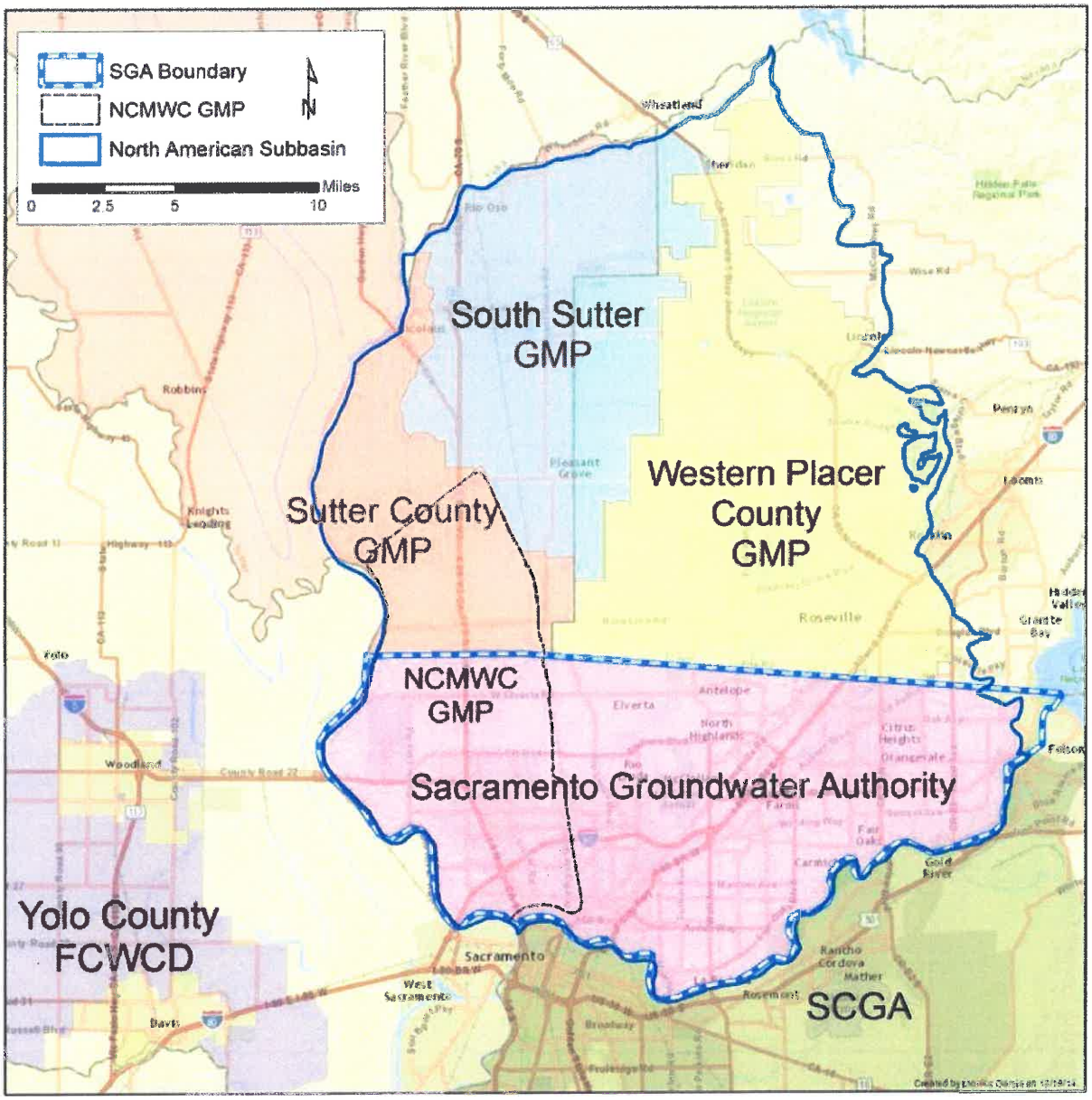

Exhibit B

OCT - 8 2015

# The Sacramento Bee

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

**THE SACRAMENTO**
**GROUNDWATER AUTHORITY**
**5620 BIRDCAGE ST**
**CITRUS HIGHTS CA 95610**

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 interest ed 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:

**SEPTEMBER 30, 2015**
**OCTOBER 6, 2015**

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 **OCTOBER 6, 2015**

(Signature)

NO 349 PUBLIC NOTICE

**NOTICE OF PUBLIC HEARING TO CONSIDER BECOMING A GROUNDWATER SUSTAINABILITY AGENCY**

The Sacramento Groundwater Authority (SGA) is a joint powers authority formed in 1998 to manage the groundwater basin underlying Sacramento County north of the American River. In 2014, the Sustainable Groundwater Management Act was passed. The Act requires creation of a Groundwater Sustainability Agency for groundwater basins in the state by June 30, 2017, followed by development of a Groundwater Sustainability Plan by 2022. The SGA will hold a public hearing at the October 8, 2015 SGA board of directors meeting to consider becoming the Groundwater Sustainability Agency for its jurisdictional area. The meeting, which is open to the public, will begin at 9 am at 5620 Birdcage Street, Suite 110 in Citrus Heights, CA. For more information on SGA or to find out more about its groundwater management efforts, visit www.sgah2o.org or contact Rob Swartz of SGA at (916) 967-7692.

Exhibit C

# SACRAMENTO GROUNDWATER AUTHORITY

## REGULAR MEETING OF THE BOARD OF DIRECTORS

**Thursday, October 8, 2015; 9:00 a.m.**

5620 Birdcage Street, Suite 110
Citrus Heights, CA 95610
(916) 967-7692

## AGENDA

**The Board will discuss all items on this agenda, and may take action on any of those items, including information items and continued items. The Board may also discuss other items that do not appear on this agenda, but will not act on those items unless action is urgent, and a resolution is passed by a two-thirds (2/3) vote declaring that the need for action arose after posting of this agenda.**

**The public shall have the opportunity to directly address the Board on any item of interest before or during the Board's consideration of that item. Public comment on items within the jurisdiction of the Board is welcomed, subject to reasonable time limitations for each speaker. Public documents relating to any open session item listed on this agenda that are distributed to all or a majority of the members of the Board of Directors less than 72 hours before the meeting are available for public inspection in the customer service area of the Authority's Administrative Office at the address listed above. In compliance with the Americans with Disabilities Act, if you have a disability and need a disability-related modification or accommodation to participate in this meeting, please contact the Executive Director of the Authority at (916) 967-7692. Requests must be made as early as possible, and at least one full business day before the start of the meeting.**

1. **CALL TO ORDER AND ROLL CALL**

2. **PUBLIC COMMENT:** Members of the public who wish to address the Board may do so at this time. Please keep your comments to less than three minutes.

3. **CONSENT CALENDAR**
   Minutes of August 13, 2015 meeting.
   **Action: Approve Consent Calendar item.**

4. **HEARING TO CONSIDER SACRAMENTO GROUNDWATER AUTHORITY ELECTING TO BECOME THE GROUNDWATER SUSTAINABILITY AGENCY FOR THE GROUNDWATER BASIN UNDERLYING SACRAMENTO COUNTY NORTH OF THE AMERICAN RIVER**
   **Action: Adopt Resolution 2015-02.**

5. **SGA GROUNDWATER MANAGEMENT PROGRAM UPDATE**
   Information Presentation: Rob Swartz, Manager of Technical Services.

6. **APPOINTMENT OF NOMINATIONS COMMITTEE FOR 2016 SGA OFFICERS**
   **Action: Chair to Appoint Nominations Committee for 2016 SGA Officers.**

7. **EXECUTIVE DIRECTOR'S REPORT**
   a. Government Affairs Update
   b. Drought Update
   c. Financial Reports

8. **CLOSED SESSION UNDER GOVERNMENT CODE SECTIONS 54954.5(C) AND 54956.9(D) – UPDATE ON CALPERS AUDIT OF RWA AND CALPERS CONTINUED OBLIGATION TO PROVIDE PENSION BENEFITS TO RWA EMPLOYEES.**

9. **DIRECTORS' COMMENTS**

**ADJOURNMENT**

**Next SGA Board of Director's Meeting** – December 10, 2015, 9:00 a.m., RWA/SGA office, 5620 Birdcage Street, Ste. 110, Citrus Heights.

# RESOLUTION NO. 2015-02

## A RESOLUTION OF THE SACRAMENTO GROUNDWATER AUTHORITY ELECTING TO BECOME THE GROUNDWATER SUSTAINABILITY AGENCY FOR THE GROUNDWATER BASIN UNDERLYING SACRAMENTO COUNTY NORTH OF THE AMERICAN RIVER

The Board of Directors of the Sacramento Groundwater Authority (SGA) does hereby find that:

**WHEREAS**, the SGA was formed under the Joint Exercise of Powers Act (Chapter 5 of Division 7 of Title 1 of the California Government Code), pursuant to a Joint Powers Agreement by and among the City of Citrus Heights, the City of Folsom, the City of Sacramento, and the County of Sacramento dated August 11, 1998; and

**WHEREAS**, the SGA was created for the purposes of protecting, preserving, and enhancing, for current and future beneficial uses, the groundwater resources in the North Area Groundwater Basin, in Sacramento County, north of the American River; and

**WHEREAS**, Assembly Bill 1739, Senate Bill 1319 and Senate Bill 1168, collectively the Sustainable Groundwater Management Act (Act), became California law on January 1, 2015; and

**WHEREAS**, the SGA updated its Groundwater Management Plan in December 2014 in response to provisions of the new Act; and

**WHEREAS**, the North American Subbasin, as defined in DWR Bulletin 118 and which the SGA overlies in part, is designated as a high priority basin by the California Department of Water Resources (DWR); and

**WHEREAS**, the SGA has had ongoing close coordination with other groundwater management entities in the North American Subbasin and adjacent subbasins; and

**WHEREAS**, the Act requires a Groundwater Sustainability Agency be formed for each high and medium priority groundwater basin in California; and

**WHEREAS**, the SGA is uniquely qualified to serve in the capacity of a Groundwater Sustainability Agency for its jurisdictional area; and

**WHEREAS**, the SGA has determined that its election to become a Groundwater Sustainability Agency is not a project and thus not subject to the California Environmental Quality Act (Title 14, Cal. Code of Regs. §15378 (b)(13)); and

**WHEREAS**, the SGA has conducted a public hearing to consider becoming the Groundwater Sustainability Agency for its area pursuant to Water Code Section 10723(b).

**NOW, THEREFORE,** be it resolved that:

1. The SGA elects to be the Groundwater Sustainability Agency for the groundwater basin underlying Sacramento County north of the American River.

2. The SGA will continue to provide opportunity for public involvement in the ongoing management of groundwater under the Act.

3. The SGA will notify DWR of its intent pursuant to Water Code Section 10723 (d).

4. The SGA will continue to coordinate with other groundwater management entities in the North American and South American subbasins.

***PASSED AND ADOPTED*** by the Board of Directors of the Sacramento Groundwater Authority, on October 8, 2015.

By: John A Wallace
Chairperson, Sacramento Groundwater Authority

Attest: Nancy Marrier
Nancy Marrier, Secretary, Board of Directors

Exhibit E

Sacramento Groundwater Authority

Attachment C to Notice of Intent

The Sacramento Groundwater Authority (SGA) is a joint powers agency formed pursuant to the Joint Exercise of Powers Act (Chapter 5 of Division 7 of Title 1 of the California Government Code). The JPA signatories include the Cities of Citrus Heights, Folsom, and Sacramento and the County of Sacramento, which collectively cover all of the land area within the JPA service area. The JPA signatories appoint 16 representatives to serve as the Board of Directors of SGA, including a representative of each municipal water supplier, a representative of self-supplied agriculture, and a representative of private self-supplied industrial (or commercial) groundwater use.

Pursuant to Water Code Section 10723.2, SGA has and will continue to consider the interests of all beneficial uses and users of groundwater, including:

(a) Holders of overlying groundwater rights – The SGA Board, which includes representatives of both self-supplied agricultural groundwater users and self-supplied industrial groundwater users, represents a broad range of interests that will ensure overlying groundwater rights are considered. SGA will also continue to reach out to other parties that may be interested in these endeavors. While individual domestic well owners are not directly represented, SGA is a public agency and complies with all requirements for public notice and public input on its activities.

(b) Municipal well operators – The 14 municipal water suppliers within the SGA service area are directly represented on the Board of Directors. These entities represent about 85% of the groundwater extraction within the jurisdictional area of SGA.

(c) Public water systems – SGA maintains a list of public water systems within its jurisdiction and will notify them as the development of the Groundwater Sustainability Plan proceeds.

(d) Local land use planning agencies – The local land use planning agencies are the signatories to the SGA joint powers agreement.

(e) Environmental users of groundwater – SGA has added the owners/managers of conservation properties that use groundwater to its interested parties list and will notify them as the development of the Groundwater Sustainability Plan proceeds.

(f) Surface water users – The primary surface water users within the SGA area are a subset of the 14 municipal water suppliers on the SGA Board of Directors.

(g) The federal government – SGA is not aware of any federal properties that use groundwater within the jurisdictional area. SGA maintains close working relationships with the Bureau of Reclamation, Corps of Engineers, U.S. Geological Survey, and Air Force Real Property Agency on their actions that may impact the groundwater basin.

(h) California Native American tribes – SGA has not identified any tribal properties that use surface water or groundwater within the area.

(i) Disadvantaged communities – The vast majority of census tracts meeting the definition of "disadvantaged community" are within the service areas of the 14 municipal water suppliers serving on the SGA Board of Directors. In addition, SGA is including small community water systems as identified in (c) above.

(j) SGA is the CASGEM reporting agency for the same area for which it intends to serve as the Groundwater Sustainability Agency.

Preliminary list of interested parties pursuant to Water Code Section 10723.2

October 9, 2015

Signatories to the SGA Joint Powers Agreement

County of Sacramento

City of Citrus Heights

City of Folsom

City of Sacramento

Representatives of the SGA Board of Directors

California American Water Company

Carmichael Water District

Citrus Heights Water District

City of Folsom

City of Sacramento

Del Paso Manor Water District

Fair Oaks Water District

Golden State Water Company

Natomas Central Mutual Water Company

Orange Vale Water Company

Rio Linda/Elverta Community Water District

Sacramento County Water Agency

Sacramento Suburban Water District

San Juan Water District

Self Supplied Agriculture – represented by Jack DeWit, DeWit Farms

Self Supplied Industry – represented by Rink Sanford, North Ridge Country Club

Other Groundwater Users

American River College

Arcade Creek Park District

Cherry Island Golf Course

Del Paso Country Club

Eleven Oaks Mobile Home Community

Foothill Golf Center

Gibson Ranch County Park

Haggin Oaks Golf Course

McClellan Mobile Home Park

Natomas Basin Conservancy

Natomas Golf Center

Sacramento Area Flood Control Agency

Teal Bend Golf Course

Twin Rivers Unified School District

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# APPENDIX H

USBR Settlement Contract Schedule B

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## Appendix H

## Diversion Schedule "B" by City of Sacramento

| Year | Requirement from American River (1,000 Acre Feet) | Year | Requirement from American River (1,000 Acre Feet) |
|---|---|---|---|
| 1963 | 48.0 | 1997 | 128.0 |
| 1964 | 49.5 | 1998 | 131.0 |
| 1965 | 51.0 | 1999 | 134.0 |
| 1966 | 53.0 | 2000 | 137.5 |
| 1967 | 55.0 | 2001 | 140.5 |
| 1968 | 56.5 | 2002 | 144.0 |
| 1969 | 58.5 | 2003 | 147.0 |
| 1970 | 60.5 | 2004 | 150.5 |
| 1971 | 62.5 | 2005 | 154.0 |
| 1972 | 64.5 | 2006 | 157.0 |
| 1973 | 66.5 | 2007 | 160.5 |
| 1974 | 68.5 | 2008 | 164.0 |
| 1975 | 71.0 | 2009 | 167.5 |
| 1976 | 73.0 | 2010 | 170.5 |
| 1977 | 75.5 | 2011 | 174.5 |
| 1978 | 77.5 | 2012 | 178.0 |
| 1979 | 80.0 | 2013 | 181.5 |
| 1980 | 82.5 | 2014 | 185.5 |
| 1981 | 85.0 | 2015 | 189.0 |
| 1982 | 87.0 | 2016 | 193.0 |
| 1983 | 89.5 | 2017 | 197.0 |
| 1984 | 92.0 | 2018 | 201.0 |
| 1985 | 94.5 | 2019 | 205.0 |
| 1986 | 97.0 | 2020 | 208.5 |
| 1987 | 99.5 | 2021 | 212.5 |
| 1988 | 102.0 | 2022 | 216.5 |
| 1989 | 105.0 | 2023 | 220.0 |
| 1990 | 107.5 | 2024 | 224.0 |
| 1991 | 110.5 | 2025 | 228.0 |
| 1992 | 113.0 | 2026 | 231.5 |
| 1993 | 116.0 | 2027 | 235.0 |
| 1994 | 119.0 | 2028 | 238.5 |
| 1995 | 122.0 | 2029 | 242.0 |
| 1996 | 125.0 | 2030 and subsequent years | 245.0 |

Source: Contract No. 14-06-200-6497 Operating Contract Relating to Folsom and Nimus Dams and their Related Works and to Diversion of Water by the City of Sacramento, United States Department of the Interior, Bureau of Reclamation, Central Valley Project, California (June 28, 1957)

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# APPENDIX I

Water Forum Agreement – Purveyor Specific Agreement

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## CITY OF SACRAMENTO

### A. INTRODUCTION

The City of Sacramento (City) purveys water within the City limits and a small area outside the City limits in the Fruitridge area. The City serves approximately 121,000 connections of which about 110,000 are residential customers.

The City of Sacramento has surface water entitlements on both the American and Sacramento Rivers and also uses groundwater. The City has a permanent agreement with the United States Bureau of Reclamation guaranteeing the accessibility of their entitlements. The authorized place of use under the City's water rights do not encompass the entire metropolitan area. The Sacramento River rights apply to the City limits; the American River rights cover an area of approximately 96,000 acres within and adjacent to the City.

The City has existing diversion, treatment, storage and pumping facilities on both of the rivers. The Sacramento River plant is located just downstream of the confluence with the American River. The American River plant known as the E. A. Fairbairn Water Treatment Plant (FWTP) is located near Howe Avenue approximately 16 miles downstream from Nimbus Dam.

### 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.

- Increased Surface Water Diversions
- Actions to Meet Customers' Needs While Reducing Diversion Impacts in Drier Years
- Support for an Improved Pattern of Fishery Flow Releases from Folsom Reservoir
- Lower American River Habitat Management Element
- Water Conservation Element
- Groundwater Management Element
- 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.

Although the City has the physical capacity to divert up to 112,000 AF, the baseline for the City's American River diversion is 50,000 AF. The rest of the City's surface water demand is met by Sacramento River diversion.

## D. AGREEMENT FOR MEETING THE CITY OF SACRAMENTO'S WATER SUPPLY NEEDS TO THE YEAR 2030

**TEXT OF CITY AGREEMENT:**

**1. Use of E. A. Fairbairn Water Treatment Plant (FWTP) Diversion Capacity**

a. 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) the City would limit its diversions of City Water[12] at the 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.

City water diverted at the FWTP in extremely dry years in accordance with the foregoing limitations could be used anywhere within the City's authorized Place of Use (POU) as it exists now and in the future[13].

b. 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 mgd) so long as the flow bypassing the diversion at the FWTP is greater than the Hodge Flow Criteria[14].

(2) Whenever flow bypassing the diversion at the FWTP is less than the Hodge Flow Criteria, City diversions 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 |

c. **Retail Water Service**. City Water diverted at FWTP in accordance with Article (b) of this section may be delivered anywhere: (1) within the City limits as they exist now

[12]The term "City Water" refers to water diverted pursuant to the City's water rights and entitlements.
[13]The City's POU, as it existed on January 1, 1997, is shown on Attachment I.
[14] The "Hodge Flow Criteria" is defined in Appendix C.

and in the future, and (2) within the City Retail Service Area[15] as it exists now and in the future but not including the area designated on Attachment II expected to be served by agencies other than the City.

d. **Wholesale Water Service - Above Hodge**. Whenever the flow bypassing the diversion at the FWTP is greater than the Hodge Flow Criteria the City may deliver City Water diverted or treated at the FWTP to public or private water purveyors on a wholesale basis, pursuant to wholesale agreements, anywhere within the POU as it existed on January 1, 1997. If it is proposed in the future to expand the POU this provision will be revisited by the Water Forum Successor Effort.

e. **Wholesale and Wheeling Water Service - Below Hodge.** Whenever flow bypassing the diversion at the FWTP is less than the Hodge Flow Criteria, any water diverted or treated at the FWTP may be delivered on a wholesale (City Water) or wheeling (non-City water) basis to any public or private water purveyors provided the rate of pumpback[16] is equal to or exceeds the rate of delivery for these purposes on a daily basis.

f. **Wholesale Delivery to Arcade and Citizens Utilities - Interim Period.** During the interim period prior to expansion of the FWTP and construction of a pumpback facility, delivery of City water may be provided to Arcade Water District and Citizens Utilities service areas within the City's POU whenever the flow bypassing the diversion at the FWTP is greater than the Hodge Flow Criteria. Such wholesale deliveries may also be made if it can be demonstrated[17] that such delivery does not originate from diversion at the FWTP. Citizens Utilities Southgate Service Area is exempt from this specific restriction.

g. **Environmental Signatories Support.** Environmental signatories' support for wholesale water deliveries from the City under articles d, e, and f of this section is contingent on those purveyors signing and implementing the *Water Forum Agreement*. Citizens Utilities Southgate Service Area is exempt from this contingency.

---

[15] The "City Retail Service Area" refers to the area where the City provides retail water service.

[16] This Agreement uses the term "pumpback" which assumes the existence of a metered raw water conveyance facility delivering water from near the confluence of the Sacramento and American rivers to the FWTP.

[17] Demonstration would consist of either the FWTP being out of service and/or the water quality of the water delivered having characteristics (i.e. electrical conductivity, total dissolved solids, hardness, etc..) of Sacramento River water.

**2. Divert and Treat an Additional 155 cubic feet per second at the Fairbairn Water Treatment Plant.**

a. Currently the 310 cubic feet per second diversion capacity at the Fairbairn Water Treatment Plant is constrained to 155 cubic feet per second by the City's ability to treat the water.

The City may rehabilitate its FWTP diversion facility and expand its FWTP treatment capacity by another 100 million gallons per day. This will allow the City to divert and treat an additional 155 cubic feet per second consistent with the terms of Section 1 above.

b. Concurrent with the expansion of the FWTP the City will also construct other facilities such as expansion/rehabilitation of the Sacramento River Water Treatment Plant and river intake to assure that a reliable alternative supply (groundwater, pumpback and/or diversion from the Sacramento River) is available whenever it is needed.

**3. Continuing studies of the Lower American River**

a. Upon receipt by the City of all necessary regulatory approvals to construct the additional capacity referred to in Section 2(a), above, completion of the City's environmental review for the project, and construction of said additional capacity, the City will commence a study program to monitor and evaluate the impacts of using the additional diversion capacity, in accordance with the diversion limits described in Section 1, upon the public trust values of the American River below the FWTP.

b. Not later than five years after the study program has commenced the results will be evaluated as follows:

(1) If the City and the Water Forum Successor Effort agree that results show that use of the additional diversion capacity pursuant to Section 1 above would have a significant adverse impact not considered in the City's prior environmental review, the City will reduce its use of the additional diversion capacity to levels that will not have such significant adverse impact.

(2) If at some time in the future, the City determines that it needs additional capacity and the Water Forum Successor Effort agrees that results demonstrate that increased diversions will not have significant adverse impacts, the City will have the support of all signatories if it chooses to pursue regulatory approvals for appropriate higher diversion limits and for the construction of more diversion and treatment capacity at FWTP for use within the POU.

(3) If the City and the Water Forum Successor Effort cannot agree on the results of (1) above, the limits will remain as specified in Section 1, the studies will continue and the evaluation of results will be repeated, as above, at intervals not exceeding three years.

## 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 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.*

*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 to the *Agreement* will endorse County/SCWA agreements with the City of Sacramento for wheeling and wholesaling of surface water prior to and after completion of the City's capacity expansion.

*20. All signatories agree to endorse, and where appropriate, participate in Sacramento River Supply for North Sacramento County and Placer County (Reference Section Four, III).*

*21. 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).*

*22. All signatories will endorse, and where appropriate, participate in the Folsom Reservoir Recreation Program (Reference Section Four, V).*

*23. 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.*

*24. 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.

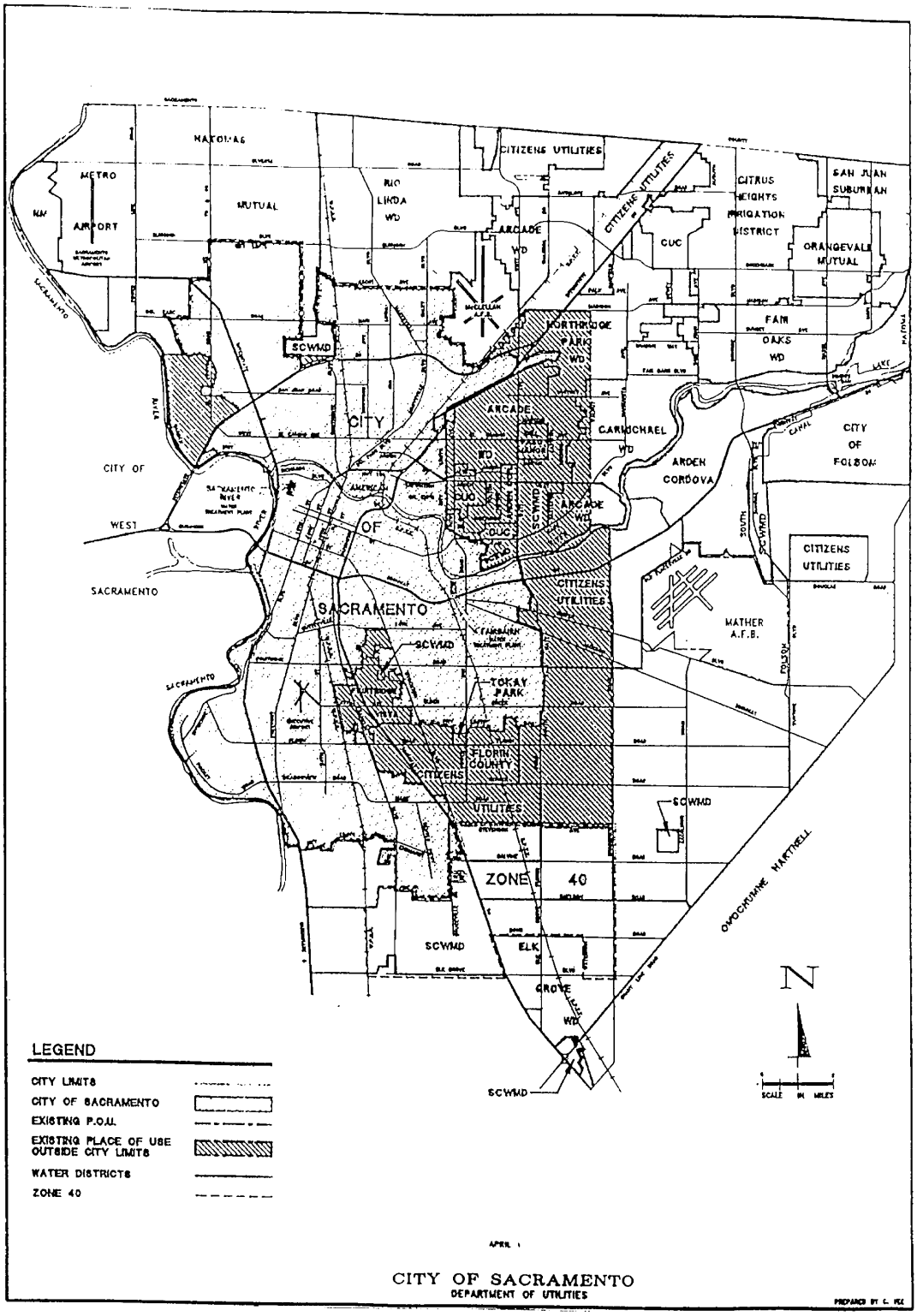
f. Adequate progress in addressing the Sacramento River and Bay-Delta conditions associated with implementation of the *Water Forum Agreement*.

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.

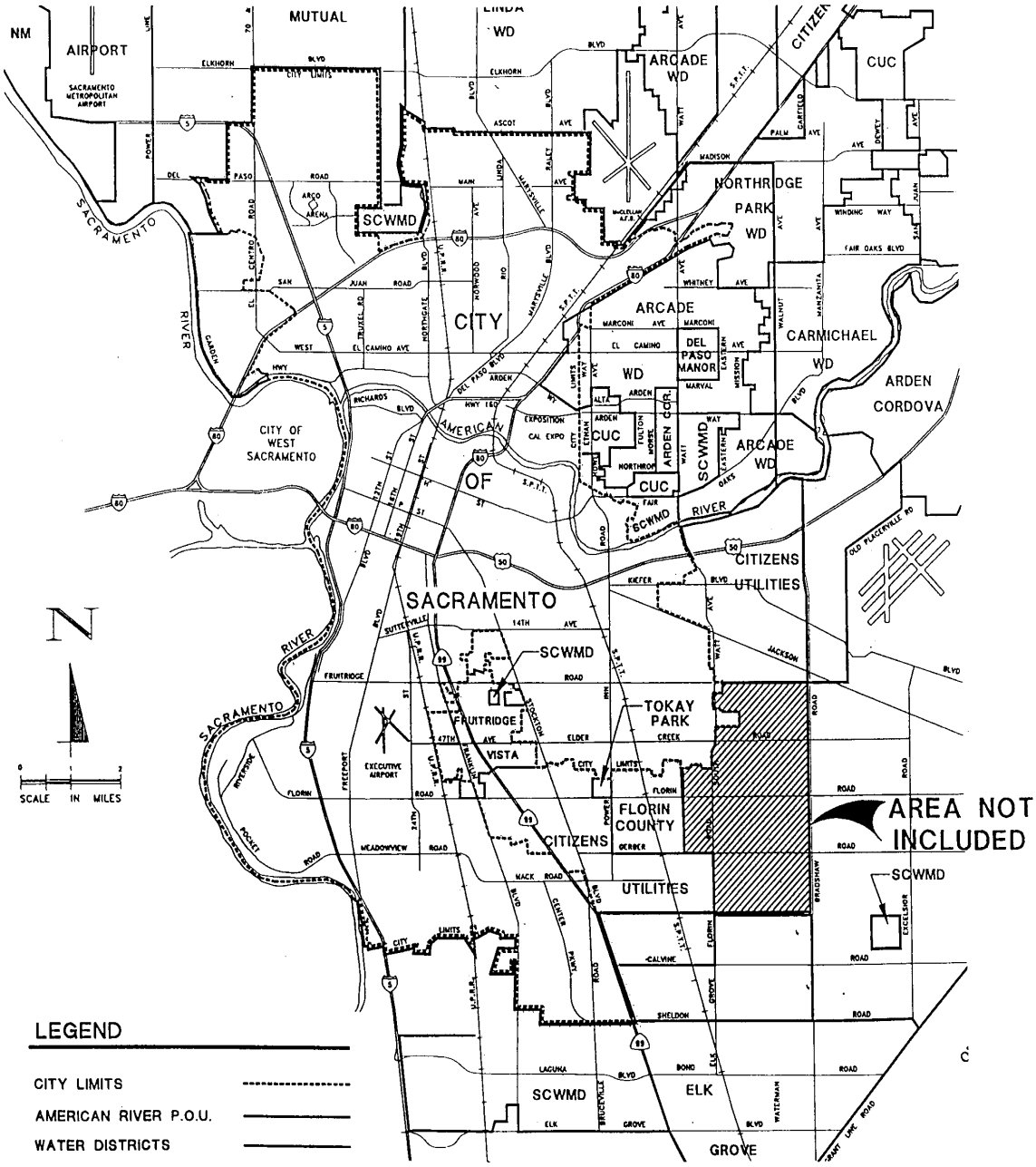
## G. REMAINING ISSUES

Development of a groundwater management arrangement for the South Area.

# Attachment I
# Map of City POU as of 1/1/97



# Attachment II
# Retail Service Area Exception



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# APPENDIX J

Recycled Water Feasibility Study Executive Summary

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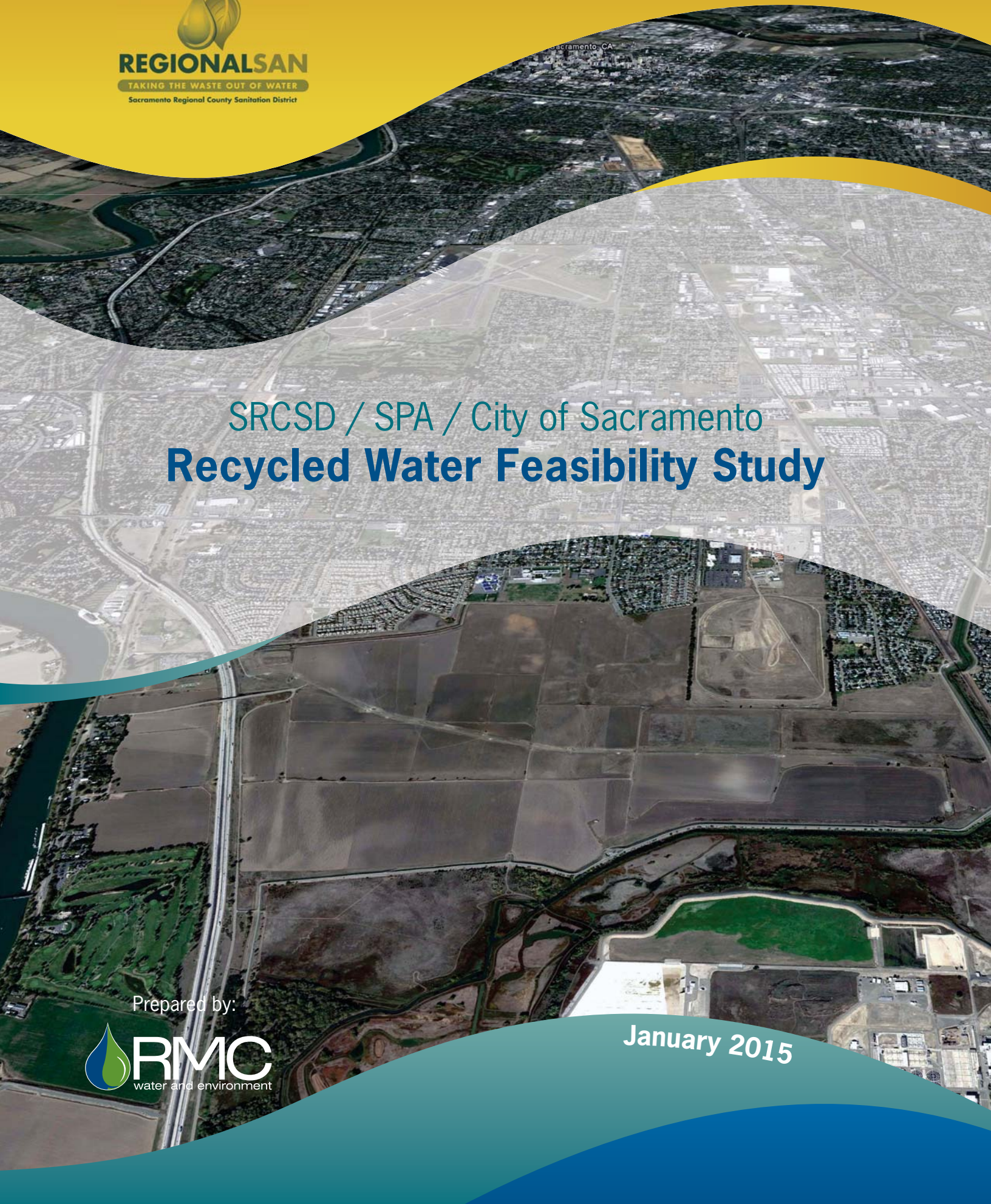
REGIONALSAN

TAKING THE WASTE OUT OF WATER

Sacramento Regional County Sanitation District



## SRCSD / SPA / City of Sacramento

# Recycled Water Feasibility Study

Prepared by:

RMC water and environment

January 2015

# Sacramento Regional County Sanitation District
# SRCSD / SPA / City of Sacramento Recycled Water Feasibility Study

**Prepared by:**

RMC Water and Environment

**January 2015**

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**Appendix D - Storage Analysis Technical Memorandum (TM 4)**
**Appendix E - Conveyance Facilities Alternatives Development Technical Memorandum (TM 5)**
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**Appendix H - Allowable Uses of Recycled Water**
**Appendix I - Unit Capital Costs**

## List of Abbreviations

| | |
|---|---|
| AF | acre-feet |
| AFY | acre-feet per year |
| APE | Area of Potential Effect |
| CDFG | California Department of Fish and Game |
| CDPH | California Department of Public Health |
| CECs | Constituents of Emerging Concern |
| CEQA | California Environmental Quality Act |
| cfs | cubic feet per second |
| DWR | California Department of Water Resources |
| EIR | Environmental Impact Report |
| EIS | Environmental Impact Statement |
| ET | Evapotranspiration |
| FE | Federally endangered |
| FRWP | Freeport Regional Water Project |
| FT | Federally threatened |
| gpd | gallons per day |
| GWR | Groundwater recharge |
| HP | Horsepower |
| kWh | kilowatt hour |
| LAFCO | Local Agency Formation Commission |
| LADWP | Los Angeles Department of Water and Power |
| LF | Linear Feet |
| M&I | Municipal and Industrial |
| mg | milligrams |
| mgd | million gallons per day |
| MWh | Megawatt hour |
| NCCP | Natural Community Conservation Planning |
| NEPA | National Environmental Policy Act |
| NMFS | National Marine Fisheries Service |
| NOAA | National Oceanic and Atmospheric Administration |
| NPDES | National Pollutant Discharge Elimination System |
| NPV | net present value |
| NTU | Nephelometric Turbidity Units |
| NWR | National Wildlife Refuge |

| | |
|---|---|
| O&M | Operations & Maintenance |
| PER | Sacramento County Planning and Environmental Review |
| Reclamation | United States Bureau of Reclamation |
| RO | Reverse Osmosis |
| RW | Recycled Water |
| RWQCB | Regional Water Quality Control Board |
| SAR | Sodium Adsorption Ratio |
| SCGA | Sacramento Central Groundwater Authority |
| SCWA | Sacramento County Water Agency |
| SGA | Sacramento Groundwater Authority |
| SHPO | State Historic Preservation Office |
| SMUD | Sacramento Municipal Utility District |
| SRCSD | Sacramento Regional County Sanitation District |
| SRWTP | Sacramento Regional Wastewater Treatment Plant |
| SSHCP | South Sacramento Habitat Conservation Plan |
| SWRCB | State Water Resources Control Board |
| TDS | Total Dissolved Solids |
| TM | Technical Memorandum |
| TMDL | Total Maximum Daily Load |
| TNC | The Nature Conservancy |
| USACE | United States Army Corps of Engineers |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Service |
| WDR | Waste Discharge Requirements |
| WRF | Water Recycling Facility |
| WW | wastewater |

This study was prepared to meet the requirements of the United States Bureau of Reclamation (Reclamation) Directives and Standards for the Title XVI Water Reclamation and Reuse Program (WTR 11-01). The Directives and Standards provide a minimum report contents. The following table summarizes the minimum report contents by WTR 11-01 Chapter and Subchapter; the third column of the table indicates where in this study the information can be found.

**Reclamation Chapter & Subchapter Reference Table**

| RECLAMATION Chapter | RECLAMATION Subchapter | Corresponding Section/Page # in this Study |
|---|---|---|
| **Introductory Information** | 1a. Identification of the non-Federal project sponsor | • 1.1.1 |
| | 1b. A description of the study area and an area/project map | • 1.2 |
| | 1c. A definition of the study area in terms of both the site-specific project area where the reclaimed water supply will be needed and developed, and any reclaimed water distribution systems. | • 2.4 |
| **Statement of Problems and Needs** | 2a. Description of the problem and needs for a water reclamation and reuse project | • 2.1 |
| | 2b. Description of current and projected water supplies, include water rights, and potential sources of additional water, other than the proposed Title XVI project, and plans for new facilities. | • 2.2.1<br>• 2.2.2 |
| | 2c. Description of current and projected water demands | • 2.2.3 |
| | 2d. Description of any water quality concerns for the current and projected water supply. | • 2.5 |
| | 2e. Description of current and projected wastewaters and disposal options other than the proposed Title XVI project, and plans for new wastewater facilities, including projected costs. | • 2.3.1 |
| **Water Reclamation and Reuse Opportunities** | 3a. Description of all uses for reclaimed water, or categories of potential uses (included but not limited to, environmental restoration, fish and wildlife, groundwater recharge, municipal, domestic, industrial, agricultural, power generation, and recreation). Identify any associated water quality, and associated treatment requirements. | • 3.1 |
| | 3b.Description of the water market available to utilize recycled water to be produced, including:<br>1. (i) Identification of:<br>1. Potential users, | • 3.2.1 |
| | 2. Expected use, peak use | • 3.2.3 |
| | 3. On-site conversion costs, | • 5.5.1 |
| | 4. Desire to use recycled water, including letters of intent if available. | • 3.3 |
| | 2. (ii) Description of any consultation with potential recycled water customers. | • 3.3 |

| RECLAMATION Chapter | RECLAMATION Subchapter | Corresponding Section/Page # in this Study |
|---|---|---|
| | 3. (iii) Description of the market assessment procedures used. | • 3.2.2 |
| | 3c. Discussion of considerations which may prevent implementing a water reuse project. Identify methods or community incentives to stimulate recycled water demand, and methods to eliminate obstacles which may inhibit the use of reclaimed water, including pricing. | • 3.3.1 |
| | 3d. Identification of all the water and wastewater agencies that have jurisdiction in the potential service area or over the sources of reclaimed water. | • 2.2.1 (Water)<br>• 2.3.1 (Wastewater) |
| | 3e. Description of potential sources of water to be reclaimed, including impaired surface and ground waters. | • 2.3.1 |
| | 3f. Description and location of the source water facilities, including:<br>1. Capacities, plans for future facilities | • 2.3.1 |
| | 2. Treatment processes | • 2.3.1 |
| | 3. Plans for future source water facilities | • 2.3.1 |
| | 4. Existing flows, quantities of impaired water available to meet new reclaimed and reused water demands | • 2.3.1 |
| | 3g. Description of the current water reuse taking place, including a list of reclaimed water uses, type and amount of reuse, and a map of existing pipelines and use sites. | • 2.4 |
| | 3h. Summary of water reclamation and reuse technology currently in use, and opportunities for development of improved technologies. | • 2.3.1 |
| **Description of Alternatives** | 4a. Description of non-Federal funding condition. The reasonably foreseeable future actions that the non-Federal project sponsor would take if Federal funding were not provided for the proposed water reclamation and reuse project, including estimated costs. | • 8.4.2 |
| | 4b. Statement of the objectives all alternatives are designed to meet. | • 5.1 |
| | 4c. Description of the other water supply alternatives considered to accomplish the objectives to be addressed by the proposed Title XVI project, including benefits to be gained by each alternative, total project cost, life cycle cost, and corresponding cost of the project water produced expressed in dollars per million gallons (MG), and/or dollars per acre-foot. An appraisal level cost estimates, or better, is acceptable for these alternatives. | • 5.4 |

| RECLAMATION Chapter | RECLAMATION Subchapter | Corresponding Section/Page # in this Study |
|---|---|---|
| | 4d. Description of the proposed Title XVI project including detailed project cost estimate; annual operation, maintenance, and replacement cost estimate; and life cycle costs shall be provided with sufficient detail to permit a more in-depth evaluation of the project, including non-construction costs. | • 5.5<br>• 5.8 (Life Cycle) |
| | 4e. Description of waste-stream discharge treatment and disposal water quality requirements for the proposed Title XVI project. | • 2.3 |
| | 4f. Description of at least two alternative measures, or technologies available for water reclamation, distribution, and reuse for the project under consideration. These alternatives must be approvable by the state(s) or tribal authorities in which the project will be located. | • 2.3 |
| **Economic Analysis** | 5a. The economic analysis included in the feasibility study report shall describe the conditions that exist in the area and provide projections of the future with, and without, the project. Emphasis in the analysis must be given to the contributions that the plan could make toward alleviation of economic problems and the meeting of future demand. | • 5.6 |
| | 5b. The Title XVI feasibility study must include a cost comparison of alternatives that would satisfy the same demand as the proposed Title XVI project. Alternatives used for comparison must be likely and realistic, and developed with the same standards with respect to interest rates and period of analysis. | • 5.6 |
| | 5c. When a Title XVI project provides water supplies for municipal and industrial use, the benefits of the Title XVI project can be measured in terms of the cost of the alternatives most likely to be implemented in the absence of the project. This is assuming that the two alternatives would provide comparable levels of service. | • 5.7.1 |
| | 5d. Some Title XVI project benefits may be difficult to quantify; for example, a drought tolerant water supply, reduced water importation, and other social or environmental benefits. These benefits shall be documented and described qualitatively as completely as possible. These qualitative benefits can be considered as part of the justification for a Title XVI project in conjunction with the comparison of project costs. | • 5.9 |

| RECLAMATION Chapter | RECLAMATION Subchapter | Corresponding Section/Page # in this Study |
|---|---|---|
| **Selection of the Proposed Title XVI Project** | 6a. Provide an analysis of whether the proposed Title XVI project would address the following:<br>1. (i) Reduction, postponement, or elimination of development of new or expanded water supplies;<br>2. (ii) Reduction or elimination of the use of existing diversions from natural watercourses, or withdrawals from aquifers;<br>3. (iii) Reduction of demand on existing Federal water supply facilities; and<br>4. (iv) Reduction, postponement, or elimination of new or expanded wastewater facilities. | • 5.3 |

| RECLAMATION Chapter | RECLAMATION Subchapter | Corresponding Section/Page # in this Study |
|---|---|---|
| **Environmental Consideration and Potential Effects** | 7a. The Title XVI feasibility study report must include sufficient information on each alternative to allow Reclamation to assess the potential measures and costs that may be necessary to comply with NEPA, and any other applicable Federal law. Accordingly, the following information is required:<br>1. (i) Discussion whether, and to what extent, the proposed Title XVI project will have potentially significant impacts on endangered or threatened species, public health or safety, natural resources, regulated waters of the United States, or cultural resources.<br>2. (ii) Discuss whether, and to what extent, the project will have potentially significant environmental effects, or will involved unique or undefined environmental risks.<br>3. (iii) Description of the status of required Federal, state, tribal, and/or local environmental compliance measures for the proposed Title XVI project including copies of any documents that have been prepared, or results of any relevant studies.<br>4. (iv) Any other information available to the study lead that would assist with assessing the measures that may be necessary to comply with NEPA, and other applicable Federal, state or local environmental laws such as the Endangered Species Act or the Clean Water Act.<br>5. (v) Discussion of how the proposed Title XVI project will affect water supply and water quality from the perspective of a regional, watershed, aquifer or river basin condition.<br>6. (vi) Discussion of the extent to which the public was involved in the feasibility study, and a summary of comments received, if any.<br>7. (vii) Description of the potential effects the project may have on historic properties. Discussion must include potential mitigation measures, the potential for adaptive reuse of facilities, an analysis of historic preservation costs, and the potential for heritage education, if necessary. | Items (i) – (v)<br>Chapter 6<br><br>Item (vi)<br>• 3.3<br><br>Item (vii)<br>• 6.2.3 |
| **Legal and Institutional Requirements** | 8a. Analysis of any water rights issues potentially resulting from implementation of the proposed water reclamation and reuse project. All proposed Title XVI projects must comply with state water law. | • 7.1 |

| RECLAMATION Chapter | RECLAMATION Subchapter | Corresponding Section/Page # in this Study |
|---|---|---|
| | 8b. Discussion of legal and institutional requirements, state, and/or local requirements with the potential to affect implementation of the project. Title XVI projects using Reclamation project water must address contractual requirements. | • 7.2 |
| | 8c. Discussion of the need for multi-jurisdictional or interagency agreements, any coordination undertaken, and any planned coordination activities. | • 7.2.1 |
| | 8d. Discussion of permitting procedures required for the implementation of water reclamation projects in the study area, and any measures that the non-Federal project sponsor can implement that could speed the permitting process. | • 7.3 |
| | 8e. Discussion of any unresolved issues associated with implementing the proposed water reclamation and reuse project, how and when such issues will be resolved, and how the project would be affected if such issues are not resolved. | • 7.5 |
| | 8f. Identification of current and projected wastewater discharge requirements resulting from the proposed Title XVI project. | • 7.4 |
| | 8g. Description of rights to wastewater discharges resulting from implementation of the proposed Title XVI project. | • 7.1 |
| **Financial Capability of Sponsor** | 9a. Proposed schedule for project implementation. | • 8.2 |
| | 9b. Discussion of the willingness of the non-Federal project sponsor to pay for its share of capital costs and the full operation, maintenance, and replacement costs. | • 8.4.1 |
| | 9c. A plan for funding the proposed water reclamation and reuse project's construction, operation, maintenance, and replacement costs, including an analysis of how the non-Federal project sponsor will pay construction and annual operation, maintenance, and replacement costs. | • 8.4.2 |
| | 9d. Description of all Federal and non-Federal sources of funding and any restrictions on such sources, for example, minimum or maximum cost-share limitations. Generally, for Title XVI authorized projects, the Federal cost share is limited to 25 percent, of $20,000,000, whichever is less. | • 8.4.3 |
| **Research Needs** | At a minimum the report must include a statement on whether the proposed water reclamation and reuse project includes basic research needs, and the extent that the proposed Title XVI project will use proven technologies and conventional system components. | • Chapter 9 |

# Executive Summary

## ES-1 Introduction

The Sacramento Regional County Sanitation District (SRCSD) is a special district providing regional wastewater conveyance and treatment services throughout the cities of Citrus Heights, Elk Grove, Folsom, Rancho Cordova, Sacramento and West Sacramento, the communities of Courtland and Walnut Grove and unincorporated Sacramento County, California. SRCSD is the non-Federal project sponsor for this feasibility study.

In 2007, SRCSD completed the Water Recycling Opportunities Study. This study took a county-wide look at a variety of potential recycled water projects. The WROS concluded that water recycling projects near the vicinity of the Sacramento Regional Wastewater Treatment Plant (SRWTP) are the most promising projects for implementation since they are the closest to a recycled water supply.

In 2009, the City initiated the process to update its Water Supply Master Plan (WSMP). As part of this effort, the City is evaluating the feasibility of using recycled water within its service area. So far, the most promising recycled water opportunities identified in the WSMP evaluation are located in the southwest portion of the City due to their close proximity to the SRWTP. In particular, the Sacramento Power Authority (SPA) Cogeneration Plant (Cogen Plant) located in unincorporated Sacramento County is currently using potable water from the City of Sacramento to supply its cooling tower water needs, and could be converted to recycled water without significant changes to its operation.

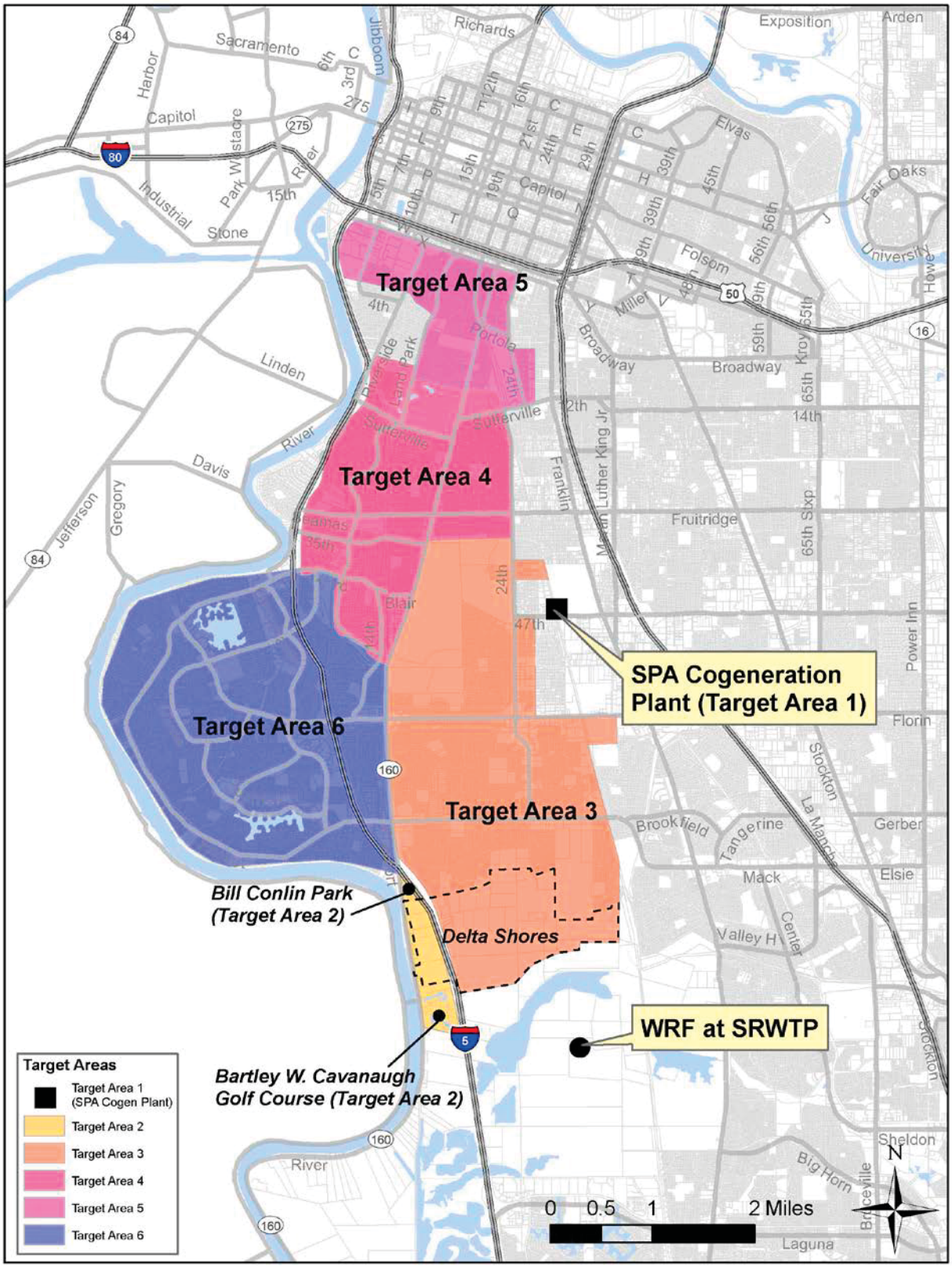
This feasibility study focuses on further evaluating the feasibility of the SRCSD / SPA / City of Sacramento Recycled Water Project (Project), and was funded in part by a grant from the United States Bureau of Reclamation (Reclamation). This report is a summary of the study that is applicable to the Reclamation determination of program feasibility. The complete series of technical memoranda (TM) prepared are included as Appendices and are referenced throughout this report. The TMs by title are as follows:

- TM 1: Market Assessment (Appendix A)
- TM 2: Current Water Supplies Evaluation (Appendix B)
- TM 3: Groundwater Recharge (Appendix C)
- TM 4: Seasonal Storage Analysis (Appendix D)
- TM 5: Conveyance Facilities Alternatives Development (Appendix E)
- TM 6: Environmental, Regulatory, Legal and Institutional Requirements (Appendix F)
- TM 7: Recycled Water Project Alternatives Evaluation Environmental, Regulatory, Legal and Institutional Requirements (Appendix G)

### ES-1.1 Study Area

The Project Study Area is located north of the SRWTP, east of the Sacramento River, south of Broadway, and west of Franklin Boulevard. This study area was developed to leverage the proposed pipeline to the SPA Cogen Plant to supply additional recycled water to other potential nearby customers. The SPA Cogen Plant would serve as an anchor customer, and other customers would be included based on connection cost-effectiveness. Most significant nearby potential customers are located to the west of Franklin Boulevard; therefore, the study area did not include areas further east. The majority of the Project Study Area, with the exception of the proposed Delta Shores Development, has been developed. The Project Study Area is divided into five target areas to implement flexible recycled water projects that can be built in phases as financing becomes available. These five target areas are shown in Figure ES-1.

**Figure ES-1: Study Area**



# ES-2 Recycled Water Market Assessment

The recycled water demand for customers within the target area was estimated based on the irrigated area of the customers and typical irrigation rates for the region. Demand by the SPA Cogen Plant was estimated based on conversations with staff at the Cogen Plant.

**Table ES-1: Recycled Water Demand Summary**

| Target Area | # Customers | Irrigated Area (acres) | Annual Average Demand (AFY) | Maximum Day Demand (mgd) | Peak Hour Demand (gpm) |
|---|---|---|---|---|---|
| 1 | 1 | 0 | 1,000 | 0.89 | 620 |
| 2 | 6 | 127 | 420 | 0.81 | 1,009 |
| 3 | 43 | 395 | 1,303 | 2.50 | 5,211 |
| 4 | 13 | 307 | 1,012 | 2.00 | 4,160 |
| 5 | 9 | 99 | 326 | 0.63 | 1,302 |
| 6 | 14 | 179 | 589 | 1.13 | 2,356 |
| **Total** | **87** | **1,106** | **4,650** | **7.96** | **14,657** |

## ES-2.1 Recycled Water Stakeholder and Customer Outreach

Select customer outreach and collaboration has been completed with large customers such as the SPA Cogen Plant and the Bartley Cavanaugh Golf Course. Additional customer outreach efforts are planned for the near future with landscape irrigation customers.

# ES-3 Recycled Water Project Screening

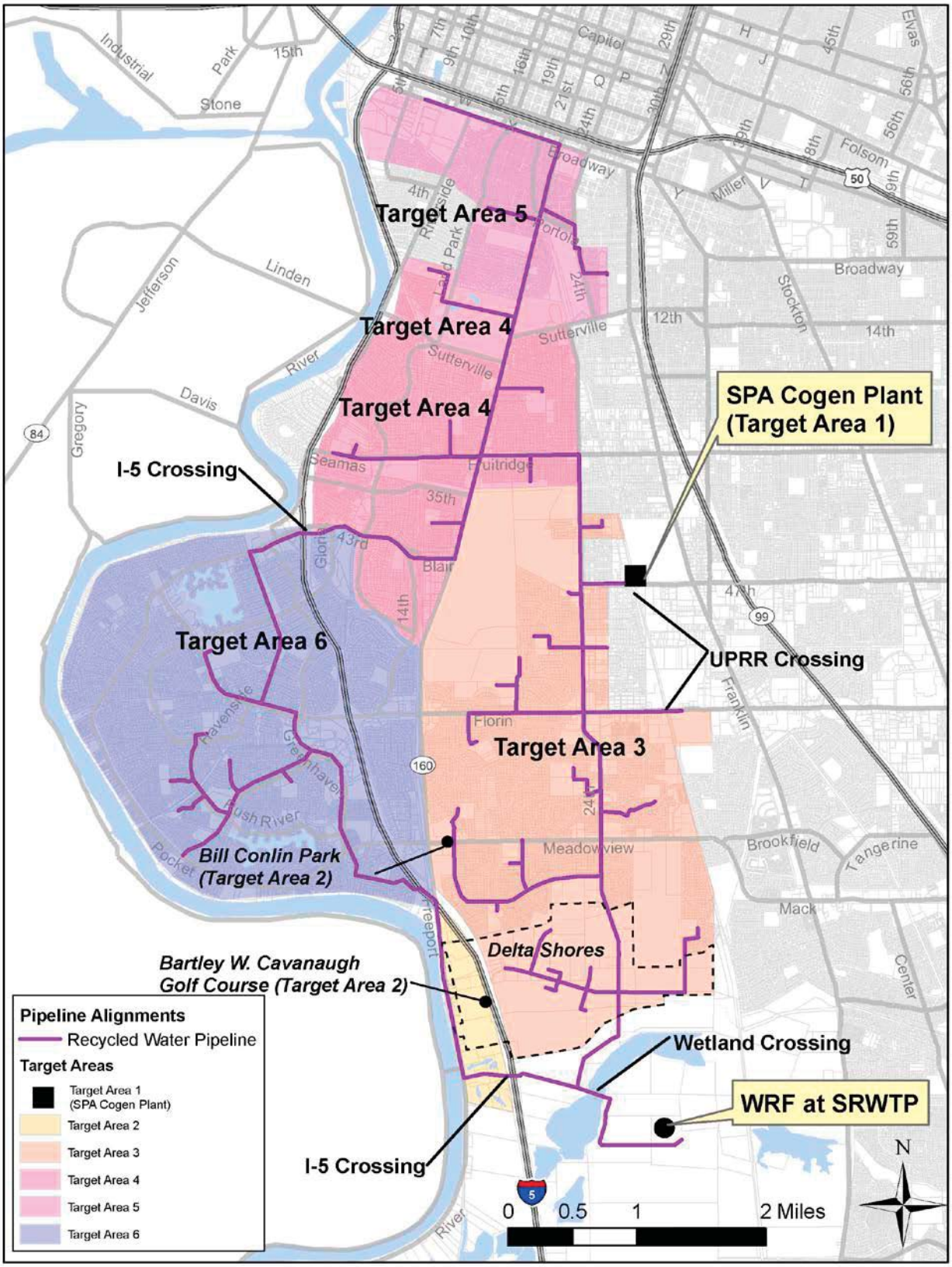
Based on the results of the recycled water market assessment, six recycled water alternatives were developed to serve customers in target areas 1 through 6. Each alternative was developed with the facilities needed to serve all the customers identified in the Market Assessment. The target areas served under each alternative, and the resulting demands, are summarized in Table ES-2. The pipeline alignments that would deliver flow to the target areas are shown in Figure ES-4. All alternatives had the following objectives:

- Maximize water served while minimizing total construction costs.
- Provide recycled water to customers to offset existing potable water usage.
- Reduce groundwater pumping of any potential customers in the Target Areas.

**Table ES-2: Project Alternative Summary**

| Alternative | Target Areas | # Customers | Total Length of Pipeline (ft) | Irrigated Area (acres) | Annual Average Demand (AFY) | Maximum Day Demand (mgd) | Peak Hour Demand (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 31,060 | 0 | 1,000 | 0.89 | 620 |
| 2 | 1-2 | 7 | 41,874 | 127 | 1,420 | 1.70 | 1,629 |
| 3 | 1-3 | 50 | 98,421 | 522 | 2,723 | 4.20 | 6,839 |
| 4 | 1-4 | 63 | 139,934 | 829 | 3,735 | 6.20 | 10,999 |
| 5 | 1-5 | 72 | 162,382 | 927 | 4,061 | 6.82 | 12,301 |
| 6 | 1-6 | 87 | 207,109 | 1,106 | 4,650 | 7.96 | 14,657 |

**Figure ES-2: Pipeline Alignments**



# ES-4 Recommended Project Evaluation

## ES-4.1 Recommended Project

Alternative 3 is the Recommended Project and meets the following objectives:

- Achieves the project objective of 2,723 acre-feet per year.
- Maximizes water served while minimizing total construction costs, by targeting large customers near the SRWTP or near the pipeline that would serve the SPA Cogen Plant.
- Expands region's water supply portfolio, helping improve overall reliability for recycled water customers and potentially improves groundwater basin conditions.
- Provides recycled water to customers to offset existing potable water usage and reduces the quantity of discharge to the Sacramento River.
- Reduces groundwater pumping of any potential customers in the Target Areas.

Facilities associated with the Recommended Project are shown in Figure 5-1. Estimated capital and O&M costs for the project alternatives are summarized in Table ES-4.

**Table ES-3: Alternative Capital Costs**

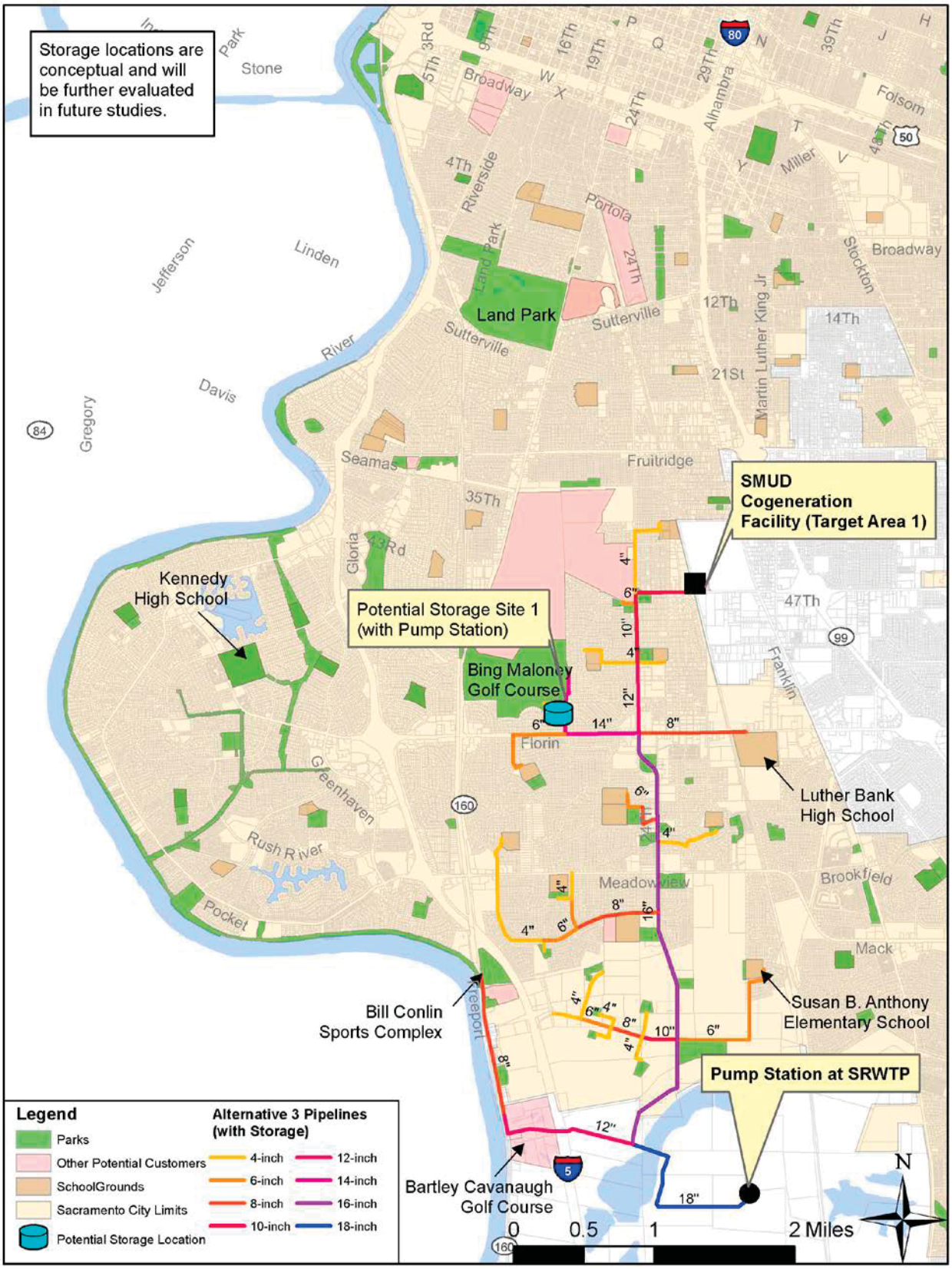
| Element | Units | Quantity | Cost ($ millions) |
|---|---|---|---|
| Storage Tanks | MG | 1.9 | $2.4 |
| Pump Station WRF | HP | 375 | $0.3 |
| Pump Stations at Storage (total hp) | HP | 450 | $2.3 |
| On-Site Cogen Plant Retrofits | LS | LS | $0.3 |
| On-Site Irrigation Retrofits | ac | 522 | $2.6 |
| Piping | LF | 98,421 | $13.8 |
| Design Contingency (20%) | | | $4.4 |
| **Raw Construction Subtotal** | | | **$26.4** |
| Land Acquisition | | | $0.1 |
| Engineering & Construction Support (20%) | | | $5.3 |
| Environmental, Permitting, Legal, and Administrative (10%) | | | $2.6 |
| **Subtotal Implementation Costs** | | | **$8.0** |
| Project Contingency (15%) | | | $5.2 |
| **Total Capital Cost** | | | **$39.6** |

**Table ES-4: Annual Unit Costs of Recommended Project**

| | |
|---|---|
| Recycled Water Service (AFY) | 2,723 |
| Capital Cost | $39,600,000 |
| Capital Cost per AFY | $14,524 |
| Annualized Capital Cost per AF[1] | $580 |
| Annual O&M Cost[2] | $368,000 |
| O&M Annual Cost per AFY | $135 |
| **Total Annual Cost per AFY** | **$715** |

Notes:
1. Based on 3 percent discount rate and 50 year life.
2. O&M costs do not include replacement costs

**Figure ES-3: Recommended Project Facilities**



## ES-4.2 No Project Alternative

Under the No Project alternative, the SPA Cogen plant and the municipal parks and golf courses would continue to use either City of Sacramento potable supply or their on-site groundwater wells. No project costs include the cost of potable supplies that would otherwise be offset by recycled water use, cost of reliability associated with occasional cutbacks that could impact irrigation customers continuing to use potable supply, the cost of continued groundwater pumping for customers currently using groundwater wells, the cost of greater wastewater discharge, and the value of the nutrients in recycled water.

Based on work being performed to develop new Total Maximum Daily Loads (TMDL) for the Delta and the Sacramento River, it is possible that a new WDR will be assigned with more stringent discharge loading requirements, beyond the requirements of the pending WDR. Under this scenario, different technologies could be employed to get the equivalent mass load reduction. Reverse osmosis is an example of one technology used today to reach a higher mass load reduction. If RO technology was used, implementation of the SRCSD / SPA / City of Sacramento Recycled Water project would allow for a reduction in the construction and operational costs of RO facilities by reducing discharge to the Sacramento River.

No Project costs are summarized in Table ES-5. Life Cycle cost estimates for the Recommended Project and the No Project alternative are summarized in Table ES-6.

**Table ES-5: No Project Costs ($ in 1,000s per year)**

| | | No Project Costs | No Project Costs (Alternate Baseline-beginning in 2028) |
|---|---|---|---|
| New Water Supply Value[a] | High Estimate | $621 | $621 |
| | Low Estimate | $100 | $100 |
| Water Reliability Benefit[b] | | $49 | $49 |
| Groundwater Pumping Offset[c] | | $85 | $85 |
| Avoided Wastewater Discharge Costs[d] | | $11 | $1,285 |
| Nutrient Value[e] | | $1.3 | $1.3 |
| **Total Average Annual Cost** | **High Estimate** | **$731** | **$2,006** |
| | **Low Estimate** | **$247** | **$1,521** |

Notes:

a. The project would provide new water supplies to the region by reducing usage of potable and groundwater supplies for industrial and irrigation purposes. This offset water supply could be used for higher values uses within the region. The high estimate value has been estimated based on recent wholesale water sales in the region. The low estimate value has been estimated based on an equivalent cost of groundwater production, and assumes the City of Sacramento would reserve 1,000 AFY for backup supply for the SPA Cogen Plant.

b. The project would improve water supply reliability for customers that have been converted from potable sources to recycled water, due to potential cutbacks in the potable system during extremely dry years.

c. Under project alternatives 2-6, Bartley Cavanaugh, Bing Maloney, and Land Park golf courses, Cooledge Community Center, Land Park and Chorley Park could reduce costs associated with operations, maintenance, and well redevelopment costs of the groundwater wells currently supplying water for irrigation.

d. Avoided Wastewater Discharge. The project would reduce SRCSD's wastewater discharge costs relative to the No Project baseline condition. The only cost savings currently identified is the cost of pumping treated wastewater to the river. This cost is avoided by supplying the water for recycling instead. Under the alternate baseline, this also includes cost of operations of a reverse osmosis facility (in the event SRCSD was forced to eventually treat its discharged wastewater to that "ultimate" level)..

e. As the recycled water has some latent ammonia, customers currently using fertilizer could reduce their fertilizer use.

**Table ES-6: Net Present Value Project Costs ($1,000s per year)**

| Year | Project Costs ($1,000 per year) | No Project Baseline | | No Project Alternative Baseline | |
|---|---|---|---|---|---|
| | | Costs (High Estimate)[a] | Costs (Low Estimate)[b] | Costs (High Estimate)[a] | Costs (Low Estimate)[b] |
| 2013 to 2014 | $4,008 | | | | |
| 2015 to 2016 | $15,767 | | | | |
| 2017 to 2027 | $394 | $731 | $247 | $731 | $247 |
| 2028 to 2035 | $394 | $731 | $247 | $2,006 | $1,521 |
| 2036 | $4,578 | $731 | $247 | $2,006 | $1,521 |
| 2037 to 2055 | $394 | $731 | $247 | $2,006 | $1,521 |
| 2056 | $4,578 | $731 | $247 | $2,006 | $1,521 |
| 2057-2066 | $394 | $731 | $247 | $2,006 | $1,521 |
| **Total NPV Costs ($1,000s)** | **$44,203** | **$18,810** | **$6,348** | **$47,881** | **$35,418** |

Notes:

a. Based on a value of $330 per AF on 1,772 AF of potable use.

b. Based a value of $130 per AF on 772 AF of potable use (excludes 1,000 AF to SPA Cogen Plant)

## ES-5 Regulatory, Legal and Institutional Requirements

Under any of the alternatives, a number of regulatory, legal and institutional requirements would need to be met prior to implementation. An EIR/EIS would likely need to be developed for CEQA and NEPA compliance. A Petition for Change would need to be filed with and approved by the SWRCB to confirm SRCSD's right to change the place of use and purpose of use of the corresponding amount of current discharges to the Sacramento River. Institutional arrangements would need to be developed to establish a recycled water purveyor for the Project study area. Table ES-7 provides a summary listing of regulatory requirements.

**Table ES-7: Summary of Regulatory, Legal and Institutional Requirements**

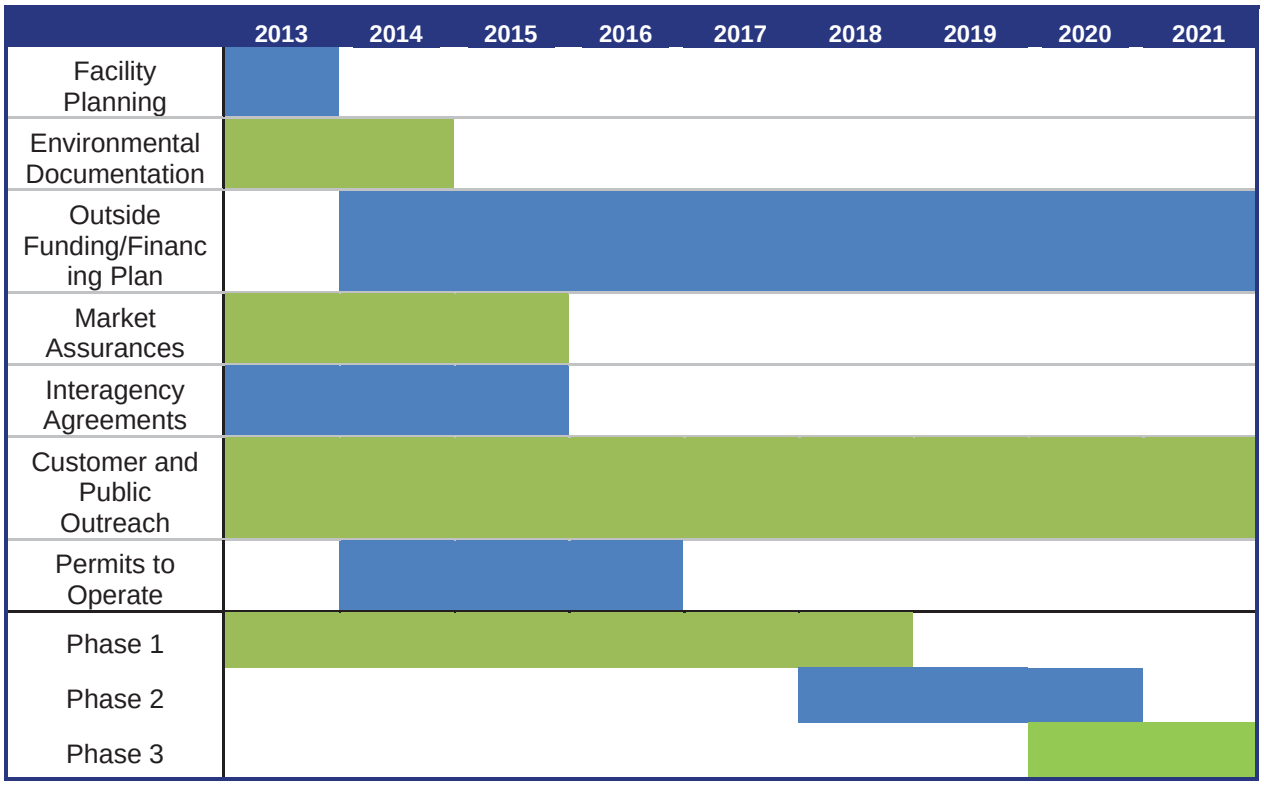
| Permit/Approval | Comments |
|---|---|
| CEQA Compliance (PER or City lead agency) | City and County need to agree on who will be the CEQA lead agency. |
| NEPA Compliance (Reclamation lead agency) | |
| Section 7 Consultation/Biological Assessment and Biological Opinions (USFWS and NMFS) | Informal consultation may be sufficient if all impacts can be avoided |
| Section 106 Compliance (SHPO) | |
| 404 Permit for any fill of wetlands or waters of the U.S. (USACE) | May not be required as SRCSD intends to avoid impacts during design phase (by incorporating trenchless pipeline installation methods). |
| 401 Water Quality Certification required for 404 Permit (RWQCB) | |
| NOI for Coverage under Statewide Construction Stormwater Permit (RWQCB) | |
| NOI under Low-Threat Discharge Order for Coverage of Pipeline discharges for testing and startup (RWQCB) | |
| NPDES Permit for discharge to waters of the State or U.S. (RWQCB) | |
| Incidental Take Permit from California Department of Fish and Game (CDFG) | May not be required, as SRCSD intends to avoid impacts during design phase. |
| Streambed Alteration Agreement for pipeline crossings of creeks (CDFG) | Required for any crossings of stream channels, even if done by trenchless method. |
| Wastewater Change Petition (SWRCB) | |
| SRCSD annexation of Service Area for recycled water, with service limited to recycled water supply (LAFCO) | Not required if City is purveyor of recycled water. |
| City of Sacramento Encroachment Permit | |
| Caltrans – Encroachment Permit | |

## ES-6 Implementation Plan

Should SRCSD decide to move forward with the preferred project, Figure ES-8 illustrates key implementation elements and associated schedule. The schedule assumes that the project would be constructed in three phases, including Phase 1 to connect to the SPA Cogen Plant, Phase 2 to connect Bartley Cavanaugh golf course and other customers in Target Area 2, and Phase 3 to connect to customers in Target Area 3.

Each implementation element is discussed in the Study. The immediate term activities/recommended next steps are summarized in the next section.

**Figure ES-4: Implementation Schedule**




## ES-7 Recommended Next Steps

Based on the findings of this Study, our recommended next steps are as follows:

- Institutional arrangement and agreements such as principles of agreement with the region's water retailer, the City of Sacramento, should begin immediately. Based upon these principles, the formation of an entity to organize the recycled water users and the Project should begin to be established after work in the environmental documentation has been initiated
- A facilities plan for the entire recycled water project should be completed in advance of funding pursuits and environmental document preparation to confirm the configuration, location and sizing of each required component of the project.
- Environmental documentation in the form of an EIR/EIS can be started after the facilities plan has been substantially developed, providing a complete Project description upon which to prepare the environmental document.
- Outside funding and finance planning activities are discussed in Section 9.3 and should be started in parallel with work has been initiated on environmental documentation.
- Market assurances in the form of letters of intent from potential customers, mandatory use ordinances, or user (customer agreements) should begin to be obtained after work on environmental documentation has been initiated. The form of assurances will be dependent upon the institutional arrangements that are made.
- Public outreach effort should be continued and expanded concurrently with the environmental documentation, institutional arrangements, and financing.

# APPENDIX K

Principles of Agreement for Recycling Water Program

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Principles of Agreement for Water Recycling Program
Between REGIONAL SAN and CITY of SACRAMENTO

**BASIS FOR PRINCIPLES OF AGREEMENT**

1. These Principles of Agreement are between the Sacramento Regional County Sanitation District (REGIONAL SAN) and the City of Sacramento (CITY), hereafter referred as "PARTIES". The Principles of Agreement is an interim document that describes the proposed institutional structure for the proposed REGIONAL SAN/CITY Water Recycling Program (Program). These Principles of Agreement are intended to provide a framework for the development of potential future agreement(s) that address participation in the ownership, financing, construction, operations, and maintenance of the Program. Approval of any such agreements will be subject to compliance with the California Environmental Quality Act and any other applicable environmental laws or regulations.

2. The State of California and the Sacramento region have identified the need to improve water supply reliability and sustainability to meet existing and future non-potable water demands. Recycled water is a safe, sustainable, and proven water supply that can be used to meet non-potable water demands, such as landscape irrigation and industrial uses, and thus helps to conserve potable water sources.

3. REGIONAL SAN and the Sacramento Power Authority (SPA), in coordination with CITY, cooperated in the development of a water recycling project, referred to as the Phase 1 Project in this Principles of Agreement, that will initially deliver recycled water via a new transmission pipeline from the Sacramento Regional Wastewater Treatment Plant (SRWTP) to the SPA Cogeneration Facility (SPA Cogen) located near Franklin Boulevard and 47th Avenue. This transmission pipeline, in concurrence with CITY, was upsized to provide additional capacity to serve potential future recycled water users within CITY.

4. The Parties anticipate implementing the Program in a phased approach to facilitate performance of the necessary environmental review(s), construction activities, financing needs, and the acquisition of grants or low interest loans from federal or state agencies, or both. A Title XVI feasibility study, developed by REGIONAL SAN in 2014, recommended three phases for Program implementation. Attachment 1 includes maps of the three Program phases identified in this study.

5. The proposed Program consists of four key infrastructure components: (i) recycled water treatment facilities, (ii) recycled water transmission facilities, (iii) recycled water distribution facilities, and (iv) on-site recycled water facilities.

**2016-0225**
**With:** Sacramento Regional County Sanitation District
**Title:** Water Recycling Program

## PURPOSE OF THE PRINCIPLES OF AGREEMENT

The following principles outline anticipated commitments and responsibilities by each of the PARTIES related to the environmental review, financing, design, construction, operations, and maintenance for each of the three Program phases identified. This document represents a good faith effort by the PARTIES to memorialize their mutual intentions consistent with the principles set forth herein, but this document is not a binding agreement nor does it commit or obligate any party to undertake or approve any future action or agreement.

## PROGRAM PHASES AND PARTY RESPONSIBILITIES

The three Program phases and their key infrastructure components, as presently anticipated by the PARTIES, are described below.

Phase 1: Phase 1 includes a new recycled water transmission pipeline to convey recycled water from SRWTP to the SPA Cogen. It also includes on-site recycled water piping at the Cogen's property. Phase 1 does not include installation of distribution facilities to other users, but REGIONAL SAN, in concurrence with CITY, intends to size the transmission pipeline to allow for the connection of other uses located in CITY in the future as described in Phases 2 and 3.

CITY is not a party to the Phase 1 agreement between REGIONAL SAN and SPA. However, CITY will maintain the existing water connection to the SPA Cogen facility in the event that recycled water cannot be delivered to it, so long as REGIONAL SAN or SPA pays the applicable monthly service charge and the appropriate volumetric charges to maintain and use the existing connection to CITY's potable water system.

Phase 2: Phase 2 includes the construction, operations and maintenance of a distribution system and on-site recycled water facilities to serve potential areas west of Interstate-5, as shown in Figure 2 of Attachment 1.

Phase 3: Phase 3 includes the construction, operations, and maintenance of a distribution system and on-site recycled water facilities to serve potential areas located between the SRWTP property and the SPA Cogen.

For Phases 2 and 3, REGIONAL SAN and CITY anticipate negotiating one or more agreement(s) defining the costs, billing, and recycled water supply terms. SPA will not be a party to the Phase 2 and 3 agreement(s).

The PARTIES understand that the three phases presented herein are at a conceptual level, and are subject to change, depending on future refinements and availability of funding or as otherwise may be agreed by the PARTIES.

Table 1 summarizes the three phases and the anticipated responsibilities of each party (including construction, ownership, operations and maintenance) for the key infrastructure components of the Program phases. No party shall be obligated to undertake or approve any responsibility as shown below unless and until such responsibility is agreed to in a duly approved agreement or any subsequent amendment(s).

**Table 1 - Anticipated Responsibilities for Key Program Components**

| Phase | Treatment | Transmission[1] | Distribution | On-Site |
|---|---|---|---|---|
| Phase 1 | REGIONAL SAN | REGIONAL SAN | Not Applicable | SPA |
| Phase 2 | REGIONAL SAN | Not Applicable | To Be Determined[2] | Users |
| Phase 3 | REGIONAL SAN | Not Applicable | To Be Determined[2] | Users |

[1] *The transmission facilities refer to the pipeline from the SRWTP property boundary to the SPA Cogeneration Facility. It also includes the recycled water transmission pipeline, Storage and Pumping facilities located within the SRTWP property. The Phase 1 pipeline will be sized to serve Phases 1, 2, and 3.*

[2] *REGIONAL SAN and CITY anticipate that responsibilities for the distribution system, including storage and pumping facilities outside of the SRWTP property boundary, will be negotiated and determined in a future agreement(s).*

## PRINCIPLES OF AGREEMENT

The principles that will govern the negotiation of agreement(s) between REGIONAL SAN and CITY are as follows:

a. *Participation:* The objective for Phases 2 and 3 is to build the distribution system and related facilities to expand the use of recycled water in the CITY by using the excess capacity in the Phase 1 transmission pipeline. REGIONAL SAN will produce the recycled water. CITY and REGIONAL SAN will collaborate to identify opportunities for expansion of the Program to serve other customers located within the CITY's service area and its immediate vicinity.

b. *Design and Construction:* It is anticipated that REGIONAL SAN and CITY will negotiate the agreement(s) governing responsibilities for the design and construction of the distribution and on-site recycled water facilities to expand the Program to serve other customers located within such

areas. Any pipelines and related facilities constructed will need to comply with applicable provisions of local and state standard specifications.

c. *Facilities' Ownership, Operation and Maintenance, and Program Administration:* REGIONAL SAN will own, operate, and maintain the recycled water treatment and transmission facilities located within the SRWTP property boundary. The ownership, operation, and maintenance of transmission, distribution, and on-site recycled water facilities for the expanded Program located outside the SRWTP property will need to be addressed by agreement(s) between CITY and REGIONAL SAN, consistent with all applicable legal requirements and limitations.

d. *California Environmental Water Quality Act (CEQA) and National Environmental Policy Act (NEPA):* The PARTIES' respective obligations under CEQA and NEPA would need to be addressed by agreement(s) between the CITY and REGIONAL SAN.

e. *Permits:* REGIONAL SAN and CITY intend to collaborate, as needed and when appropriate, with respect to applications for approvals necessary to comply with permitting requirements for the distribution system and other on-site recycled water facilities.

f. *Cost Sharing:* It is anticipated that cost sharing of capital costs, operation, and maintenance will be negotiated between CITY and REGIONAL SAN.

g. *Recycled Water Pricing:* The PARTIES intend to negotiate with each other regarding recycled water pricing, including the potential for establishment of additional rate categories and fees appropriate for each use, with the goal of a rate for recycled water that is equal to or less than the rate for the same usage of potable water. Any use of sewer or water ratepayer funds must comply with the provisions of Proposition 218, among other applicable legal requirements and limitations.

h. *Recycled Water Policy:* It is anticipated that CITY and REGIONAL SAN will collaborate to develop a recycled water policy to promote and advance the use of recycled water within the areas identified in the CITY.

i. *Approval:* Approval from their governing bodies will be required for REGIONAL SAN and CITY to implement Phase 2 and 3 of the Program.

IN WITNESS WHEREOF, the PARTIES have executed these Principles of Agreement upon the dates hereinafter set forth.

Attest: 4/15/2016
Dated:

Sacramento Regional County Sanitation District
By:- Prabhakar Somavarapu
Title: DISTRICT ENGINEER

Attest: 2/24/16
Dated:

City of Sacramento
By:
Title: Director

APPROVED AS TO FORM:

CITY ATTORNEY

Attested By:
Wendy Klock-Johnson
Assistant City Clerk
2/24/2016

# ATTACHMENT 1

## Maps of

## Potential Program Phases

**Figure 1**
**Vicinity Map for Phase 1 Project**

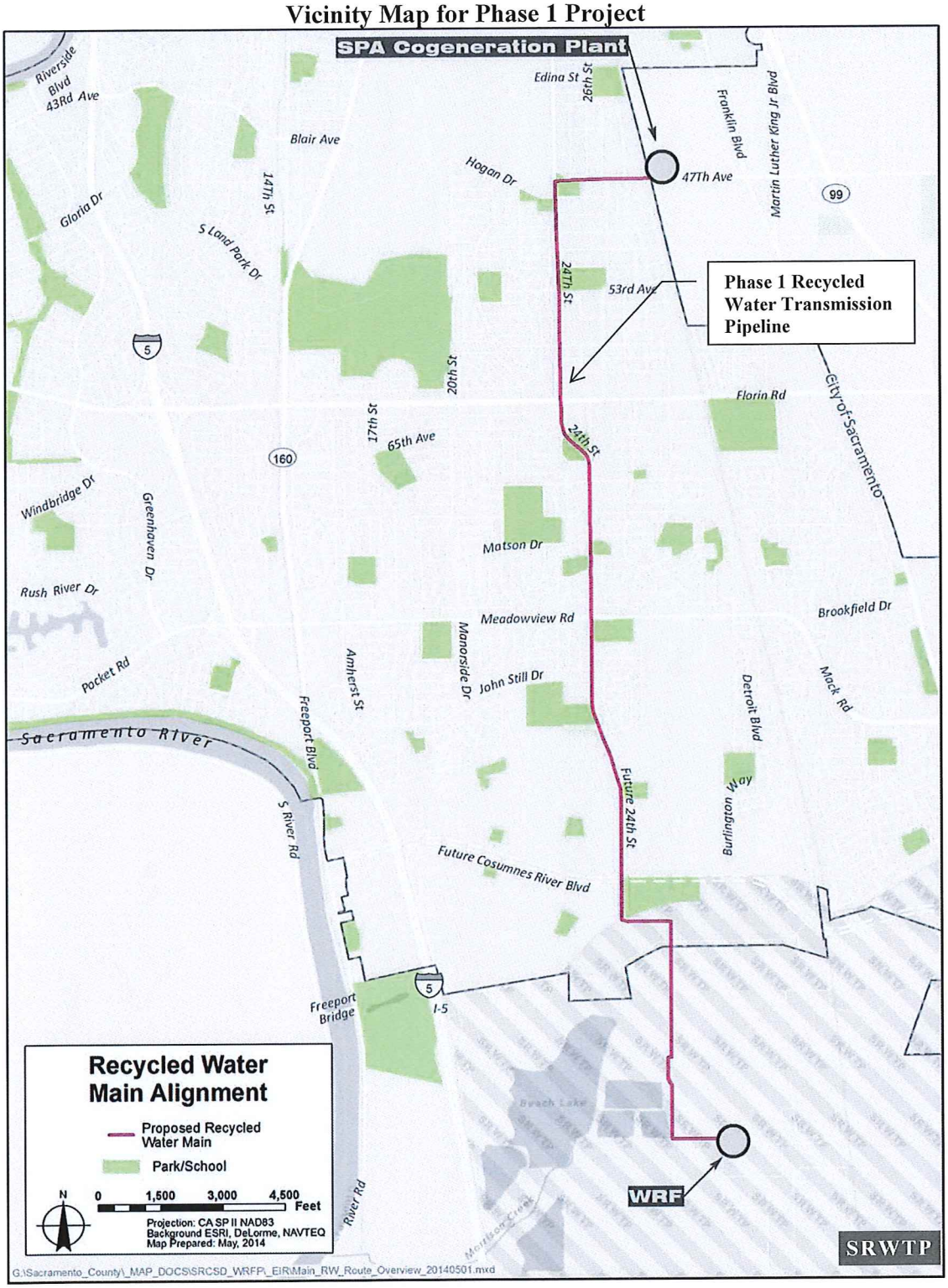
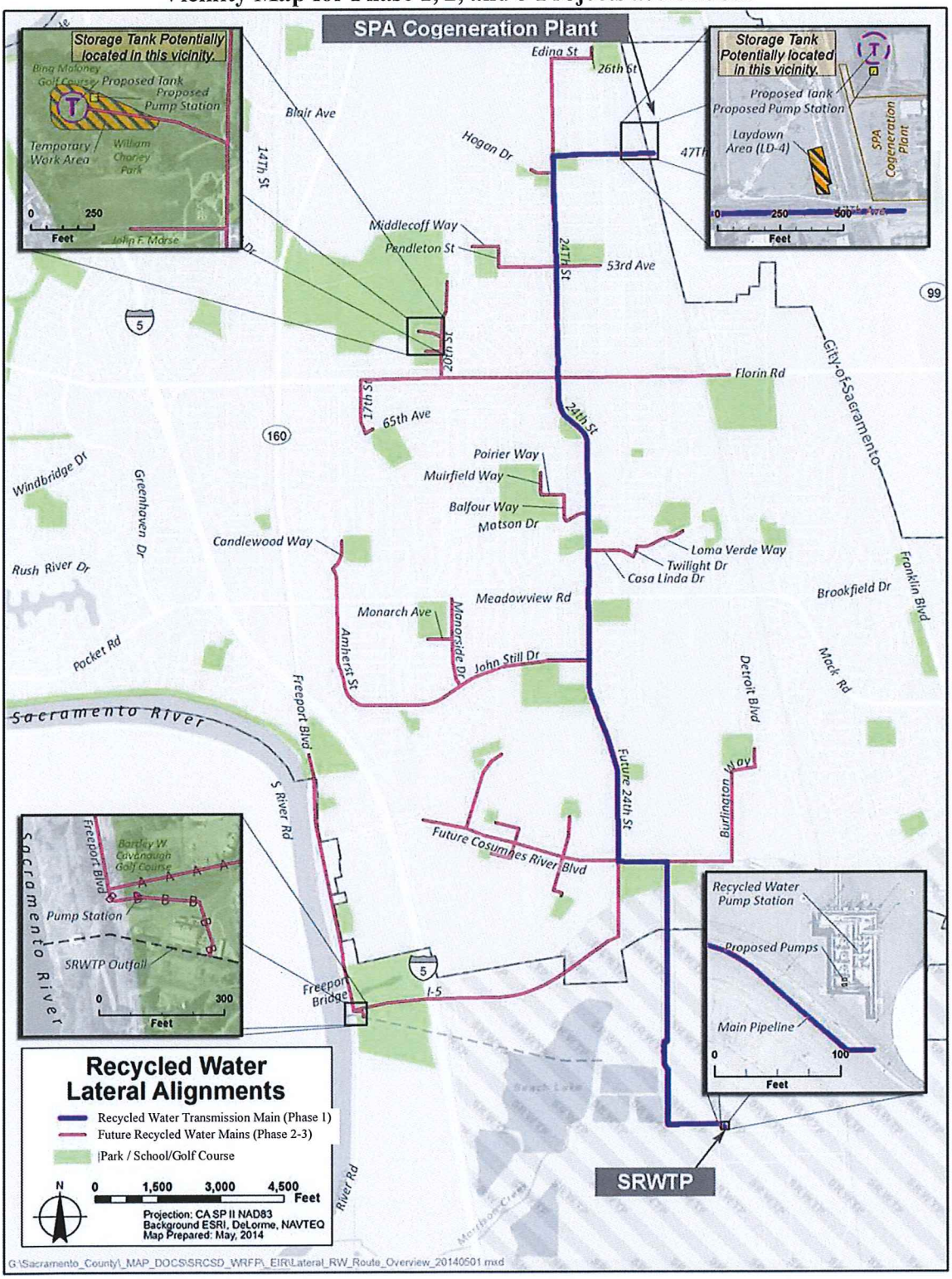


**Figure 2**
**Vicinity Map for Phase 1, 2, and 3 Projects at Buildout**



# APPENDIX L

Water Shortage Stage Workshop Summary Report

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# Water Shortage Stage Workshop Summary Report

Regional Water Authority

March 3, 2015

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# Executive Summary

Communication with water customers is especially important during times of drought. As part of drought response, each water provider typically has a water shortage contingency plan in place that includes a set of water shortage stages.[1] These stages are triggered dependent on necessary percent reductions in use. The percent reductions have associated actions to reduce use that are either requested or required of customers. Typically these stages vary in name, percent reduction and associated actions as to meet local needs. However, as water provider boundaries are often intertwined, clearly communicating these stages to customers can be a challenge. For example neighbors across the street from each other often have different watering days, which can cause confusion. Situations such as this affect the success of local and regional public outreach messaging to urge customers to reduce water use.

For these reasons and with the added urgency of historic 2014 drought conditions, the Regional Water Authority (RWA) convened a workshop for water providers (local and county governments and water districts) in the Sacramento region to discuss and produce a water shortage stage template (Page 9). The workshop was held on November 20, 2014 and was attended by 21 people representing 12 Sacramento region water providers. The workshop presented an opportunity for water providers to discuss specific water conserving actions within a framework of water shortage stages. It also allowed these water providers to share successful actions and strategies that have been recently adopted and implemented in the region to better prepare water shortage contingency plans in the future.

The finalized template provided in this document would not have been possible without the extensive work of the Regional Managers Forum hosted by the Sacramento Area Council of Governments (SACOG) that produced a template base from which workshop attendees discussed and modified. **The purpose of this template is to serve as a tool to assist water providers in the development of their water shortage contingency plans. Each water provider retains discretion in its selection of the specific language, actions and requirements to include in each stage of its water shortage contingency plan.** Included in the template are stage numbers, public announcement stage names, recommended conservation (water use percent reductions) and suggested actions.

This summary report document will be distributed to water providers in the Sacramento region and will be updated as necessary by the Regional Water Authority.

*About the Regional Water Authority: RWA is a joint powers authority representing two dozen water providers and affiliates in the greater Sacramento area. Its primary mission is to help its members protect and enhance the reliability, availability, affordability and quality of water resources.*

[1] It should be noted that water shortage stages are part of a broader water shortage contingency plan, which is part of a broader urban water management plan. For more information, visit the California Department of Water Resources' Urban Water Management webpage: www.water.ca.gov/urbanwatermanagement/.

## Workshop Background

The desire for water providers in this region to coordinate water shortage stages has been recognized for some time now. There are many benefits to aligning stages such as increased regional and local consistency in public outreach messaging and reduced customer confusion. However, there are some challenges as well including the need to maintain local preferences and implications of stage language when water rates are involved. Despite these challenges the Sacramento region has made efforts to move toward aligning stages among water providers.

The first effort was in 2010 after the region experienced a dry water year in 2009. The Regional Water Authority (RWA) created the Regional Water Shortage Contingency Plan Consistency Work Group (Work Group) to draft common stage numbers, titles and water savings ranges (percent reductions). The Work Group consisted of the following RWA water provider members: Carmichael Water District, Citrus Heights Water District, City of Folsom, City of Lincoln, City of Roseville, City of Sacramento, Del Paso Manor Water District, Placer County Water Agency and Sacramento Suburban Water District. The Work Group recommended the stages and water savings ranges displayed in Table 1 and also recommended that all RWA member water providers consider changing elements of their respective water shortage contingency plan to be consistent with neighboring water providers. When no shortage exists, the recommendation was to refer to a "normal water supply" and point customers to their water provider's existing water waste ordinance or policy.

Table 1: 2010 RWA Water Shortage Stage Recommendations

| Stage | Title | Water Savings Range* |
|---|---|---|
| Stage 1 | Water Alert | Up to 10% |
| Stage 2 | Water Warning | Up to 25% |
| Stage 3 | Water Crisis | Up to 50% |
| Stage 4 | Water Emergency (Health and Safety Only) | >50% |

* The actual water savings target will be determined when a stage is declared by the water provider.

To complement the stage recommendations in Table 1, the Work Group also provided a list of recommended water efficiency measures that could be communicated to the public and the media in local and regional messages.

- Outdoors
    - Keep water from running off your property when watering landscape.
    - Repair leaks promptly (inside and out).
    - Use shutoff nozzle on hoses.
    - Maintain your swimming pool without draining and filling it.
    - Typically, watering three days per week is sufficient for most landscapes in the Sacramento region.
    - Water during cooler morning and evening hours to reduce evaporation.
- Indoors
    - Use high efficiency plumbing fixtures and appliances.
    - Do full loads of laundry and dishes.
- Contact your water provider for additional recommendations and specific requirements.

As a result of this effort, seven water providers (out of 20) in the region incorporated all or some of the elements in Table 1 into their respective water shortage stage language. The changes occurred between 2010 and 2014.

The second effort was in response to the historic 2014 California drought and was led by a committee of local government staff as part of the Regional Managers Forum (Forum). The Forum is organized through the Sacramento Area Council of Governments (SACOG), the metropolitan planning organization for the Sacramento region. This effort produced a water shortage stage template that included coordinated stage numbers, stage names, percent reductions and corresponding conservation actions. This was a step further than previous efforts as it linked stage information with conservation actions to provide a more complete template. Landscape watering, water waste and construction related suggested language was included among other topics. During 2014, the committee, led by the City of Sacramento, discussed and produced a template document with the intention of aligning water shortage stages among participating local governments through the adoption of the template in their ordinances and plans.

This template served as the basis for the third effort described in the remainder of this document. The committee requested that RWA host a workshop to facilitate discussion and finalize the template with its members, which include water districts in addition to cities and counties. The workshop was held on November 20, 2014 and was attended by 21 people representing 12 Sacramento region water providers. The workshop presented an opportunity for water providers to discuss specific water conserving actions within a framework of water shortage stages. Water providers also shared successful actions and strategies that have been adopted and implemented in the region so that water providers may better prepare water shortage contingency plans now and in the future. The tone of the workshop shifted from requesting water providers adopt a common shortage stage template for their service areas (as was the case in the first and second efforts) to one of producing a "tool" for water providers. This tool would be a resource for water providers to be used while updating relevant ordinances and plans such as urban water management plans. It should be noted that only water providers that serve more than 3,000 customers or supplying more than 3,000 acre feet of water annually (known as urban water suppliers) are required to submit an urban water management plan.

The activity in 2014 both from the second and third efforts was influenced by several external factors that provided an additional incentive to be successful. The historic statewide 2014 drought and the water supply conditions experienced at Folsom Reservoir in early 2014 required an extensive public outreach effort to urge customers to conserve water. The need to effectively communicate to the region's water customers initiated the second effort to align water shortage stages. The Governor's request for a 20% reduction in water use across the state in January 2014 supported these efforts.

Furthermore in July 2014, the State Water Resources Control Board (State Water Board), an entity tasked with ensuring the highest reasonable quality of waters for the State, while allocating those waters to achieve the optimum balance of beneficial uses, adopted emergency regulations. These emergency regulations outlined mandatory water waste activities that were prohibited for everyone in the state and included:

- Potable water to wash sidewalks & driveways

- Runoff when irrigating with potable water
- Hoses with no shutoff nozzles to wash cars
- Potable water in decorative water features that do not recirculate the water

The State Water Board additionally directed activities for implementation by urban water suppliers including restrictions on outdoor irrigation by activating the relevant stage in suppliers' local water shortage stage plan and monthly reporting of water production (and additionally starting in October 2014 residential gallons per capita per day) data to the State Water Board. Local drought conditions and the outdoor irrigation requirement required by the State Water Board motivated many Sacramento area water providers to revisit and update their water shortage stage plans to be even more effective at responding to current water supply conditions and communicating with customers. Thirteen out of the region's 20 water providers made changes to their plans during 2014.

# Workshop Details

## Attendees

The workshop was held on November 20, 2014 and was attended by 21 people representing 12 Sacramento region water providers (Table 2). The region's public information officers, water conservation managers and staff, general managers and municipal parks managers were invited.

Table 2: 2014 Water Shortage Stage Workshop Attendees

| Water Provider | Staff Attendees |
|---|---|
| Carmichael Water District | Steve Nugent and Chris Nelson |
| Citrus Heights Water District | Darlene Gillum |
| City of Folsom | Marcus Yasutake and Don Smith |
| City of Roseville | Kelye McKinney and Lisa Brown |
| City of Sacramento | Jim Peifer |
| Elk Grove Water District | Jim Malberg and Ellen Carlson |
| Placer County Water Agency | Linda Yager |
| Rio Linda/Elverta Community Water District | Mary Henrici |
| Sacramento County Water Agency | Kerry Schmitz, Mike Huot, Dan Gwaltney & Erika Nelson-Johnson |
| Sacramento Suburban Water District | Greg Bundesen |
| San Juan Water District | Vicki Sacksteder |

## Goals

The following three workshop goals were achieved during and after the workshop:

- To finalize the draft Regional Managers Forum template document and provide it as a tool (not requirement) to water providers in the Sacramento region.
- To facilitate discussion among water providers regarding the priority of stage-specific conservation actions taking into account recent experience from early 2014.
- To document and share lessons learned to aid other water providers that may modify their local water shortage stages in the future.

## Agenda

The workshop agenda is provided below. It should be noted that the attendees did not prioritize conservation actions by stage. The workshop attendees were comfortable with including all suggested actions without ranking as all were seen as valuable with the understanding that all actions were part of an overall tool to assist water providers.

# Water Shortage Stage Workshop

Regional Water Authority
November 20, 2014

9:00-9:10 Introduction and history of project

9:10-9:30 Survey the room

- Why are you interested in this workshop?
- Has your water provider updated their water shortage stages in response to the drought?

9:30-9:50 Lessons learned

- The cities of Folsom and Roseville will provide a 10 minute summary of their experience with updating their water shortage stages during the drought.

9:50-11:50 Gather additional conservation actions by stage to add to the template

- This will be the focus of the workshop. We will walk through the provided template stage by stage to discuss the addition of conservation actions based on water provider experience. This will include a discussion about watering days/schedules.

11:50-12:20 Discussion about how and why to prioritize conservation actions for each stage

- Prioritize conservation actions within each stage. There will be a discussion first and then each participate will be given the opportunity to vote.

12:20-12:50 Lunch/Vote Tally

12:50-1:30 Complete the template

- We will reveal which conservation actions were identified as the priority actions per stage.
- Wrap up with next steps. RWA will finalize the template and distribute out to all of the water providers to use as a tool to help assist with drought response.

## Assumptions

The workshop was facilitated under some basic assumptions described below that were presented and generally agreed upon by attendees.

- All work during the workshop would build upon the Regional Managers Forum template provided to attendees before and at the workshop.
- The attendees would focus on modifying stage percentages and conservation actions and would not drastically alter stage names and numbers.
- The resulting template and summary document would be utilized in the Sacramento region as a tool and would not be required for adoption by any water provider.

## Case Studies

The workshop featured two case studies that focused on updating and enforcing water shortage stages.

### City of Folsom

The City of Folsom updated its Water Conservation Ordinance during the last drought in 2009. The goal was to streamline enforcement by allowing water conservation staff to enforce the ordinance and impose penalties when warranted. Compliance became a term of service and fines were attached to the water bill. Currently Folsom's enforcement procedures recognize that parks and active sports fields are community assets. Parks and active sports fields are working with the City's Parks Department to achieve the desired percentage of water use reduction while preserving sports fields and trees in a safe condition. The goal is to coach to compliance, avoiding heavy handed enforcement, while mitigating economic damage as much as possible. To date this approach has been successful with Folsom's water customers regularly achieving water savings at or above 20%. In the future, the City is examining methods to focus more enforcement efforts on their mandatory percentage of water use reduction through data provided by their advanced metering infrastructure (AMI) technology.

### City of Roseville

In 2014, Roseville declared a Stage 2 drought condition requesting a 20% overall reduction in water use from its customers. To help residential customers better understand what a 20% reduction meant, the City modified its WaterInsight Program to create a baseline (average 2011-2013 monthly water usage) and compared that baseline to actual 2014 usage. This allowed the WaterInsight Program customer reports to calculate and offer a 20% goal for the current month as well as the next two months. The City required a 30% reduction from its commercial irrigation customers. To assist these customers, staff created monthly water budgets to gauge success using individual site performance and tracked collective water use. Additionally the City updated its Water Conservation Ordinance for the 2014 drought allowing for more flexibility for the Parks Department for landscape management. This enabled them to sacrifice unused sites and focus more attention on high use areas. The City also contracted with a security firm to perform water waste patrols on commercial sites during specified evening hours. Lastly the City implemented a 15% drought surcharge on the commodity/volumetric portion of the water bill. The surcharge supplemented declining revenues as well as provided a price signal to customers to reduce water use. The surcharge was designed to be cost neutral to a customer if they reduced use by the required amount. In other words, customers saving 20% should not see an increase in their water bill.

# Water Shortage Stage Template

| Stage | Public Announcement Stage Name | Recommended Conservation (Water Use Reduction) | Suggested Actions |
|---|---|---|---|
| Normal | Normal Conditions | Use Water Efficiently | Fix leaks or faulty sprinklers promptly/within X day(s). |
| | | | Decorative water features (water fountains, etc.) must recirculate water and shall be leak proof. |
| | | | All landscapes shall be watered during cooler morning and evening hours to reduce evaporation and minimize landscape runoff. |
| | | | Landscape watering shall be confined to a user's property and shall not runoff onto adjacent properties, roadsides or gutters. |
| | | | No landscape watering shall occur while it is raining or snowing. |
| | | | Use a shutoff nozzle on hoses. |
| | | | Washing down impervious surfaces such as driveways and sidewalks is prohibited unless for public health and safety purposes. |
| | | | Unauthorized use of hydrants is prohibited. Authorization for use must be obtained from water supplier. |
| | | | Commerical, industrial, institutional equipment must be properly maintained and in full working order. |
| | | | Encourage customers to wash only full loads when washing dishes or clothes. |
| | | | Encourage customers to use pool covers to minimize evaporation. |
| | | | Encourage restaurants to only serve water to customers on request. |
| 1 | Water Alert | Up to 20% | Fix leaks or faulty sprinklers within X day(s). |
| | | | Require restaurants to only serve water to customers on request. |
| | | | No restrictions on landscape watering with non-potable water. |
| | | | Up to 3 days per week turf watering when using potable water. Plant containers, trees, shrubs and vegetable gardens may be watered additional days using only drip irrigation or hand watering. |
| 2 | Water Warning | Up to 30% | Fix leaks or faulty sprinklers within X day(s). |
| | | | Decorative water features that use potable water must be drained and kept dry. |
| | | | Car washing is only permitted using a commercial carwash that recirculates water or by high pressure/low volume wash systems. |
| | | | Require a construction water use plan be submitted to the water supplier that addresses how impacts to existing water users will be mitigated (such as dust control). |
| | | | With the exception of landscapes watered with non-potable water, limit the installation of new landscaping to drought tolerant trees, shrubs and groundcover. Prohibit installation of new turf or hydroseed. Customers may apply for a waiver to irrigate during an establishment period for the installation of new turf or hydroseed. |
| | | | **Warm/Dry Season** |
| | | | Up to two days per week turf watering when using potable water. |
| | | | Plant containers, trees, shrubs and vegetable gardens may be watered additional days using only drip irrigation or hand watering. |
| | | | **Cool/Wet Season** |
| | | | Turf shall not be watered unless utilizing non-potable water during extended dry spells. |
| | | | Plant containers, trees, shrubs and vegetable gardens shall be watered only by drip irrigation or hand watering. |
| 3 | Water Crisis | Up to 40% | Fix leaks or faulty sprinklers within X day(s). |
| | | | Existing pools shall not be emptied and refilled using potable water unless required for public health and safety purposes. |
| | | | No new permits for pools will be issued. |
| | | | No new landscape installations or renovations will be permitted. |
| | | | Previous waivers for watering during an establishment period will be revoked. |
| | | | **Warm/Dry Season** |
| | | | Up to one day per week turf watering when using potable water. |
| | | | Plant containers, trees, shrubs and vegetable gardens may be watered additional days using only drip irrigation or hand watering. |
| | | | **Cool/Wet Season** |
| | | | Turf shall not be watered unless utilizing non-potable water during extended dry spells. |
| | | | Plant containers, trees, shrubs and vegetable gardens shall be watered only by drip irrigation or hand watering. |
| 4 | Water Emergency | Up to 50% | Water use for public health and safety purposes only. |

## Water Shortage Stage Template Commentary

**First and foremost the suggested actions listed above in the Water Shortage Stage Template are provided as a tool to assist water providers in the development of their water shortage contingency plans. Each water provider retains discretion in its selection of the specific language, actions and requirements to include in each stage of its water shortage contingency plan.** The Regional Water Authority and workshop attendees fully acknowledge that not all water providers in the region may be able to adopt this template language in whole or in part due to legal, local preference, water supply, and/or water demand reasons among others. The template is merely provided as a tool to assist water providers.

This template addresses some but not all components of water shortage stages. For this reason, water providers that choose to use this template will have to additionally customize it for completion. There are several areas for individual water provider customization including:

- Defining Warm/Dry and Cold/Wet seasons, such as Warm/Dry is March-October and Cold/Wet is November-February.
- Defining number of days customers have until leaks need to be fixed, currently represented by "X" in the template.
- Defining terms within the template such as water waste, establishment period, non-potable water, faulty sprinkler, decorative water features, runoff, etc. Some of these terms may be already defined in a water provider's local ordinances, however, some water providers may have to create definitions to accompany this template, if used and applicable.

Furthermore the template does not address enforcement strategies such as warnings, fines and penalties that may be associated with each stage. Enforcement will be determined by individual water providers in accordance with the departments, entities, or local powers that are responsible for such enforcement.

Water shortage stages are part of a broader water shortage contingency plan. Water shortage contingency plans are part of a water provider's broader urban water management plan. Water providers that supply water to over 3,000 customers or supply more than 3,000 acre feet annually must prepare and submit an urban water management plan to the California Department of Water Resources every five years. The next iteration of plans are for 2015. For more information on urban water management plans and water shortage contingency plans, visit the California Department of Water Resources' Urban Water Management webpage.[2]

Updating water shortage stages is a complex task that influences many different sectors within a water provider's service area, especially if service area boundaries overlap with multiple local government boundaries. The workshop attendees identified several areas for potential complication while using the template as a tool to update their water shortage contingency plans including:

- Conflicting and/or pre-existing local and county ordinances or practices
- Individual water provider Board/Council/Management preferences
- Changing state, regional and local policies and regulations

[2] www.water.ca.gov/urbanwatermanagement/

- The inclusion of drought rates to water shortage stage language and the related need to comply with Proposition 218.[3]

Despite identifying several challenges, the workshop participants were able to reach consensus on several items including:

- General agreement by attendees to use the stage "name" instead of "number" in outreach materials to reduce confusion to customers while remembering that perhaps the most effective way to communicate with customers is to speak in percent reductions such as 20% or 30% conservation. This communicates to the customer the goal, which is saving a certain percentage of water to respond to dry conditions.
- General agreement by attendees on the percentage reductions and suggested actions portion of the water shortage stage template **as a tool**. Attendees generally agreed on percentage reductions for each stage because they are written as "up to" percentages which provide another layer of customization to local water providers to respond to the needs of their individual service areas.

## Next Steps

The Regional Water Authority (RWA) will distribute this finalized summary document as a tool and will provide technical assistance, as requested, to all its' member water providers as they choose to embark on updating their water shortage contingency plans. RWA will collect and review member water providers' water shortage contingency plans to track the usage and adoption of elements from the water shortage stage template provided in this document. RWA will continue to coordinate with the Regional Managers Forum and will provide updates to the Forum as necessary.

## Additional Resources

In addition to this document, there are several other helpful resources that can assist a water provider when they choose to update their water shortage contingency plan.

- Governor's Office of Planning and Research, Local Government Drought Toolkit[4]
  This resource contains a water shortage stage template with extensive attention to potential suggested actions for each stage.
- Contact the Regional Water Authority for the region's most recent collection of member water providers' water shortage contingency plans.[5]

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[3] For more information about Proposition 218 see Association of California Water Agencies' Proposition 218: Local Agency Guidelines for Compliance (2007). www.acwa.com/products/acwa-issue-guidelines/proposition-218-local-agency-guidelines-compliance

[4] www.opr.ca.gov/docs/Local_Government_Drought_Toolkit_March_10_2014.pdf

[5] Regional Water Authority, 5620 Birdcage, Suite 180, Citrus Heights, California, 916.967.7692 or www.rwah2o.org.

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# APPENDIX M

City Code 1304

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# Chapter 13.04 WATER SERVICE SYSTEM

## Note

* Prior code history: prior code §§ 47.01.001—47.01.008; 47.01.010; 47.01.011; 47.01.013—47.01.016; 47.02.018—47.02.022; 47.04.037—47.04.040; 47.05.041—47.05.049; 47.06.051; 47.07.052; 47.07.054; 47.07.055; 47.08.056—47.08.064; 47.09.070—47.09.079; 47.10.090—47.10.101; 47.11.110; 47.11.111; 47.11.132; 47.12.201—47.12.204; 47.13.300; 47.13.301; 47.13.303—47.13.307; 47.13.316—47.13.321; 47.14.400—47.14.405; 47.14.430; 47.14.431 and 47.14.450—47.14.452.

## Article I. Water Service and Water Service Area—Definitions

### 13.04.010 Description of services.

The department of utilities of the city of Sacramento shall furnish a safe and potable water supply meeting the standards of the California Health and Safety Code and Title 22 of the California Code of Regulations. (Ord. 2001-033 § 1)

### 13.04.020 Water service area.

The water service area is that area located within the city limits as such limits now or may from time to time exist, and those areas outside the city limits that have been approved for water service by the city council consistent with applicable water right restrictions. (Ord. 2001-033 § 1)

### 13.04.030 Definitions.

Unless the context requires otherwise, whenever the words or terms defined in this section, or pronouns used in their place, occur in this chapter, they shall have the following meanings:

"Air conditioning or refrigeration system" means any combination of equipment, whether compressor or other type, by which heat is removed from or added to the air, that maintains temperatures that are not less than sixty (60) degrees Fahrenheit, and from which the accumulated heat is wholly or partially removed or added by the use of water. Evaporative coolers are included in this definition.

"City" means the city of Sacramento, California.

"City council" means the city council of the city of Sacramento, California.

"City limits" means the corporate limits of the city of Sacramento, California.

"City manager" means the city manager of the city of Sacramento or his or her authorized representative.

"City water distribution system" means all pipes, transmission and distribution mains and other facilities owned or operated by the city to supply, provide, or deliver water to its customers.

"Commercial service" means the provision of water to premises used for a business, trade, manufacturing or processing activity, including without limitation hotels, motels, rest homes, schools, irrigation service connections and all other services not hereinafter defined as a "domestic service."

The provision of water to premises used for both commercial and domestic purposes shall be considered commercial service.

"Cross-connection" means any actual or potential connection between the city's or consumer's potable piping system and any other source or piping system through which it is possible to introduce into any part of the potable piping system any used water, industrial fluid, gas or substance other than the potable water with which the piping system is supplied. By-pass arrangements, jumper connections, removable sections, swivel or change-over devices and other temporary or permanent devices through which or because of which backflow can or may occur are considered to be cross-connections.

"Customer" means the owner of the property to which water service is rendered, or an association or other entity managing a common interest development billed for water service pursuant to subsections (A)(1), (A)(2), or (A)(3) of Section 13.04.220. As used herein, "association" and "common interest development" have the meanings specified in Section 13.12.010.

"Department" means the Department of Utilities of the city of Sacramento, California.

"Director" means the director of the Department of Utilities of the city of Sacramento, or his or her authorized representatives.

"Distribution main" means a water pipeline used to convey potable water from a transmission main to the customer's property.

"Domestic service" means the provision of water solely for household and domestic irrigation purposes to premises with one or more residential dwelling units, excluding the provision of water defined herein as "commercial service."

"Fire chief" means the fire chief of the city of Sacramento or his or her authorized representative.

"Fire service" means the water pipe and appurtenant facilities dedicated to provide water solely for fire fighting purposes.

"Flat rate" means a fixed periodic rate charged for the provision of water based on factors related to the amount of water used, that may include a minimum rate or service charge, but that does not involve measurement of and billing for the actual quantity of water delivered.

"Irrigation season" means May through October, inclusive, unless a different time period is specified by resolution of the city council.

"Irrigation service" means a water pipe dedicated to provide water solely for irrigation of landscaping.

"Metered rate" means the periodic rate charged for the provision of water in measured quantities based on the quantity delivered, that may include a minimum rate or service charge.

"On-site fire protection facilities" mean privately-owned fire protection facilities installed on private property in accordance with the provisions of this code, whether installed before or after the effective date of the ordinance codified in this chapter.

"Person" means any person, company, partnership, agency or other public or private entity.

"Point of service" means the location where the city's distribution main delivers water to the customer's private water line. For a metered water service connection, the city's point of service generally is located at the downstream side of the meter where it connects to the private water line; provided that in any location where the meter is outside of the city right-of-way containing the city distribution main, the city's point of service is located at the boundary of the city right-of-way. For an unmetered water service connection, the city's point of service generally is located as follows:

Public Alleys. The point of service for an unmetered water service connection to a city distribution main in a public alley, paved or unpaved, is located at the alley right-of-way line.

Public Streets. The point of service for an unmetered water service connection to a city distribution main in a public street is located at the edge of the public sidewalk adjoining the property served when the sidewalk is continuous with the curb and gutter; at the edge of the curb adjoining the property served when the sidewalk is separated from curb and gutter by a planter strip; and at the street right-of-way line for a public street lacking curb, gutter, and sidewalk improvements.

Public Utility Easements, Abandoned Streets and Alleys, and Private Streets and Alleys. The point of service for an unmetered water service connection to a city distribution main in a public utility easement, abandoned public street or alley, private street or alley, or other private parcel is located at the corporation stop/valve at the main.

Where the exact location of the point of service is unclear, the director shall determine the location.

“Premises” means the property or area, including improvements thereon, to which water service is or will be provided.

“Private fire hydrant” means a fire hydrant that is not located in a city right-of-way or other city property that is owned and maintained by a party other than the city.

“Private water line” means a water pipeline that is owned and maintained by a party other than the city, beyond the city’s point of service.

“Public fire hydrant” means a fire hydrant that is owned and maintained by the city.

“Public water main” means a transmission or distribution main that is owned and maintained by the city.

“Rendered,” when used to describe water service or other utility services being rendered, means that the service is provided or otherwise made available for use.

“Room” means an area with a minimum of fifty (50) square feet that is structurally or functionally distinct from other rooms or areas in a residential dwelling unit receiving domestic service, as determined by the department in accordance with the department’s billing criteria.

“Service connection” or “water service connection” means any tap, pipe, or other means of taking water from the city water distribution system. A service connection occurs at the time that a tap, pipe, or other means of taking water is physically attached to the city water distribution system in a manner capable of taking water from the distribution system.

“Standard specifications” means the city’s Standard Specifications for Public Construction dated June 2007, including any subsequent amendments.

“Transmission main” means a water pipe greater than twelve (12) inches in diameter used to convey potable water from a well or treatment plant to a distribution main.

“Temporary water service” means the provision of water for a period of twelve (12) months or less.

“Water conservation device” means any mechanical or electrical equipment employed to efficiently use water.

“Water distribution facilities” means city transmission mains and distribution mains, unless the context indicates otherwise.

“Water meter” means a water meter provided or approved by the city that is installed on a water service connection in a manner that measures the volume of all water taken from the city water distribution system through that water service connection. As used in Article III of this chapter,

water meter shall include the water meter, the meter box containing the water meter and all related attachments and equipment.

"Water service" means the provision of water from the city water distribution system in accordance with the provisions of this chapter and other applicable ordinances, laws and regulations. Unless the context, or the city, in its discretion, requires otherwise, the term "water service" as used in this chapter shall not include the provision of city water on a wholesale basis to another water purveyor that, in turn, will supply such water to its own retail customers. (Ord. 2013-0014 § 1; Ord. 2011-051 § 3; Ord. 2005-090 § 2; Ord. 2001-033 § 1)

## Article II. General Requirements

### 13.04.040 Private water lines.

Private water lines serving two or more buildings or structures located on the same lot or parcel or not maintained by a public utility shall be constructed to meet the standards for construction of public water mains set forth in the standard specifications. (Ord. 2001-033 § 1)

### 13.04.050 Relocation of service connection.

A service connection may be relocated by the city at a customer's request provided the relocation, in the judgment of the director, is not detrimental to the city water distribution system. Such relocation shall include any modifications necessary to comply with then-current service connection standards or requirements, and the cost of the relocation shall be borne by the customer. The customer shall pay the estimated cost of the relocation, as determined by the director, prior to obtaining a water tap and constructing the water service. Where a service connection is relocated for the convenience or protection of the city, the relocation shall be at the expense of the city. (Ord. 2001-033 § 1)

### 13.04.060 Service connections generally.

A. Unless otherwise provided in this chapter, each lot or parcel shall have a separate water service connection, except for fire service connections serving more than one lot or parcel that are authorized pursuant to the provisions of this chapter. All water service lines shall be equipped with an approved corporation stop/valve at the distribution main, and with a curb stop valve unless not required under specifications adopted by the department. Water service lines shall not cross another lot or parcel without first obtaining any and all rights-of-way, easements, or other approvals necessary to do so.

B. To be eligible for water service, a parcel must abut a public easement or a city street or alley right-of-way in which a distribution main is located at a point immediately adjacent to the property, unless the director authorizes the extension of a distribution main.

1. If the parcel abuts both a public easement and a street or alley right-of-way in which distribution mains are located, the director shall specify which distribution main will be used for any new water service connection.

2. If the parcel abuts only a public easement in which a distribution main is located, and the distribution main is scheduled in the department's capital improvement program to be abandoned when a new distribution main is constructed in a street or alley right-of-way adjacent to the parcel, the director may require, as a condition of allowing a new water service connection to the

existing distribution main, that the parcel's private water lines be configured to allow the parcel to be connected to the new distribution main after it is constructed.

C. The director may authorize water service for land locked parcels provided that the customer obtains recorded private easements from the affected owner(s) and all other applicable legal requirements are fulfilled. Private easements must abut a distribution main in a dedicated public easement or city right-of-way. Water service lines constructed in private easements are private water lines, and the city shall have no responsibility for the maintenance and repair of such lines.

D. The director may authorize water service for a parcel that is not adjacent to a distribution main and is not land locked, on such terms and conditions as may be specified by the director, if the director determines based on written findings that it is not feasible to extend a distribution main due to the unique physical characteristics of the parcel which are so unusual that complying with the requirements of this section would create an exceptional hardship to the parcel owner or the surrounding parcel owners.

E. Except as provided herein, the director shall determine the maximum sizes of service connections. For single-family domestic service connections, the maximum size shall be one inch, or one and one-half inches if residential fire sprinkler systems are present, unless otherwise authorized by the director.

F. All water service connections are subject to the city's tap, meter, development, abandonment, and other applicable fees established by city council resolution, and to the department's cross-connection control standards. (Ord. 2015-0011 § 1; Ord. 2013-0014 § 2; Ord. 2011-031 § 1; Ord. 2001-033 § 1)

### 13.04.065 Access to customer premises for water service work.

A customer receiving city water service shall provide the city's employees and contractors access to and use of the premises where city water service is received as may be required for the installation, maintenance, repair, or removal of any pipelines, water meters, and other appurtenances used to provide or measure city water service to the customer's premises or to adjacent premises; or for purposes of connecting, reconnecting, or relocating the connection for city water service to any such premises. Compliance with the foregoing requirements is a condition of the customer receiving or continuing to receive city water service, and the department may shut off water service at the distribution main if the customer refuses to allow access as required in this section. If the customer refuses to allow such access, the city may seek authorization for access from any court of competent jurisdiction. (Ord. 2013-0014 § 3; Ord. 2005-090 § 3)

### 13.04.070 Multiple service connections.

Except for separate irrigation service connections and fire service connections, each lot or parcel shall have only one service connection; provided that requests for multiple service connections (excluding separate irrigation service and fire service connections) may be approved on a case-by-case basis by the director.

A. Backup service connections are considered to be temporary and shall be subject to termination by city at a future date specified by the director.

B. If permanent multiple service connections require a public water main extension, the main extension shall be installed to the satisfaction of the director at the customer's expense.

C. Where multiple service connections already exist, and a lot split, lot merger, or a change of business or operations occurs, the excess service connection shall be removed at the customer's expense, if required by the director. (Ord. 2015-0011 § 2; Ord. 2001-033 § 1)

### 13.04.075 Water service for community gardens.

The director may authorize lots or parcels utilized for a community garden, as defined in Section 17.108.040 of this code, to use the existing water service connection of an adjoining lot or parcel to provide irrigation for the community garden if the owner of the adjoining lot or parcel consents to such use, provided that:

A. A backflow prevention device is installed and periodically tested in accordance with such requirements as may be specified by the director to protect the potable water supply of the city and of the adjoining lot or parcel served by the existing water service connection; and

B. A water meter is installed on the existing water service connection. The owner of the adjoining lot or parcel served by the existing water service connection shall notify the director prior to the initiation of any such use, and shall be liable for all rates, charges, and fees for the water service furnished to the existing water service connection used to provide irrigation for the community garden. (Ord. 2013-0021 § 38; Ord. 2011-031 § 2)

### 13.04.080 No city responsibility beyond point of service—Indemnity.

The city's responsibility to operate, maintain and repair public water mains shall extend only to the point of service. The operation, maintenance and repair of any private water line connected to the point of service shall be the customer's sole responsibility. The customer shall indemnify and hold harmless city, its officers and employees from any claims, actions, costs (including attorney fees), damages or other liability resulting or arising from the condition, operation, maintenance or repair of said private water line. (Ord. 2001-033 § 1)

### 13.04.090 Discontinuance of water services—No liability.

The supply of city water may be discontinued at any time without notice to customers and the city shall in no way be liable for any damage or costs resulting from such discontinuance. The city does not guarantee, and shall not be liable for any failure in, continuity of water service or water pressure. (Ord. 2001-033 § 1)

### 13.04.100 Use of water.

No person shall use any city water unless installation of the tap and initiation of the water service has been approved by the city in accordance with all applicable provisions of this code. Any use without such approval shall be unlawful. (Ord. 2001-033 § 1)

### 13.04.110 Inspections.

No person shall interfere with the inspection by city employees of any water fixture or water-using or water-distributing device connected directly or indirectly to the city water distribution system, for the purpose of determining whether there is a violation of any provision of this chapter. City employees shall obtain the consent of an adult occupant before entering occupied premises or

dwellings. If consent is not obtained, the city may seek authorization for access from any court of competent jurisdiction. (Ord. 2013-0014 § 4; Ord. 2001-033 § 1)

### 13.04.120 Leaking fixtures.

It is unlawful for any person to maintain or allow on his or her premises leaky or faulty water fixtures or water using or distributing devices to which city water is connected, so that city water is wasted thereby. The failure to repair or disconnect the faulty device within five days after being notified in writing to do so by the department shall be sufficient cause for the disconnection of city water from the premises until the repairs have been made. After disconnection, water shall be reconnected only in accordance with the provisions of Section 13.04.170. (Ord. 2001-033 § 1)

### 13.04.130 Public fire hydrant use—Requirements.

A. No person other than authorized employees of the department or fire department, or other persons duly authorized by the city manager, shall open or operate any public fire hydrant or attach any hose, tubing, or pipe to a public fire hydrant for any purpose, without first obtaining a fire hydrant use permit from the director, in accordance with the temporary water use policy approved by the director pursuant to Section 13.04.210. Permit applications shall be filed on forms provided by the department. The permittee shall at all times comply with the temporary water use policy and any other conditions included in the permit.

B. Permit applicants shall pay the fees, charges, and deposits required by the temporary water use policy, in the amounts established by city council resolution.

C. No person, whether authorized to open a public fire hydrant or not, shall leave a public fire hydrant open or leave the cap off the nozzle of a public fire hydrant after having ceased to use it.

D. Any person who opens or operates a public fire hydrant, whether or not authorized as provided herein, shall indemnify and hold harmless the city, its officers, and employees from any claims, actions, costs (including attorney fees), damages, or other liability resulting or arising therefrom. (Ord. 2013-0014 § 5; Ord. 2001-033 § 1)

### 13.04.140 Public fire hydrants—Administrative penalties.

A. Any person violating any provision of Section 13.04.130 is subject to administrative penalties pursuant to Section 1.28.010. The administrative penalty for violations of Section 13.04.130 is one hundred dollars ($100.00) for the first violation, five hundred dollars ($500.00) for the second violation, and one thousand dollars ($1,000.00) for the third and all subsequent violations in a one-year period.

B. If a person commits more than three violations of Section 13.04.130 in a three-year period, the director may refuse to issue any further fire hydrant use permits to that person for a period of one year.

C. The penalties set forth above also apply to persons using a water transportation vehicle if the vehicle is found operating without a valid fire hydrant use permit as required under the temporary water use policy.

D. Violation of any provision of Section 13.04.130 is grounds for forfeiture of a deposit as provided in the temporary water use policy.

E. The foregoing provisions are cumulative and in addition to any other penalty or remedy provided or authorized under any applicable law, regulation, or this code, including Section 1.28.020 and Chapters 2.24, 15.36, and 15.100. (Ord. 2013-0014 § 6; Ord. 2001-033 § 1)

### 13.04.150 Private fire hydrant use.

Unmetered on-site fire protection facilities providing water supply to private fire hydrants shall be used for fire suppression purposes only, except as provided otherwise in this section. No person shall use or allow others to use private fire hydrants for any purpose other than fire suppression without obtaining permission from the director. The director may require the property owner to purchase, install, and maintain a detector check on each fire service provided to the property. The size, location, and type of detector check shall be as specified by the director. (Ord. 2013-0014 § 7; Ord. 2001-033 § 1)

### 13.04.160 No obstruction.

No person shall block or obstruct any public or private fire hydrant in such a manner that interferes with its operation, maintenance or repair, or the attachment of a fire hose thereto. No person shall place upon or about any public or private fire hydrant, water gate, water meter, curb/cock or stop/cock connected with the city water distribution system any building material or other obstruction so as to prevent free access to the same at all times. (Ord. 2001-033 § 1)

### 13.04.170 Reconnection of water.

In no case shall water service be restored to any premises when shut off as provided in this title, unless the pipe leading thereto is directly connected with the distribution main and unconnected with any other service pipe leading to any other premises, and except on approval of the director and payment of all past due accounts and the additional amount covering costs for shutting off and restoring the water service. (Ord. 2001-033 § 1)

### 13.04.180 Service pipes.

A. No person whose water service pipe is attached directly or indirectly to a public water main shall allow any person to attach any pipe or hose connection to the plumbing on his or her lot or parcel for the purpose of providing water service to any other lot or parcel, except to provide irrigation for a community garden in accordance with Section 13.04.075.

B. No person shall receive water service on a lot or parcel by means of a pipe or hose connection to the plumbing on a different lot or parcel that is attached directly or indirectly to a public water main, except to provide irrigation for a community garden in accordance with Section 13.04.075.

C. The department may order the disconnection of any pipe or hose connection in violation of this section, or the department may disconnect the pipe or hose connection. (Ord. 2013-0014 § 8; Ord. 2011-031 § 3; Ord. 2001-033 § 1)

### 13.04.190 Water shut-off for illegal service connection.

A. If the department orders the disconnection of a pipe or hose connection in violation of Section 13.04.180, and the pipe or hose connection is not disconnected with the time specified by the department, the department may shut off the water service connection providing water to the pipe or hose connection at the distribution main.

B. If any person refuses to allow department employees to enter any premises for the purpose of disconnecting a service pipe or hose connection that supplies city water to another lot or parcel in violation of this chapter, the department may shut off water service to the premises at the distribution main. (Ord. 2013-0014 § 9; Ord. 2001-033 § 1)

### 13.04.200 Use after shut off—Indemnity.

Whenever the department shuts off any pipe or any public or private fire hydrant carrying or discharging water from the city water distribution system, no person shall open the pipe or hydrant or turn on or use any water from the pipe or hydrant without obtaining prior approval from the director. Any person who violates this section shall indemnify and hold harmless the city, its officers, and employees from any claims, actions, costs (including attorney fees), damages, or other liability resulting or arising therefrom. (Ord. 2013-0014 § 10; Ord. 2001-033 § 1)

### 13.04.210 Temporary water service.

A. The director shall adopt a written temporary water use policy that establishes policies, procedures, and requirements applicable to temporary water service, including procedures governing application for—and issuance, denial, renewal, and revocation of—fire hydrant use permits, and procedures for payment and forfeiture of deposits.

B. Any person requesting temporary water use shall comply with all requirements of the temporary water use policy, including the payment of all applicable fees, charges, and deposits in the amounts established by city council resolution.

C. Temporary water service shall be provided through a meter, at current city charges. The department may authorize temporary water service for new residential construction prior to meter installation, upon payment, prior to issuance of a building permit, of a temporary water service fee, for each residential lot, equal to three times the city's then-current monthly flat rate for water service to a single-family residence with six to nine rooms. (Ord. 2013-0014 § 11; Ord. 2001-033 § 1)

### 13.04.220 Condominiums; common interest developments; common irrigation systems.

A. Notwithstanding any contrary provision of this code, if authorized by the director, and subject to such terms and conditions as may be specified by the director:

1. Water service, and other city utility services as applicable, rendered to a condominium project's condominium units or common area(s) may be provided at a single point of service or multiple points of service and billed to the association managing the condominium project.

2. In a common interest development, if a meter is installed on an existing unmetered water service connection, or if an existing metered service connection is changed from flat rate to metered rate billing, the metered rate for the service connection shall be billed to the association managing the common interest development, or to the owners of the separate interests served by the service connection in accordance with a rate allocation established by ordinance or

resolution of the city council; this does not include water service provided at a water service connection serving only one separate interest, which shall be billed to the owner of the separate interest.

3. Irrigation service rendered to the common area(s) of a common interest development may be provided at a single point of service or multiple points of service and billed to the association or other entity managing the common interest development.

4. Irrigation service for a common irrigation system that crosses parcel lines in a commercial development that is not a common interest development, may be provided at a single point of service or multiple points of service and billed to a single owner or the owner's authorized representative, provided that:

a. The owner owns all parcels served by the common irrigation system; or

b. If the owner owns at least one, but not all, of the parcels served by the common irrigation system, the owner furnishes satisfactory evidence of an easement or other interest of record for the parcels not owned by the owner, that authorizes the owner or the owner's authorized representative to obtain and pay for irrigation service for the common irrigation system on those parcels.

B. If water service is billed to an association or other entity pursuant to subsections (A)(1), (2), or (3) of this section, the association or other entity shall be fully responsible for payment of the rates, fees, and charges for the water service as a condition of continuing to receive water service.

C. If irrigation service is billed to an owner or the owner's authorized representative pursuant to subsection (A)(4) of this section, the owner or the owner's authorized representative shall be fully responsible for payment of the rates, fees, and charges for the irrigation service as a condition of continuing to receive irrigation service.

D. As used in subsection A of this section, the terms "common area," "condominium project," "common interest development," "separate interest," and "association" have the meanings specified in Section 13.12.010. (Ord. 2015-0011 § 3; Ord. 2013-0014 § 12; Ord. 2011-051 § 4; Ord. 2001-033 § 1)

## 13.04.225 Water service to projects consisting of vertical parcels.

A. Notwithstanding any contrary provision of this code, the director may authorize water service to be:

1. Rendered to a project consisting of vertical parcels at a single metered point of service or multiple metered points of service, with sub-meters for each parcel, as specified by the director; and

2. Billed to a single person authorized to receive and pay for the water service for and on behalf of all the parcel owners, referred to in this section as the "authorized party."

B. If the director authorizes water service pursuant to subsection A, before receiving any water service connection the authorized party and all parcel owners must enter into a water service agreement with the department, in a form approved by the city attorney, that includes the terms and conditions specified by the director, including, at a minimum, the following:

1. The owners and authorized party shall be solely responsible for all water distribution facilities within the project, including the sub-meters for all parcels;

2. The authorized party shall pay when due the rates, fees, and charges for water service rendered to the city's metered points of service; shall be solely responsible for the allocation, billing, and collection of these costs among the parcels within the project based on sub-metering; and, if required by the director, shall furnish a security deposit to assure payment;

3. If the authorized party fails to pay all or any portion of the rates, fees, and charges for water service rendered to the city's metered points of service when and as required:

a. The city may discontinue water service provided through the city's metered points of service until all rates, fees, and charges are paid in full, and

b. All of the parcel owners will be liable for payment as specified in Section 13.12.020, and will be subject to the delinquent service charge procedures specified in Sections 13.12.070 through 13.12.100;

4. The owners and authorized party shall release any and all claims arising from the city's discontinuance of water service for nonpayment, including unknown claims arising under California Civil Code Section 1542;

5. The owners and authorized party shall defend, indemnify, and hold harmless the city, its officers, employees, and agents against any and all liabilities and costs (including attorney fees) arising from:

a. Any action or failure to act by the owners or authorized party, or their respective members, officers, employees, contractors, or agents,

b. Any discontinuance of water service for nonpayment, or

c. Any claim related to the authorized party's authority to act on behalf of the parcel owners;

6. The agreement shall be recorded so that the agreement's obligations are covenants that run with all parcels within the project, in accordance with Section 1468 of the Civil Code, and bind all members, successors, and assigns of the owners and authorized party;

7. If the services of any attorney are required by a party to secure performance of the agreement, or due to a breach or default of a party, or if any judicial remedy or arbitration is necessary to enforce or interpret any provision of the agreement, the prevailing party shall be entitled to reasonable attorney fees, costs, and other expenses, in addition to any other relief to which the party may be entitled; and

8. Except as provided otherwise in the agreement, the provision of city water service shall be subject to all applicable provisions of the city charter, this code, and any other statute, regulation, ordinance, resolution, or city policy or procedure. (Ord. 2015-0011 § 4)

### 13.04.230 Structures overlying city utilities.

No permanent structure (including without limitation garages, patios, concrete slabs, tool shed and similar structures) shall be constructed on top of water, sewer or drainage pipelines or anywhere within the associated utility easements, unless approved by the director upon execution of a hold harmless agreement approved by the city attorney. (Ord. 2001-033 § 1)

### 13.04.240 Cross-connection control standards.

The city council shall from time to time by resolution adopt cross-connection control standards that establish the city's requirements for design, construction, installation, and

maintenance of backflow prevention assemblies. The purpose of these standards is to protect the potable water supply of the city of Sacramento from the possibility of contaminants, pollutants, or water from unapproved sources entering the city's water distribution system through cross-connections. Any person receiving or using water from the city's water distribution system shall comply with all provisions of the city's then current cross-connection control standards, and the violation of any provision thereof shall constitute an infraction. In the event a water customer is found to be in violation of the cross-connection control standards by the director or by a Sacramento County Environmental Health Officer, the customer's water service may be terminated. The foregoing provisions shall be cumulative and in addition to any other remedy provided under any applicable law or regulation, including without limitation the administrative penalty provisions of Section 1.28.010. (Ord. 2001-033 § 1)

### 13.04.250 Easements.

Easements granted for public water mains shall be exclusive easements, and shall be in a form approved by the department and the city attorney. (Ord. 2001-033 § 1)

### 13.04.260 Damage to city water distribution system.

Any person or entity damaging or removing any portion of the city water distribution system shall pay the city's costs of investigating and repairing such damage and/or replacing any removed item(s), and shall indemnify and hold harmless city, its officers and employees from any claims, actions, costs (including attorney fees), damages or other liability resulting or arising from such damage or removal. (Ord. 2001-033 § 1)

### 13.04.270 Violations.

Unless specified as a misdemeanor, the violation of any provision of this chapter is an infraction, in addition to any other remedy provided under any applicable law or regulation, including without limitation the administrative pen-

alty provisions of Section 1.28.010. (Ord. 2001-033 § 1)

## Article III. Water Meters

### 13.04.280 Intent and purpose.

The provisions of California Water Code Section 521 et seq., impose various requirements for the installation and use of water meters. The ordinance codified in this article is enacted to comply with and implement these state law requirements. (Ord. 2005-090 § 4)

### 13.04.290 Installation of water meters on water service connections made on or after January 1, 1992.

A. In accordance with the provisions of California Water Code Section 525, no new water service connec-tions may be attached to the city water distribution system on or after January 1, 1992, unless such connection is equipped with a water meter. As used in this section, "new water service connection" includes any existing water service connection that is used to provide water to buildings or residential units constructed on or after January 1, 1992. Fire service connections are

exempt from the provisions of this chapter. The director may adopt standards and requirements to implement the provisions of this section.

B. Prior to the installation of a water meter in accordance with the terms of this section, the customer shall pay any applicable fee established from time to time by resolution of the city council to recover costs incurred by the city to provide, install or supervise the installation of the water meter.

C. Water meters for water service connections made on or after January 1, 1992 shall be installed by the city or under the city's supervision in accordance with all applicable city water and building codes, regulations, and standards.

D. A water meter for a water service connection made on or after January 1, 1992 shall not be installed unless a plumbing permit has been issued.

E. Meters for water service connections made on or after January 1, 1992 shall be installed above ground on metered water services three inches and larger in diameter that require the installation of a backflow prevention assembly installation.

F. No occupancy permit for any structure served by a water service connection made on or after January 1, 1992 shall be issued until meter installation is complete. (Ord. 2005-090 § 4)

### 13.04.300 Phased meter installation program.

California Water Code Section 527 requires the city to install water meters on all water service connections on or before January 1, 2025. In order to comply with this requirement, the director shall develop and implement a phased program to accomplish, by January 1, 2025, the installation of water meters on all city water service connections that existed without meters as of January 1, 2005. Such program shall comply with any requirements specified or approved by resolution(s) of the city council, including resolution(s) adopted prior to the effective date of the ordinance enacting this section. The director may adopt standards and requirements to implement the provisions of this section. Customers shall pay such rates, fees and/or charges as may be established from time to time by resolution of the city council to fund, among other costs, the development and implementation of the phased meter installation program. (Ord. 2005-090 § 4)

### 13.04.305 Conversion to metered connections for common interest developments.

A. If an existing unmetered water service connection in a common interest development is changed to a metered connection, the meter shall be installed on the existing connection. If the water service connection serves more than one separate interest, the department may install within the development's private water distribution system separate water meters for each separate interest, if requested by the association managing the common interest development and the owners of the separate interests and the director determines that it is feasible and appropriate to do so:

1. Provided that the association and owners, at no cost to the city:

a. Locate and expose those portions of the development's private water distribution system where the separate water meters would be installed as may be required by

the director to determine whether it is feasible to install separate water meters,

b. Install all piping and other improvements required by the director to install separate meters, and

c. Convey to the city all easements or other property rights required by the director for installation, operation, maintenance, repair, and replacement of the separate meters and the meter boxes containing them; and

2. Subject to such other terms and conditions specified by the director.

B. If an existing unmetered water service connection serves more than one separate interest in a common interest development that does not have an association, the director may require that the owners of all separate interests in the common interest development, at no cost to the city, and as a condition of continuing to receive city water service:

1. Locate and expose those portions of the development's private water distribution system where separate water meters would be installed for each separate interest;

2. Install all piping and other improvements required by the director to install separate metered water service connections for the separate interests; and

3. Convey to the city all easements or other property rights required by the director for installation, operation, maintenance, repair, and replacement of the separate meters and the meter boxes containing them.

C. The department's installation, operation, maintenance, repair, or replacement of separate water meters and meter boxes within a common interest development's private water distribution system shall not create or impose on the city any responsibility or liability of any kind for the condition, operation, maintenance, repair, or replacement of any portion of the private water distribution system.

D. As used in this section, the terms "association," "common interest development," and "separate interest" have the meanings specified in Section 13.12.010. (Ord. 2015-0011 § 5; Ord. 2013-0014 § 13)

### 13.04.310 Reading meters.

The customer receiving city water service shall keep water meters unobstructed and accessible for reading, maintenance and repair, and shall provide the department's employees and/or its contractors access to the premises where the customer receives water service as may be required by the city for such purposes. Compliance with this section shall be a condition of receiving or continuing to receive city water service. (Ord. 2005-090 § 4)

### 13.04.320 Testing meters.

A. Any metered customer may request in writing that the meter through which water is being furnished be examined and tested by the department to determine whether the meter is registering accurately the amount of water that is being delivered through it. Upon receipt of such request, the department shall examine and test the meter. If the meter is found to register over three percent more water than actually passes through it, the customer's water bill will be adjusted accordingly. If the meter is found to register a variance of three percent or less, no billing adjustment will be made. Meter testing will be performed at a customer's request, at no charge to the customer, not more than once every twelve (12) months.

B. If a customer requests more frequent testing, the customer's request shall be accompanied by a deposit of an amount equal to the monthly minimum meter charge. Upon receipt of such request, the department shall examine and test the meter. If the meter is found to register over three percent more water than actually passes through it, the customer's water bill will be

adjusted accordingly and the deposit shall be returned, without interest. If the meter is found to register a variance of three percent or less, no billing adjustment will be made and the deposit shall be used by the city to pay its inspection and testing costs. (Ord. 2005-090 § 4)

### 13.04.330 Water meter use—Indemnity and notification.

No person other than authorized employees of the department or other persons authorized by the director shall install, maintain, repair, move, replace, adjust, tamper with, manipulate, damage, disconnect, or remove any water meter. Any person performing any of the foregoing actions, whether or not authorized by the director, shall indemnify and hold harmless city, its officers, and employees from any claims, actions, costs (including attorney fees), damages, or other liability resulting or arising from such actions, and shall pay the city's costs of investigating and repairing any resulting damage or replacing any removed items. Customers with metered water service connections shall notify the department of any visible damage to, or removal of, any portion of the meter box containing the water meter. (Ord. 2013-0014 § 14; Ord. 2005-090 § 4)

### 13.04.340 Reserved.

(Ord. 2005-090 § 4)

## Article IV. Construction of Water Distribution Facilities Within City Limits

### 13.04.350 Application for installation.

Any person requesting water service from a public water main for a property or properties where no water distribution facilities have been installed shall apply to the director for permission to install the distribution facilities. The application shall be made to the director and shall contain plans and specifications for the proposed distribution facilities, that shall conform to the requirements of the director as to size, type and quality of materials and loca-

tion of transmission and/or distribution mains. (Ord. 2001-033 § 1)

### 13.04.360 Certification of approval of water distribution facilities plans.

If the director certifies in writing that the plans and specifications submitted conform to the requirements of the department, the applicant may cause the water distribution facilities to be installed by either private contract or by another procedure acceptable to the director. The department's approval of tentative map conditions and subsequent improvement plans shall satisfy this requirement. All costs associated with the installation shall be the responsibility of the applicant. (Ord. 2001-033 § 1)

### 13.04.370 Inspection of installation.

The director shall have the right to inspect all work performed and all work must be approved by the director after inspection before the distribution facilities shall be connected to the city water distribution system. (Ord. 2001-033 § 1)

### 13.04.380 Distribution facilities to become property of the city.

After the director issues a notice of completion, the distribution facilities shall become the property of the city. (Ord. 2001-033 § 1)

## Article V. Water Service Outside the City Limits

### 13.04.390 Approval of city council.

No application for water service to any area located outside the city limits shall be granted without approval by the city council. (Ord. 2001-033 § 1)

### 13.04.400 Approval of city council—Conditions for approval.

Applications for water service to areas located outside of the city limits may be granted only in areas where surplus water is available in excess of the water supply needs of water users within the city limits, and where providing such service is not deemed detrimental to existing services or inimical to the interests and operations of the department. Water service outside the city limits shall be subject to the conditions and requirements of this chapter, and also shall be consistent with applicable water right restrictions. (Ord. 2001-033 § 1)

### 13.04.410 Permit required.

All applicants for city water service to areas outside of the city limits shall secure a permit from the department. The permit shall not be issued unless it is found that the plumbing in the premises to be served and the construction of the water distribution facilities serving such premises conforms with the provisions of this code and other applicable regulations of the city and the laws and regulations of the state. The applicant shall allow city personnel and/or the Sacramento County Environmental Management Department to inspect the premises and distribution facilities at all reasonable times and if it is found at any time that any of the above-mentioned provisions, regulations or laws is violated, the water service shall be disconnected. (Ord. 2001-033 § 1)

### 13.04.420 Permit application.

The application for the permit required by Section 13.04.410 shall be on a form provided by the department, and shall be accompanied by payment of the application fee established by city council resolution. (Ord. 2013-0014 § 15; Ord. 2001-033 § 1)

### 13.04.430 Discontinuance of service outside city limits.

The department may discontinue water service to any area outside of the city limits when it determines that the continuation of service is no longer feasible economically or that continuing such service interferes with proper service to water users within the city limits. (Ord. 2001-033 § 1)

### 13.04.440 Maintenance of distribution facilities.

Upon issuance of a permit in accordance with Section 13.04.410 and acceptance by the city, the city shall maintain all distribution facilities to which water service is provided pursuant to the provisions of this chapter. (Ord. 2001-033 § 1)

## Article VI. Regulations for Air Conditioning and Swimming Pools

### 13.04.450 Air conditioning and refrigeration devices—Discharge into sewers.

Waste cooling water from air conditioning and refrigeration systems may be discharged:

A. To a storm sewer only when such discharge is permitted by the state and authorized in writing by the director; and

B. To a sanitary sewer only when such discharge is permitted by the Sacramento Regional County Sanitation District and is authorized in writing by the director.

The director may require the installation of a water conservation device meeting standards specified by the department as a condition of granting such authorization,

that shall be in addition to any permits or other approvals required under the city plumbing and electrical codes. (Ord. 2001-033 § 1)

### 13.04.460 Evaporative coolers—Recirculating pump.

Evaporative coolers installed after January 1, 1959, shall be equipped with a recirculating pump. The makeup supply line shall be equipped with an inlet valve that shall open only when makeup water is required by the unit. The make up supply line shall be equipped with an approved air-gap. (Ord. 2001-033 § 1)

### 13.04.470 Evaporative coolers—Sale of cooler without recirculating pump.

No person within the city limits of the city shall sell an evaporative cooler after January 1, 1959, that will use water from the public water system within the city limits unless such cooler is, when sold and delivered, equipped with an air-gap installed on the water supply to the cooler and a water recirculating device. (Ord. 2001-033 § 1)

### 13.04.480 Roof sprinklers prohibited.

The use of existing roof sprinkler systems after January 1, 1959, or their installation after the original effective date of the provisions of this section is prohibited. (Ord. 2001-033 § 1)

### 13.04.490 Swimming pools.

Prior to the issuance of a plumbing permit for the installation of a swimming pool, a plan showing the water supply and drainage piping of the swimming pool shall be submitted for approval by the community development department. This drawing shall indicate all valves, size of piping, and filter pump capacity. No plumbing permit shall be issued without prior approval by the director. Except when authorized by the director pursuant to Section 13.04.230, no pool or pond, nor any associated decking, may be constructed within a public water, sewer, or drainage easement, or within six feet of a city water, sewer, or drainage pipe. (Ord. 2013-0014 § 16; Ord. 2001-033 § 1)

### 13.04.500 Swimming and wading pools and/or fish ponds—Recirculating devices required.

After January 1, 1959, all swimming or wading pools or fish ponds above two thousand (2,000) gallons in capacity, using water from the city water system or discharging to a public sewerage or drainage system, shall be provided with recirculating systems equipped with an approved filter. The make up supply line shall be equipped with an approved air gap. (Ord. 2001-033 § 1)

### 13.04.510 Swimming and wading pools and/or fish ponds—Discharge to storm sewer.

Permission to discharge dechlorinated swimming pool water to the storm sewer may be granted by the director, if permitted by the state. (Ord. 2001-033 § 1)

### 13.04.520 Swimming and wading pools and/or fish ponds—Discharge into sanitary sewer.

Permission to discharge swimming pool water into a sanitary sewer may be granted by the director, if permitted by the Sacramento Regional County Sanitation District, subject to the following conditions:

A. The maximum size of the discharge pipe from the pool to the sewer service clean-out shall be limited to one and one-half inches.

B. If the sanitary sewer capacity becomes inadequate for both sanitary flows and the swimming pool discharges, the swimming pool discharge shall immediately be disconnected. (Ord. 2001-033 § 1)

### 13.04.530 Discontinuance of service.

Alterations, changes of equipment or piping, improper operation or lack of maintenance that results in conditions that are hazardous or are potentially hazardous to the potable water supply, either within the premises or in public water mains, or cause use of water in excess of quantities permitted under this chapter, shall be cause for the discontinuance of the supply of water to the premises until the hazard or potential hazard is abated or until approved backflow protection or water conservation devices are used, as elsewhere specified in this code, and are operating within the defined limits of use. (Ord. 2001-033 § 1)

## Article VII. Water Flow for Fire Protection

### 13.04.540 Adoption of Insurance Service Office Standards.

The recommendations, guidelines, and standards for fire protection facilities and adequate water flow published by the Insurance Service Office (ISO) are adopted as standards for fire protection facilities and adequate water flow within this city as to all matters therein contained except as herein otherwise provided. Two copies of the ISO recommendations, guidelines and standards shall be kept available for public review in the office of the city clerk. The requirements established by this article shall be in addition to any requirements established by other applicable provisions of this code, including without limitation this chapter, Chapter 2.24 and Title 15 of this code. (Ord. 2001-033 § 1)

### 13.04.550 Intent and purpose of article.

This article is adopted for the following purposes:

A. To protect public health, safety and welfare from the danger of fire because of the lack of fire protection facilities and of adequate water flow for fire protection available to buildings located at a distance from public streets, alleys and rights-of-way.

B. To establish uniform standards for the construction and placement of fire protection facilities and the delivery of adequate water flow for fire protection upon private property.

C. To provide for the installation, maintenance and supervision of fire protection facilities and adequate water flow for fire protection upon private property. (Ord. 2001-033 § 1)

### 13.04.560 Definitions.

Unless the context requires otherwise, whenever the words or terms defined in this section, or pronouns used in their place, occur in this article, they shall have the following meanings:

"Land" means any lot, parcel, zoning plot, acreage or building site, or any other land or portion thereof, whether improved or unimproved.

National Standards. The recommendations, guidelines and standards for fire protection facilities and adequate water flow published by the Insurance Services Office.

"To develop land" means to make any improvements or do any work upon such land as would require the issuance of a building permit under Title 15 of the Sacramento City Code. (Ord. 2001-033 § 1)

### 13.04.570 On-site fire protection facilities and adequate water flow for fire protection required.

When any land is to be developed in such a manner that any part of a proposed building or structure to be located thereon will be in excess of one hundred fifty (150) feet from the nearest public fire hydrant located, or to be located prior to the completion of the building or structure in a public street, alley or place, the owner or developer shall provide at the same time in the public street, alley, or place, or on-site, such fire protection facilities and adequate water flow for fire protection as the fire chief shall deem necessary, according to national standards. All facilities required to be installed shall be approved by and meet the specifications of the fire chief as to location, size and type of materials and manner of installation; provided, however, that all water mains, fittings and hydrants shall conform to national standards and to the standard specifications of the city. No main shall be installed that is less than six inches in diameter. Hydrant branches of six inch diameter shall be circulating if more than five hundred (500) feet in length. If the fire chief determines that the installation of a circulating six inch branch would result in practical difficulty or unnecessary hardship, the fire chief may permit the installation of a single (non-circulating) eight inch branch if such branch is connected to a water main at least eight inches in diameter or is connected to a circulating six inch water main not more than one thousand (1000) feet in length.

All installations made in a public street, alley or place shall require an encroachment/excavation permit and shall comply with all conditions of the permit and this code. No fire service line shall be installed across any parcel other than the parcel to which the service is being furnished, provided that the fire chief may, in his or her discretion, authorize a fire service line that serves more than one parcel, upon the recording of an agreement, in a form approved by the city, that fully provides for the operation, maintenance and repair of the line, and grants a permanent easement for these purposes, at no cost or liability to the city.

The costs and expenses of installing and maintaining on-site fire protection facilities shall be the sole responsibility of the owner or developer of the land. The costs and expenses of installing

off-site fire protection facilities, including main and branch mains, shall also be the sole responsibility of the owner or developer, and shall be paid in full before any water service connection is made, unless otherwise determined by the director. (Ord. 2001-033 § 1)

### 13.04.580 Plans—Review by fire chief—When required.

Every application for a building permit and its accompanying plans filed with the manager of the Building Inspections Division of the city (hereinafter referred to as "the building official") pursuant to Title 15 of this code shall be referred to the fire chief for review and comment, if:

A. The proposed development will consist of one or more buildings located upon a single lot or parcel, or additions thereto, the total floor area of which, including that of any existing building located upon the same lot or parcel, will equal or exceed five thousand square feet; or

B. The proposed development will consist of one or more buildings, or additions thereto, any one of which exceeds either two stories or thirty feet in height; or

C. The proposed development will consist of one or more buildings, or additions thereto, in Occupancies A through U as defined by Title 15 of the Sacramento City Code wherein any part of any building or structure will be in excess of one hundred fifty (150) feet from the nearest distribution main or proposed distribution main located or to be located in a public street, alley or place prior to the completion of the building or buildings. (Ord. 2001-033 § 1)

### 13.04.590 Plans—Action by fire chief.

When any plans are submitted under Section 13.04.580, the fire chief shall review the same and determine whether or not the fire protection facilities and water flow for fire protection existing or to be provided are adequate according to national standards. If the fire chief determines that the facilities and water flow for fire protection existing or to be provided are adequate according to national standards, the fire chief shall endorse the plans with an approval and return the same to the building official. If the fire chief determines that the facilities existing or to be provided are not adequate according to national standards, the fire chief shall:

A. Disapprove the plans and indicate in writing to the building official how they are deficient. In such event the building official shall require from the owner revised plans to cure the deficiency, and the revised plans shall be submitted to the fire chief; or

B. Conditionally approve the plans. In such event, such conditions shall be made part of the plans and the issuance of a permit by the building official shall be so conditioned. The plans shall be one hundred (100) percent complete before they are forwarded to the department and/or any water service connection is made. (Ord. 2001-033 § 1)

### 13.04.600 Access for fire fighting equipment.

Whenever any fire protection facilities, public or private fire hydrants, or other appurtenances for use by the fire department are required to be installed pursuant to this chapter, there shall be included in the development plan and delineated thereon adequate provision for access by fire fighting personnel and equipment to and from all such fire protection facilities, including, but not limited to, public or private fire hydrants and appurtenances. Such access shall be approved by the fire chief and the owner may be required to dedicate to the city as a condition of approval of the development plan, an easement sufficient for access by fire fighting equipment to such fire protection facilities. All such access easements shall be maintained in such a manner as to

provide clear and unobstructed ingress and egress by fire fighting personnel and equipment and/or maintenance personnel and equipment at all times. (Ord. 2001-033 § 1)

### 13.04.610 Final inspection—Occupancy permit.

No final inspection by the building official as to all or any portion of the development shall be deemed completed and no certificate of occupancy or temporary certificate of occupancy shall be issued unless and until the installation of the prescribed fire protection facilities and access ways has been completed and approved by the fire chief. (Ord. 2001-033 § 1)

### 13.04.620 Maintenance of on-site fire protection facilities.

Except as provided in Section 13.04.620, all on-site fire protection facilities shall at all times be maintained as installed, free of leaks and in good working order by the owner of the land. The fire chief is hereby authorized to enter upon the land at reasonable times and in a reasonable manner to conduct periodic tests and inspections of such facilities. If the fire chief determines that any on-site fire protection facilities are being maintained in such manner as not to meet the standards specified herein, the fire chief shall order the owner to make such repairs, alterations, or additions as shall conform the facilities to such standards. The fire chief shall designate a reasonable time within which such repairs, alterations, or additions are to be made and it shall be unlawful for any person so ordered to willfully fail or refuse to comply with such order. Without limiting the foregoing, the willful failure or refusal to comply with such an order shall constitute an occupancy violation within the meaning of the applicable provisions of Title 15 and Chapter 8.96 of the Sacramento City Code. (Ord. 2001-033 § 1)

### 13.04.630 Alterations or modification of on-site fire protection facilities.

On-site fire protection facilities may be altered or modified with the written consent of the fire chief subject to the provisions of Section 13.04.570. (Ord. 2001-033 § 1)

### 13.04.640 Inspection and servicing of private fire hydrants.

The inspection, servicing, testing and repair of all private fire hydrants shall be the sole responsibility of the owner of the property where the private fire hydrant is located. The term “service” or “servicing” shall mean and include repainting external surfaces and hydrant identification numbers, to clear away weeds, shrubs and other accumulations of vegetation, to lubricate operating nuts and stems, and to replace nozzle caps, chains and gaskets. Without affecting the property owner’s responsibility therefor, the director may authorize officers, employees, agents or contractors of the city to inspect, service, test and/or repair private fire hydrants and the property owner shall be required to pay such fee(s) for these services as may be established from time to time by resolution of the city council. Whether or not inspection, servicing, testing or repair is performed by a property owner or the city, the property owner shall indemnify and hold harmless the city, its officers and employees from any claims, actions, costs (including attorney fees), damages or other liability resulting or arising from the condition of, or any failure to inspect, service, test or repair, any private fire hydrant located on the owner’s property. (Ord. 2001-033 § 1)

### 13.04.650 Filing of map.

A map showing the size and location of all water pipes and hydrants installed pursuant to this chapter and stating the material of which such pipes are made and the date of their installation and approval shall be filed with the department and the fire department prior to the issuance of any occupancy permit under the provisions of the building code. (Ord. 2001-033 § 1)

## Article VIII. Water Wells

### 13.04.660 Sacramento County water well regulations apply within city limits.

The provisions of Chapter 6.28 of the Sacramento County Code shall apply within the limits of the City of Sacramento, except as provided otherwise herein. (Ord. 2001-033 § 1)

### 13.04.670 Permit required—Exception.

It shall be unlawful for any person, firm or corporation, whether as principal, servant, agent or employee, to dig, drill, bore, drive, deepen, modify, repair, reconstruct, inactivate, destroy or abandon any well, whether the well is used for domestic purposes, industrial purposes, irrigation, air conditioning, disposal, exploration, monitoring or cathodic protection, or to install, repair or replace a well pump or pumps, without first having obtained a permit to do so from the Sacramento County environmental management department as provided in Section 6.28.030 of the Sacramento County Code; provided, however, that no such permit shall be required for any actions taken by or on behalf of the City of Sacramento with regard to any well or pump that is owned or operated by or on behalf of the city for domestic or industrial purposes or for irrigation. (Ord. 2001-033 § 1)

### 13.04.680 Prohibition of water wells within a certain portion of the City of Sacramento.

A. Purpose. Certain chemicals have been found in the ground water at and immediately west of McClellan Air Force Base in Sacramento City and County. These chemicals may constitute a hazard to the health, safety and well being of the residents of the city of Sacramento. The United States Government, without admitting any liability, has recognized the need to take corrective measures. To date there are insufficient data to indicate the existence of a hazard to health, safety and well being from the use of wells for industrial and irrigation purposes only.

Pursuant to a comprehensive and long range plan, the United States Government has installed certain monitoring wells and certain extraction wells at appropriate places on and west of McClellan Air Force Base. This ground water monitoring and extraction/treatment program will benefit the residents of the area hereinafter described. The pumping of water from the water wells west and southwest of McClellan Air Force Base impairs the ability of the United States Government to adequately monitor and contain the spread of the aforesaid chemicals. The prohibitions and requirements set forth in this section provide effective control over potential points of human exposure to possibility of ground water contamination. Therefore, it is necessary to the health, safety and well being of the residents of the City of Sacramento that the city council enact the prohibitions and requirements set forth in this section.

B. Definitions. The following definitions shall apply for purposes of this section:

“Public agency” means any public agency of the state including, but not limited to, cities, counties, districts, agencies and authorities.

"Water purveyor" means a public agency authorized by law to provide water for domestic or irrigation purposes to the general public.

"Domestic" means all residential uses of water, except industrial, irrigation and agricultural.

"Irrigation" means all uses of water for irrigating food and forage crops and ornamental vegetation and watering of farm animals.

C. Prohibition Area. This section shall apply to, and the term "prohibition area" as used in this section shall mean, that portion of the city from McClellan Air Force Base west along Ascot Avenue, south on Dry Creek Road, southeast along Marysville Boulevard, east on Bell Avenue, then south on Raley Boulevard to Interstate 80 and east to McClellan.

D. New Wells Prohibited. From and after such time as water from the City of Sacramento is made available for domestic, industrial, and irrigation purposes within the prohibition area no permit shall be issued for and no person shall dig or drill a new water well within the prohibition area.

E. Closure of Existing Water Wells. Within ninety (90) days following such time as both (1) water for domestic, industrial, and irrigation purposes is made available by the city to a property within the prohibition area and (2) the United States Government tenders to the city on behalf of the owner of the property an amount of money equal to the total cost of connection to the public water main and closure of any existing water wells, whichever is later in time, the owner of such property shall do one of the following:

(1) Abandon all such water wells on the property in accordance with regulations established by the Sacramento County Environmental Management Department.

(2) If the owner of such property elects not to close the water well, such owner shall cause the well to be severed from any buildings so that the water from such well may not be used for domestic purposes and shall further cause to be installed such back flow prevention devices as may be required by the appropriate health authorities. In such cases no person shall thereafter use the water from such well for domestic purposes and no person shall thereafter allow or cause such a well to be connected to any building so that water could be drawn from such well for domestic purposes.

(3) In the event the owner of such property elects not to close the water well as set forth in subsection (2), above, the owner shall thereafter be responsible for all costs, including, but not limited to, maintenance, repair, replacement, improvement and testing of any required back flow prevention devices and for all costs required for testing or monitoring the well, it being the expressed intent that the offer of the United States Government to pay any costs is a one time only offer and all continuing costs and costs thereafter arising are the responsibility of the property owner and not the United States Government.

F. Availability of Water. For purposes of this section, water for domestic and irrigation purposes shall be deemed available to a property if a public water main has been installed in the public right of way nearest the property and the water main is usable.

G. Cost of Connection and Closure. The cost of connection to a public water main and the cost of closure of an existing well shall include all labor, material and engineering cost necessary to accomplish the same together with all fee and permit costs. In addition, the cost of connection to a public water main shall include the cost of a water line of sufficient size to provide an adequate water supply to the property for domestic, and if applicable, industrial and irrigation purposes. It is intended that the cost of all work necessary to accomplish the connection and, if appropriate, well closure shall be borne by the United States Government and such work shall be accomplished without cost to the property owners. It is further intended that no property owner be

required to have a connection that provides a lesser quantity of water, measured on a monthly basis, than an existing facility. To these ends, the department shall determine the cost and sufficiency of service size in accordance with department procedures. All work shall be accomplished by the department or its licensed contractor(s).

H. Exemptions. This section shall not apply to monitoring or testing wells operated by the United States Government or a public agency. (Ord. 2001-033 § 1)

## Article IX. Department of Utilities

### 13.04.690 Established.

There is hereby created a Department of Utilities that shall be in charge of the construction, management, supervision, maintenance, extension, operation and control of all water supply and distribution to the city and its inhabitants. The department also shall be in charge of the construction, management, supervision, maintenance, extension, operation and control of the city's sewer and drainage systems. (Ord. 2001-033 § 1)

### 13.04.700 Director.

There shall be a director of the department appointed by the city manager. (Ord. 2001-033 § 1)

### 13.04.710 Payment over of moneys—Disbursements and expenditures.

Receipts from the department shall be paid into the city treasury and maintained in a separate water fund. Appropriations from such fund shall be made for the following fund purposes, in the order named:

A. For the payment of all operating expenses.

B. For the pension charges and proportionate payments to such compensation and other insurance and accident reserve funds as the city council may establish.

C. For repairs and maintenance.

D. For depreciation.

E. For payment of interest and sinking funds on the bonds issued for acquisition, construction or extensions.

F. For extensions and improvements.

G. For the payment into the general fund of the city of any duly approved general tax on the water fund.

H. For a surplus fund.

I. For such other purposes as may be found necessary in connection with the furnishing of an adequate and suitable water supply for the city. (Ord. 2001-033 § 1)

## Article X. Rates and Charges

### 13.04.720 Establishment of rates for water service.

Rates, fees, and charges for water service are established and shall be charged for water service. The amount of the rates, fees, and charges shall be set from time to time by ordinance or resolution of the city council. (Ord. 2011-051 § 5; Ord. 2001-033 § 1)

### 13.04.730 Liability for charges.

Customers to whom water service is rendered shall be responsible and liable for payment of the rates, fees, and charges for the service (on either a flat rate or metered rate basis). (Ord. 2011-051 § 6; Ord. 2001-033 § 1)

### 13.04.735 Processing fee.

Customers establishing a new account for any city utility service provided under Title 13 of this code, or making changes to an existing account, shall pay a fee to cover the city's administrative processing costs, as established from time to time by resolution of the city council. (Ord. 2009-011 § 1)

### 13.04.750 Collection of fees and charges.

Except as otherwise provided herein, the fees and charges for water service shall be billed and collected in accordance with the provisions of Chapter 13.12 of this code. (Ord. 2001-033 § 1)

### 13.04.760 Additional charges.

The director may undertake any work or service on or for a premises' water service connection that the director deems necessary to maintain the safety of the city's water supply, or to correct any condition in violation of this chapter. The owner of the premises shall be responsible for the cost thereof, which may be added to the regular billing for the premises' water service and collected pursuant to Chapter 13.12. (Ord. 2015-0011 § 6; Ord. 2013-0014 § 17; Ord. 2001-033 § 1)

### 13.04.770 Collection of water service charges with charges for other utility services—Generally.

The charges imposed for water service to a customer by this chapter shall be collected together with the charges for any other utility service rendered to the customer by the city. Such water service charges shall be billed upon the same bill and collected as one item with such other utility service charges, unless other arrangements are approved by the director. (Ord. 2001-033 § 1)

### 13.04.790 Service connection installation fee.

The service connection installation fee for connection to a public water main shall be determined by reference to a schedule of rates established from time to time by resolution of the city council, and shall be paid in advance. (Ord. 2001-033 § 1)

### 13.04.800 Fees for disconnection and restoration of water service.

A. If water service to any premises is disconnected pursuant to any provision of this code, the owner shall be responsible and liable for payment of the fee established by city council

resolution to cover the city's costs to turn off the water, and that fee may be added to the regular billing for the water service and be collected in the same manner as other utility service charges pursuant to Chapter 13.12.

B. If water service to any premises is disconnected, the owner shall be responsible and liable for payment of the fee established by city council resolution to cover the city's costs to turn the water back on, and water shall not be turned on until the fees established pursuant to subsection A of this section and this subsection are paid in full.

C. If any person turns on water service or allows or causes it to be turned on, after it has been turned off by the city, the department may turn off the water service and may charge and collect the applicable fees each time this occurs, in addition to other amounts due, before water service is restored. (Ord. 2013-0014 § 19; Ord. 2001-033 § 1)

### 13.04.810 Vacancy credit.

A. If a customer requests that the customer's water service or city sewer service be temporarily discontinued because all of the buildings receiving water service or city sewer service are vacant or have been demolished, the director shall grant a credit for nonuse of the customer's water service connection or city sewer service connection if authorized under this section and upon satisfaction of all of the following conditions:

1. Execution of a temporary stop service agreement as required by the department, which shall include authorization for disclosure to the department of the customer's water usage records if the customer is provided water by another water purveyor;

2. Payment of the applicable service and processing fee(s) established by city council resolution;

3. Payment of the current city utility bill in full;

4. The water service connection is turned off by department personnel, provided that this requirement shall not apply to any of the water service connections described in subsection C of this section;

5. If the customer receives city sewer service but is provided water by another water purveyor, verification from the other water purveyor of water shut-off or nonuse as required by the department; and

6. If the credit for nonuse is requested because all of the buildings receiving water service or city sewer service have been demolished, all demolition work must have been completed and given final approval by city officials in accordance with the applicable provisions of Chapter 8.96, 8.100, or 15.44.

B. The credit for nonuse of a water service connection being charged a flat rate shall be equal to the difference between the monthly flat rate and the monthly basic service charge that would apply to the connection if it were being charged a metered rate.

C. No credit shall be allowed or provided for nonuse of an irrigation service connection, fire service connection, or any other water service connection that has a water meter and is being charged a metered rate.

D. A credit for nonuse of water service or city sewer service shall be terminated when the water service is turned on by department personnel, upon occupancy of any building that receives the water service or city sewer service, or as provided in subsection E or F of this section.

E. For a parcel with a metered water service connection being charged a metered rate, other than an irrigation service or fire service connection, a credit for nonuse of city sewer service on the parcel shall be terminated if the water meter indicates that water is being used.

F. For a parcel with city sewer service but provided water by another water purveyor, a credit for nonuse of city sewer service on the parcel shall be terminated if the other water purveyor verifies that water is being used on the parcel. (Ord. 2013-0014 § 20; Ord. 2010-009 § 1; Ord. 2001-033 § 1)

## 13.04.820 Water system development fee.

A. General. Every lot or parcel that connects to the city water distribution system is subject to a water system development fee established to recover the capital costs of the city's existing or new water diversion, treatment, storage, and distribution facilities. No water service shall be furnished to the lot or parcel unless this fee has been paid. This requirement does not apply to the extent that the fee established by this section, or the equivalent thereof, has previously been paid by the owner of the lot or parcel, or a predecessor of the owner, or if the lot or parcel meets the qualifications for an infill site as established by city council resolution. Payment of this fee is in addition to payment of all other applicable fees and charges.

B. Amount of Water System Development Fee. The fee established by this section is determined by reference to a schedule of fees adopted by city council resolution, subject to annual adjustment made by the director as provided in subsection C of this section.

C. Annual Adjustment. In January of each year, the director shall adjust the water system development fee schedule then in effect to compensate for an increase in construction costs since the previous adjustment, by applying the following methodology:

1. The director shall first calculate the "current construction cost index," which shall be the average of: (a) the average construction cost index for twenty (20) U.S. cities published in the appropriate January issue of "Engineering News Record" (ENR) magazine; and (b) the construction cost index for San Francisco published in the same issue of ENR magazine.

2. The director shall then calculate the "fee adjustment factor," by dividing the current construction cost index calculated pursuant to paragraph 1 of this subsection by the construction cost index that was calculated in January of the last year in which the water system development fee schedule was changed.

3. If the fee adjustment factor calculated pursuant to paragraph 2 of this subsection is one or less, the water system development fee schedule then in effect shall remain unchanged. If the fee adjustment factor calculated pursuant to said paragraph is greater than one, the director shall adjust the water system development fee schedule then in effect by multiplying each of the fees therein by the fee adjustment factor. If the water system development fee schedule is adjusted as provided herein, the adjusted water system development fee schedule shall become effective on July 1st following the January when the fee adjustment factor is calculated pursuant to paragraphs 1 and 2 of this subsection.

D. Replacement Services. If an existing water service connection or meter is replaced by one of a larger size at the owner's request, the water system development fee equals the difference between the current fee for the existing service connection size and the current fee for the replacement service connection size. If the existing water service connection was oversized to provide water for fire protection in addition to commercial or domestic service, and no water

system development fee was paid for the existing service, the calculation of the current fee for the existing service size excludes the size increment that was required solely for fire protection.

E. Fire Services. The water system development fee does not apply to connections made solely for fire service.

F. Credit for Major Facilities. Nothing in this ordinance prohibits the city council from authorizing appropriate credit toward water system development fees for property owners who were assessed or in some manner paid all or a portion of the cost of water diversion, treatment, storage, or transmission facilities.

G. Appeal. There is established a water system development fee determination board. The board's membership consists of the director and the building official, or their respective designees. Any person aggrieved by the determination of the water system development fee for property owned by such person may file a written appeal with the building official. The appeal shall be reviewed by the board, and notice of the determination of the board shall be given to the property owner. If the appeal is granted, an appropriate refund shall be made, based on the recalculated development fee.

If the appeal is not granted, notice shall be given to the property owner that shall briefly specify the reason for the decision of the board. Any property owner who receives such notice and who desires to have the appeal reconsidered by the board may apply for a hearing by filing a written application with the building official not later than fifteen (15) calendar days following the property owner's receipt of the notice that the written appeal was denied. The board shall, not later than thirty (30) calendar days after application for a hearing, schedule a hearing upon ten (10) days written notice to the property owner. The property owner or his or her representative may present at the hearing any evidence relevant to the appeal. The board shall reevaluate the appeal. In considering the appeal, the board may obtain an inspection report from the department. Written notice of the board's action shall be given to the property owner and the order of the board shall be final.

H. Nonpayment. If water service is initiated without payment of the water system development fee as required by this section, water service may be disconnected until the fee is paid. (Ord. 2013-0014 § 21; Ord. 2001-033 § 1)

## Article XI. Outdoor Water Conservation

### 13.04.830 Legislative intent.

The city council finds and determines:

A. To prevent waste and ensure reasonable use of water supplied by the city water distribution system, it is necessary and desirable to enact certain limitations to promote water conservation by city customers.

B. These limitations should be focused on outdoor water use, because the maximum demands for water from the city's water distribution system occur during the summer months, with outdoor irrigation use exceeding all other demands.

C. Water use limitations should be designed to promote the use of drip irrigation and other low volume irrigation methods that reduce outdoor water use by applying water more efficiently than traditional irrigation methods.

D. Reduction of water use through water conservation protects and promotes the public health, safety and welfare by conserving a vital resource that is subject to ever-increasing demands.

E. Reduction of water demands through water conservation will reduce the per capita amount of water used by city customers, and also will reduce the city's costs for electrical energy, equipment and chemicals utilized to pump and treat water supplied to the city water distribution system.

F. By reducing the use of electrical energy, equipment and chemicals, the reduction of water demands through water conservation also protects and promotes the public health, safety and welfare by reducing greenhouse gas emissions associated with the production and transport of electrical energy, equipment and chemicals. (Ord. 2009-050 § 1; Ord. 2009-026 § 1)

### 13.04.840 Definitions.

When used in this article, the following words or phrases shall have the meanings set forth below:

"City water" means any water delivered by the city's water distribution system.

"Integrated pest management" means a pest control methodology that utilizes a variety of complementary strategies to significantly reduce or eliminate the use of pesticides while at the same time managing pest populations at an acceptable level.

"Low volume irrigation system" means any irrigation system that applies irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as drip, drip lines, and bubblers with a flow rate measured in gallons per hour, and that is designed to apply small volumes of water slowly at or near the root zone of plants. This includes but is not limited to properly functioning drip irrigation systems and soaker hoses.

"New landscaping" means any lawn, plants or other landscaping planted after the effective date of the ordinance adopting this section.

"Water waste runoff" means water flowing away from property in any gutter, ditch or other manner over the surface of the ground due to excessive application of city water. (Ord. 2009-050 § 1; Ord. 2009-026 § 1)

### 13.04.845 Irrigation service for area exceeding five acres.

To reduce demand on the city water distribution system and promote water conservation, the director may require water for the irrigation of areas exceeding five acres to be obtained from a private well, recycled water supply, or other water source, instead of allowing an irrigation service connection from the city water distribution system. (Ord. 2013-0014 § 22)

### 13.04.850 Substandard water fixtures prohibited.

No person shall cause or allow any city water to be wasted due to leaky or faulty water lines, hoses, fixtures or other water using or distributing devices, unless such person shall have first obtained the written consent of the director to do so. (Ord. 2009-050 § 1; Ord. 2009-026 § 1)

### 13.04.860 Water runoff prohibited.

A. No person shall knowingly or willingly cause or allow any city water applied to any landscaping, including new landscaping, or used for any other irrigation purposes, to flow away as water waste runoff from property owned or occupied by that person.

B. No person shall knowingly or willingly cause or allow any city water used for non-irrigation purposes to flow away as water waste runoff from property owned or occupied by that person, unless the water is used in compliance with subsection A or B of Section 13.04.870 or the director provides prior written consent for the runoff. (Ord. 2015-0011 § 7; Ord. 2009-050 § 1; Ord. 2009-026 § 1)

### 13.04.870 Outdoor conservation of water.

A. No person shall use, or cause to be used, any city water for the purpose of washing down sidewalks, driveways, or parking areas except to alleviate immediate fire, health or sanitation hazards, or to implement an integrated pest management program, unless the director provides prior written consent.

B. No person shall use, or cause to be used, any city water through a hose for the purpose of washing a vehicle unless:

1. The hose is equipped with an automatic shut-off nozzle attachment, and the attachment is being used to shut off the flow of water at all times when the hose is not being used to wash the vehicle; and

2. The vehicle washing is conducted on a day of the week when outdoor irrigation is permitted for the street address where the vehicle is being washed, as specified in this section.

This subsection shall not apply to commercial car washing businesses.

C. Beginning on the day that daylight savings time begins, and extending until the day before daylight savings time ends:

1. No person shall use, or cause to be used, any city water for landscape irrigation between the hours of ten a.m. and seven p.m., unless the director provides prior written consent to a different time limitation.

2. Residential and commercial locations bearing a street address ending in an odd number shall be permitted to irrigate with city water only on Tuesday, Thursday and Saturday, and locations bearing a street address ending in an even number shall be permitted to irrigate with city water only on Wednesday, Friday and Sunday, unless the director provides prior written consent to a different irrigation pattern.

3. No landscape irrigation shall be allowed on Mondays.

D. Beginning on the day that daylight savings time ends, and extending until the day before daylight savings time begins, all residential and commercial locations shall be permitted to irrigate with city water only on Saturday or Sunday, and landscape irrigation shall be prohibited on any other days of the week, unless the director provides prior written consent to a different irrigation pattern.

E. The limitations specified in subsections C and D shall not apply to landscape irrigation using a low volume irrigation system, nor to the irrigation of container plants, nor to the irrigation of new landscaping that is subject to the provisions of Section 13.04.880.

F. References in this article to any day of the week shall mean the period beginning at twelve a.m. on that day and ending twenty-four (24) hours later.

G. No person shall use, or cause to be used, any city water in a fountain or other decorative water feature unless it uses a recirculating system.

H. No person shall use, or cause to be used, any city water for landscape irrigation during and within forty-eight (48) hours after measurable rainfall. As used in this subsection,

"measurable rainfall" means a rainfall event for which 0.125 inches of precipitation or more is recorded at the National Weather Service rain gauge located at the Sacramento Executive Airport.

I. Upon declaration of a water shortage, the city council may impose revised and additional limitations on outdoor water use, as specified in Section 13.04.910, and no person shall use, or cause to be used, city water in violation of those limitations while the water shortage remains in effect. (Ord. 2015-0011 § 8; Ord. 2009-050 § 1; Ord. 2009-026 § 1)

### 13.04.880 New landscaping.

The following regulations shall apply to the use of city water to irrigate new landscaping:

A. Irrigation of new landscaping shall be allowed on any day of the week for a period of twenty-one (21) days after the new landscaping is planted, unless the director provides prior written consent to extend this time period based on plant type and the season when the new landscaping is planted.

B. Any irrigation of new landscaping after expiration of the time period specified in subsection A, and any irrigation of existing landscaping adjacent to the new landscaping, shall be subject to the limitations specified in Section 13.04.870.

C. Upon declaration of a water shortage, the city council may impose revised and/or additional limitations on the irrigation of new landscaping, as specified in Section 13.04.910, and no person shall use, or cause to be used, city water in violation of such limitations while the water shortage remains in effect. (Ord. 2009-050 § 1; Ord. 2009-026 § 1)

### 13.04.890 Penalties for violation.

A. The following penalties shall be imposed for violation of any of the provisions of Sections 13.04.850 through 13.04.880, inclusive. Any violations occurring on separate calendar days shall be considered separate violations.

1. First Violation During Any Twelve (12) Month Period. No penalty shall be imposed, but a written notice describing the violation and the penalties for subsequent violations shall be issued to the owner and the occupant (if different than the owner) of the premises where the violation occurred.

2. Second Violation During Any Twelve (12) Month Period. A written notice describing the violation and the penalty shall be issued to the owner and the occupant (if different than the owner) of the premises where the violation occurred. A penalty of twenty-five dollars ($25.00) shall be imposed, but this penalty shall be removed from the water service bill for the premises if the owner, or the occupant (if different than the owner, and the occupant committed the violation), attends a water conservation seminar offered by the department within sixty (60) days after the date of the penalty notice; provided that only one removal of this penalty shall be allowed for the premises within any twenty-four (24) month period.

3. Third Violation During Any Twelve (12) Month Period. A written notice describing the violation and the penalty shall be issued to the owner and the occupant (if different than the owner) of the premises where the violation occurred. A penalty of one hundred dollars ($100.00) shall be imposed.

4. Fourth Violation and Any Successive Violations During Any Twelve (12) Month Period. A written notice describing the violation and the penalty shall be issued to the owner and the

occupant (if different than the owner) of the premises where the violation occurred. A penalty of five hundred dollars ($500.00) shall be imposed.

B. The written notices specified in subsection A also shall provide notice of the right to appeal pursuant to Section 13.04.900 and shall specify the address where the notice of appeal shall be filed.

C. The penalties specified in subsection A shall be imposed on the owner of the premises where the violation occurs regardless of who committed the violation. After the notice of violation is issued, the penalty amount shall be included on the water service bill for the premises and shall be collected in accordance with Chapter 13.12, subject to subsection (A)(2) of this section and Section 13.04.900(D). All penalties collected shall be used by the department to fund water conservation programs.

D. Upon declaration of a water shortage by the city council, as specified in Section 13.04.910, the penalty amounts specified in subsection A shall be doubled while the water shortage remains in effect.

E. The violation of any of the provisions of Sections 13.04.850 through 13.04.880, inclusive, also shall be deemed to constitute a public nuisance, subject to abatement in accordance with the provisions of Chapter 8.04 of this code, as applicable.

F. The foregoing provisions are cumulative and in addition to any other remedies or penalties authorized or imposed under any other provision of this code, including, but not limited to, Section 13.04.270, or any other applicable law or regulation. The provisions of this article may be enforced by the department or by the department of code enforcement. (Ord. 2015-0011 § 9; Ord. 2009-050 § 1; Ord. 2009-026 § 1)

## 13.04.900 Appeal.

A. The owner or occupant of the premises where the violation occurred may appeal a notice of violation issued under Section 13.04.890(A) by filing a written notice of appeal with the director not later than thirty (30) days after the notice of violation is issued. The notice of appeal shall specify the grounds for appeal, and shall provide the appellant's telephone number and address for receipt of the city's written notices relating to the appeal.

B. Upon receipt of a timely notice of appeal, department staff will review the notice of violation and the appellant's grounds for appeal. Department staff may request additional information from, or provide additional information to, the appellant. At the conclusion of this administrative review process, department staff will notify the appellant if the notice of violation will be dismissed or department staff finds a sufficient basis for the notice of violation. If department staff finds a sufficient basis for the notice of violation, department staff also will notify the appellant that appellant may request a hearing on the appeal and how to make the request.

C. If the appellant requests a hearing on the appeal not later than five days after receiving the department staff notification described in subsection B of this section, the director shall set the matter for an informal hearing at the earliest practical date. Not less than seven days prior to the hearing date, the director shall provide written notice of the hearing to the appellant. At the hearing, the director shall hear any relevant evidence presented by the appellant or department staff, and may uphold, modify, or rescind the notice of violation, including the penalty imposed by the notice of violation, if any. The appellant shall be provided written notice of the determination of the director that sets forth findings in support of the determination. The determination of the director is the city's final administrative determination of the matter.

D. The failure of the owner or occupant of the premises where the violation occurred to file a timely notice of appeal or to request and attend a hearing in accordance with the provisions of this section constitutes an irrevocable waiver of the right to appeal and a failure to exhaust administrative remedies with regard to the notice of violation.

E. If department staff dismisses the notice of violation or the director determines that a penalty shall not be imposed, the penalty shall be removed from the water service bill for the premises where the violation occurred.

F. The director may designate one or more employees of the department to hear and determine appeals of any notice of violation, provided that the designated employee(s) shall not be employed within the section issuing the notice of violation or performing the administrative review described in subsection B of this section. (Ord. 2015-0033 § 1; Ord. 2015-0011 § 10; Ord. 2009-050 § 1; Ord. 2009-026 § 1)

### 13.04.910 Declaration of water shortage.

A. In response to any condition necessitating increased water conservation, such as a water shortage due to drought, natural disaster, or other reduction of water supply availability, or as may otherwise be required to protect the public health, safety, and welfare, the city council may by resolution declare the existence of a water shortage and impose revised and additional limitations and time restrictions on outdoor water use. While the declaration of water shortage remains in effect, no person shall use, or cause to be used, city water in violation of such limitations or restrictions. Unless the resolution specifies an ending date, the declaration of water shortage shall remain in effect until rescinded or otherwise modified by subsequent resolution of the city council.

B. While a declaration of water shortage is in effect, any requirement in the Planning and Development Code to plant or irrigate trees, shrubs, or other groundcover, or for groundcover to be living, is suspended. (Ord. 2014-0009 § 1; Ord. 2009-050 § 1; Ord. 2009-026 § 1)

### 13.04.920 Access to customer premises—Compliance.

A. A customer receiving city water service shall provide the department's employees and/or contractors access to and use of the premises where city water service is received as may be required by the city's employees or contractors to determine whether there is any violation of any of the provisions of Sections 13.04.850 through 13.04.880, inclusive, or to abate any violation thereof. If the customer refuses to allow such access, the city may seek authorization from any court of competent jurisdiction for such access and abatement.

B. Compliance with the provisions of this article shall be a condition of the customer receiving or continuing to receive city water service. (Ord. 2009-050 § 1; Ord. 2009-026 § 1)

### 13.04.930 Fire and other emergencies.

Nothing in this article shall be construed to apply to the use of city water for purposes of extinguishing fire or any other similar emergency. (Ord. 2009-050 § 1; Ord. 2009-026 § 1)

### 13.04.940 Consent of director.

Whenever in this article a person is authorized to obtain the consent of the director to perform an act otherwise prohibited, the director may give consent on such conditions as the director may specify, and the director shall give such consent only where the director determines:

A. There is no practical alternative manner in which the person may accomplish the desired result; and

B. The desired result is of substantial importance when compared with the importance of conserving water resources as set forth in this article. (Ord. 2009-050 § 1; Ord. 2009-026 § 1)

### 13.04.950 City water use.

The city of Sacramento, and its officers, employees, and agents when acting in the course and scope of their employment, shall be exempt from the provisions of this article; provided, however, that the city manager shall promulgate administrative regulations governing water use by the city, and its officers, employees, and agents, as may be necessary for the city to achieve the conservation of water resources equal to or greater than the level of conservation achieved by the city's water service customers. (Ord. 2009-050 § 1; Ord. 2009-026 § 1)

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# APPENDIX N

Ordinance No. 2015-0011
Resolution No. 2015-0162

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**ORDINANCE NO. 2015-0011**

Adopted by the Sacramento City Council

May 12, 2015

**AN ORDINANCE AMENDING AND ADDING VARIOUS SECTIONS IN CHAPTERS 13.04 AND 13.12 OF THE SACRAMENTO CITY CODE, RELATING TO WATER SERVICE CONNECTIONS, OUTDOOR WATER CONSERVATION, UTILITY BILLING AND COLLECTION, AND UTILITY SERVICE TERMINATION**

BE IT ENACTED BY THE COUNCIL OF THE CITY OF SACRAMENTO:

SECTION 1.

A. Subsection B of section 13.04.060 of the Sacramento City Code is amended to read as follows:

B. To be eligible for water service, a parcel must abut a public easement or a city street or alley right-of-way in which a distribution main is located at a point immediately adjacent to the property, unless the director authorizes the extension of a distribution main.

1. If the parcel abuts both a public easement and a street or alley right-of-way in which distribution mains are located, the director shall specify which distribution main will be used for any new water service connection.

2. If the parcel abuts only a public easement in which a distribution main is located, and the distribution main is scheduled in the department's capital improvement program to be abandoned when a new distribution main is constructed in a street or alley right-of-way adjacent to the parcel, the director may require, as a condition of allowing a new water service connection to the existing distribution main, that the parcel's private water lines be configured to allow the parcel to be connected to the new distribution main after it is constructed.

B. Except as amended in subsection A above, all provisions of section 13.04.060 remain unchanged and in full effect.

SECTION 2.

Section 13.04.070 of the Sacramento City Code is amended to read as follows:

**13.04.070 Multiple service connections.**

Except for separate irrigation service connections and fire service connections, each lot or parcel shall have only one service connection; provided that requests for multiple service connections (excluding separate irrigation service and fire service connections) may be approved on a case by case basis by the director.

A. Backup service connections are considered to be temporary and shall be subject to termination by city at a future date specified by the director.

B. If permanent multiple service connections require a public water main extension, the main extension shall be installed to the satisfaction of the director at the customer's expense.

C. Where multiple service connections already exist, and a lot split, lot merger, or a change of business or operations occurs, the excess service connection shall be removed at the customer's expense, if required by the director.

SECTION 3.

A. Subsection A.2 of section 13.04.220 of the Sacramento City Code is amended to read as follows:

2. In a common interest development, if a meter is installed on an existing unmetered water service connection, or if an existing metered service connection is changed from flat rate to metered rate billing, the metered rate for the service connection shall be billed to the association managing the common interest development, or to the owners of the separate interests served by the service connection in accordance with a rate allocation established by ordinance or resolution of the city council; this does not include water service provided at a water service connection serving only one separate interest, which shall be billed to the owner of the separate interest.

B. Except as amended in subsection A above, all provisions of section 13.04.220 remain unchanged and in full effect.

SECTION 4.

Section 13.04.225 is added to the Sacramento City Code to read as follows:

**13.04.225 Water service to projects consisting of vertical parcels.**

A. Notwithstanding any contrary provision of this code, the director may authorize water service to be:

1. Rendered to a project consisting of vertical parcels at a single metered point of service or multiple metered points of service, with sub-meters for each parcel, as specified by the director; and

2. Billed to a single person authorized to receive and pay for the water service for and on behalf of all the parcel owners, referred to in this section as the “authorized party”.

B. If the director authorizes water service pursuant to subsection A, before receiving any water service connection the authorized party and all parcel owners must enter into a water service agreement with the department, in a form approved by the city attorney, that includes the terms and conditions specified by the director, including, at a minimum, the following:

1. The owners and authorized party shall be solely responsible for all water distribution facilities within the project, including the sub-meters for all parcels;

2. The authorized party shall pay when due the rates, fees, and charges for water service rendered to the city’s metered points of service; shall be solely responsible for the allocation, billing, and collection of these costs among the parcels within the project based on sub-metering; and, if required by the director, shall furnish a security deposit to assure payment;

3. If the authorized party fails to pay all or any portion of the rates, fees, and charges for water service rendered to the city’s metered points of service when and as required:

a. The city may discontinue water service provided through the city’s metered points of service until all rates, fees, and charges are paid in full; and

b. All of the parcel owners will be liable for payment as specified in section 13.12.020, and will be subject to the delinquent service charge procedures specified in sections 13.12.070 through 13.12.100;

4. The owners and authorized party shall release any and all claims arising from the City's discontinuance of water service for nonpayment, including unknown claims arising under California Civil Code section 1542;

5. The owners and authorized party shall defend, indemnify, and hold harmless the city, its officers, employees, and agents against any and all liabilities and costs (including attorney fees) arising from:

   a. Any action or failure to act by the owners or authorized party, or their respective members, officers, employees, contractors, or agents;

   b. Any discontinuance of water service for nonpayment; or

   c. Any claim related to the authorized party's authority to act on behalf of the parcel owners;

6. The agreement shall be recorded so that the agreement's obligations are covenants that run with all parcels within the project, in accordance with Section 1468 of the Civil Code, and bind all members, successors, and assigns of the owners and authorized party;

7. If the services of any attorney are required by a party to secure performance of the agreement, or due to a breach or default of a party, or if any judicial remedy or arbitration is necessary to enforce or interpret any provision of the agreement, the prevailing party shall be entitled to reasonable attorney fees, costs, and other expenses, in addition to any other relief to which the party may be entitled; and

8. Except as provided otherwise in the agreement, the provision of city water service shall be subject to all applicable provisions of the city charter, this code, and any other statute, regulation, ordinance, resolution, or city policy or procedure.

SECTION 5.

Section 13.04.305 of the Sacramento City Code is amended to read as follows:

**13.04.305 Conversion to metered connections for common interest developments.**

A. If an existing unmetered water service connection in a common interest development is changed to a metered connection, the meter shall be installed on the existing connection. If the water service connection serves more than one

separate interest, the department may install within the development's private water distribution system separate water meters for each separate interest, if requested by the association managing the common interest development and the owners of the separate interests and the director determines that it is feasible and appropriate to do so:

1. Provided that the association and owners, at no cost to the city:

   a. Locate and expose those portions of the development's private water distribution system where the separate water meters would be installed as may be required by the director to determine whether it is feasible to install separate water meters,

   b. Install all piping and other improvements required by the director to install separate meters, and

   c. Convey to the city all easements or other property rights required by the director for installation, operation, maintenance, repair, and replacement of the separate meters and the meter boxes containing them; and

2. Subject to such other terms and conditions specified by the director.

B. If an existing unmetered water service connection serves more than one separate interest in a common interest development that does not have an association, the director may require that the owners of all separate interests in the common interest development, at no cost to the city, and as a condition of continuing to receive city water service:

1. Locate and expose those portions of the development's private water distribution system where separate water meters would be installed for each separate interest,

2. Install all piping and other improvements required by the director to install separate metered water service connections for the separate interests; and

3. Convey to the city all easements or other property rights required by the director for installation, operation, maintenance, repair, and replacement of the separate meters and the meter boxes containing them.

C. The department's installation, operation, maintenance, repair, or replacement of separate water meters and meter boxes within a common interest development's

private water distribution system shall not create or impose on the city any responsibility or liability of any kind for the condition, operation , maintenance, repair, or replacement of any portion of the private water distribution system.

D. As used in this section, the terms “association,” “common interest development,” and “separate interest” have the meanings specified in Section 13.12.010.

SECTION 6.

Section 13.04.760 of the Sacramento City Code is amended to read as follows:

**13.04.760 Additional charges.**

The director may undertake any work or service on or for a premises’ water service connection that the director deems necessary to maintain the safety of the city’s water supply, or to correct any condition in violation of this chapter. The owner of the premises shall be responsible for the cost thereof, which may be added to the regular billing for the premises’ water service and collected pursuant to chapter 13.12.

SECTION 7.

Section 13.04.860 of the Sacramento City Code is amended to read as follows:

**13.04.860 Water runoff prohibited.**

A. No person shall knowingly or willingly cause or allow any city water applied to any landscaping, including new landscaping, or used for any other irrigation purposes, to flow away as water waste runoff from property owned or occupied by that person.

B. No person shall knowingly or willingly cause or allow any city water used for non-irrigation purposes to flow away as water waste runoff from property owned or occupied by that person, unless the water is used in compliance with subsections A or B of section 13.04.870 or the director provides prior written consent for the runoff.

SECTION 8.

A. Section 13.04.870 of the Sacramento City Code is amended as follows:

1. Subsection G of section 13.04.870 is repealed.

2. A new subsection G is added to section 13.04.870, to read as follows:

G. No person shall use, or cause to be used, any city water in a fountain or other decorative water feature unless it uses a recirculating system.

3. A new subsection H is added to section 13.04.870, to read as follows:

H. No person shall use, or cause to be used, any city water for landscape irrigation during and within 48 hours after measurable rainfall. As used in this subsection, “measurable rainfall” means a rainfall event for which 0.125 inches of precipitation or more is recorded at the National Weather Service rain gauge located at the Sacramento Executive Airport.

4. A new subsection I is added to section 13.04.870, to read as follows:

I. Upon declaration of a water shortage, the city council may impose revised and additional limitations on outdoor water use, as specified in section 13.04.910, and no person shall use, or cause to be used, city water in violation of those limitations while the water shortage remains in effect.

B. Except as amended in subsection A above, all provisions of section 13.04.870 remain unchanged and in full effect.

SECTION 9.

A. Section 13.04.890 of the Sacramento City Code is amended as follows:

1. Subsection A.2 of section 13.04.890 is amended to read as follows:

2. Second Violation During Any 12 Month Period. A written notice describing the violation and the penalty shall be issued to the owner and the occupant (if different than the owner) of the premises where the violation occurred. A penalty of $25.00 shall be imposed, but this penalty shall be removed from the water service bill for the premises if the owner, or the occupant (if different than the owner, and the occupant committed the violation), attends a water conservation seminar offered by the department within 60 days after the date of the penalty notice; provided that only one removal of this penalty shall be allowed for the premises within any 24 month period.

2. Subsection C of section 13.04.890 is amended to read as follows:

C. The penalties specified in subsection A shall be imposed on the owner of the premises where the violation occurs regardless of who committed the violation. After the notice of violation is issued, the penalty amount shall be included on the water service bill for the premises and shall be collected in accordance with chapter 13.12, subject to subsection A.2 of this section and section 13.04.900.D. All penalties collected shall be used by the department to fund water conservation programs.

B. Except as amended in subsection A above, all provisions of section 13.04.890 remain unchanged and in full effect.

SECTION 10.

Section 13.04.900 of the Sacramento City Code is amended to read as follows:

**13.04.900 Appeal.**

A. The owner or occupant of the premises where the violation occurred may appeal a notice of violation issued under section 13.04.890.A by filing a written notice of appeal with the director not later than 30 days after the notice of violation is issued. The notice of appeal shall specify the grounds for appeal, and shall provide the appellant's telephone number and address for receipt of the city's written notices relating to the appeal.

B. Upon receipt of a timely notice of appeal, the director shall set the matter for an informal hearing at the earliest practical date. Not less than seven days prior to the hearing date, the director shall provide written notice of the hearing to the appellant. At the hearing, the director shall hear any relevant evidence presented by the appellant or department staff, and may uphold, modify, or rescind the notice of violation, including the penalty imposed by the notice of violation, if any. The appellant shall be provided written notice of the determination of the director that sets forth findings in support of the determination. The determination of the director is the city's final administrative determination of the matter.

C. The failure of the owner or occupant of the premises where the violation occurred to file a timely notice of appeal in accordance with the provisions of this section constitutes an irrevocable waiver of the right to appeal and a failure to exhaust administrative remedies with regard to the notice of violation.

D. If the director determines that a penalty shall not be imposed, the penalty shall be removed from the water service bill for the premises where the violation occurred.

E. The director may designate one or more employees of the department to hear and determine appeals of any notice of violation, provided that the designated employee(s) shall not be employed within the section issuing the notice of violation.

SECTION 11.

A. Section 13.12.010 of the Sacramento City Code is amended as follows:

1. The definition of “owner” is amended to read as follows:

“Owner” means the person to whom a parcel of real property was assessed as legal owner in the assessment roll. If the director has actual knowledge of a grant deed or other reliable evidence showing that a different person owns legal title to the parcel, “owner” also includes the different person. “Owner” also includes an owner’s duly authorized executor or receiver.

2. The definition of “rates, fees and charges” is amended to read as follows:

“Rates, fees, and charges” means any rate, fee, tax, assessment, penalty, or other charge established, prescribed, revised, set, charged, or collected under any provision of this code or any ordinance or resolution adopted pursuant to this code.

B. Except as amended in subsection A above, all provisions of section 13.12.010 remain unchanged and in full effect.

SECTION 12.

A. Section 13.12.040 of the Sacramento City Code is amended as follows:

1. Subsection C.2 of section 13.12.040 is amended to read as follows:

2. In a common interest development, the rates, fees, and charges for an unmetered water service connection that is changed to a metered service connection with metered rate billing, or for a metered water service connection that is changed from flat rate to metered rate billing, shall be billed as provided in section 13.04.220(A)(2).

2. A new subsection G is added to read as follows:

G. The director may require the owner to provide a security deposit equal to three times the estimated monthly bill for water, sewer, and/or storm

drainage service rendered to the owner's parcel, in accordance with section 10009.6 of the California Public Utilities Code. The director may establish procedures and requirements governing the collection, maintenance, use, and return of security deposits.

B. Except as amended in subsection A above, all provisions of section 13.12.040 remain unchanged and in full effect.

SECTION 13.

Section 13.12.041 is added to the Sacramento City Code to read as follows:

**13.12.041 Billing for water service to projects consisting of vertical parcels.**

Notwithstanding any contrary provision of this code, if the director authorizes water service to a project consisting of vertical parcels pursuant to section 13.04.225:

A. The rates, fees, and charges for water service rendered to the city's metered points of service shall be billed to the "authorized party" defined in section 13.04.225;

B. The "authorized party" defined in section 13.04.225 shall be fully responsible for payment to the city of all amounts billed, and the city shall have no responsibility for, nor any involvement in, the authorized party's allocation, billing, and collection of these costs from the owners or occupants of the parcels; and

C. The "authorized party" defined in section 13.04.225 is considered the "owner" for purposes of the termination of service procedures specified in article III of this chapter.

SECTION 14.

Section 13.12.080 of the Sacramento City Code is amended to read as follows:

**13.12.080 Lien created—Procedure.**

A. If the owner fails to request a hearing within the time specified in section 13.12.070, or if the owner timely requests a hearing but fails to appear, or if after a hearing the director's designee decides that delinquent charges and penalties are owing, the director shall file a lien by recording with the Sacramento County recorder's office a certificate or report, in the format specified by the recorder's office. The certificate or report shall identify the owner's name, the real property to which the utility services were rendered, and the amount of the delinquent

charges and penalties that remains unpaid 75 days following the past due date. From the time the certificate or report is recorded, the amount required to be paid, together with applicable penalties, constitutes a lien in accordance with and subject to the provisions of section 5473.11 of the California Health and Safety Code, and may be enforced or collected upon as provided in state law. Thereafter, the lien shall not be released unless and until it is fully paid, is rendered invalid by operation of law, or the director determines that it was recorded in error. The owner is responsible for payment of any fees applicable to the lien release.

B. The director is authorized to determine the minimum amount of delinquency, if any, for recording a lien as provided herein.

SECTION 15.

Section 13.12.100 of the Sacramento City Code is amended to read as follows:

**13.12.100 Report of delinquent utility service charges—Special assessment procedure.**

A. The director shall prepare a report of delinquent utility service charges, and shall mail to the owner of each parcel of real property identified in the report, at the owner's address, a written notice of the city's intention to make the delinquent charges a special assessment against the parcels of real property to which the utility services were rendered. The notice shall inform the owner of the owner's right to file a written objection or protest with the director. Any objection or protest must be received by the director within 15 days after the date of the director's notice.

B. Upon receipt of a timely written objection or protest, the director shall review the objection or protest and mail a written response to the owner at the owner's address. The director's response also shall inform the owner of the owner's right to object or protest before a hearing officer, and shall notify the owner of the date, time, and location of the hearing, which shall be not less than 15 days after the date of the director's response. An owner must request a hearing within ten days after the date of the director's response.

C. Only those owners who filed a timely objection or protest in accordance with subsection A of this section, and made a timely request for a hearing in accordance with subsection B of this section, shall be permitted to have their objection or protest heard by the hearing officer. Before the date of the hearing, the director shall transmit to the hearing officer the objections or protests from

owners who filed a timely objection or protest and made a timely request for a hearing, a list of the applicable delinquent utility service charges, and all other relevant information.

D. At the hearing, the hearing officer shall consider the delinquent utility service charges together with any objections, protests, and other relevant information received before or at the hearing. The hearing officer is authorized to make revisions to the delinquent utility service charges for any owner appearing at the hearing if the hearing officer finds that revisions are necessary to correct an error or otherwise invalid charge. As soon as practicable after the hearing, the hearing officer shall provide the owners appearing at the hearing with written notice of his or her decision, including any revisions made by the hearing officer to the delinquent utility service charges. The hearing officer also shall transmit any revisions to the director, who shall submit the report of delinquent utility service charges (as revised) to the city clerk to be transmitted to the city council. The director shall mail to the owners who appeared before the hearing officer written notice of the date, time, and location of the public hearing described in subsection E of this section.

E. Upon receipt of the report from the hearing officer, the director shall schedule a public hearing before the city council. The city clerk shall cause notice of the hearing to be published pursuant to California Government Code section 6066. At the hearing, the city council shall consider any objections or protests de novo, provided that only those owners who filed a timely objection or protest and a timely request for a hearing in accordance with the provisions of subsections A and B of this section, and appeared before the hearing officer, shall be permitted to have their objection or protest considered by the city council. At the conclusion of the hearing, the city council may adopt a resolution adopting the report, with or without modifications. If the city council finds that the objections or protests considered by the city council have been made by the owners of a majority of the separate parcels of property described in the report, the report shall not be adopted.

F. After adoption of the report by the city council, the delinquent utility service charges contained therein constitute a special assessment and lien, effective in accordance with applicable law, against each parcel of real property to which the utility services were rendered. Thereafter the assessment shall be collected at the same time, by the same persons, and in the same manner, together with and not separately, as ordinary secured property taxes are collected, and shall be subject to the same penalties and same procedures of sale as provided for delinquent ordinary secured property taxes. The assessment shall be subordinate to all existing special assessment liens previously imposed upon the property, and paramount to all other liens except those for state, county, and

municipal taxes, with which it shall be on parity. The lien shall continue until the assessment and all interest and penalties due and payable thereon are paid or the lien is released or is prevented from attaching by operation of law. All laws applicable to the levy, collection, and enforcement of secured property taxes shall be applicable to the special assessment and lien, except as may be provided otherwise by state law.

G. On or before August 10th, a copy of the resolution and report, endorsed by the city clerk as a true copy of the resolution and report adopted by the city council, shall be filed with the Sacramento County auditor. The descriptions of the parcels of real property subject to the special assessments and liens shall be those used for the same parcels by the Sacramento County assessor for the current year.

SECTION 16.

Section 13.12.110 of the Sacramento City Code is amended to read as follows:

**13.12.110 Contesting special assessment.**

The validity of any special assessment and lien imposed under section 13.12.100 shall not be contested in any action or proceeding unless the action or proceeding is commenced within 30 days after the date the city council adopts the resolution confirming the report of delinquent utility services charges. An owner's failure to file a timely objection or protest, make a timely request for a hearing, appear at the hearing, or present their objection or protest to the city council, in accordance with section 13.12.100, constitutes a failure to exhaust administrative remedies with regard to the special assessment.

SECTION 17.

A. Subsection C of section 13.12.130 of the Sacramento City Code is amended to read as follows:

C. The notice shall include all of the following in a clear and legible format:

1. The owner’s name and address;

2. The amount of the delinquency;

3. The date by which payment or arrangement for payment is required in order to avoid termination of utility services;

4. A description of the opportunity to file a complaint or request an investigation concerning the delinquent utility service charges or applicable services, or to request an extension of time to pay the delinquent charges because the charges are beyond the means of the owner to pay in full within the time required, as provided in section 13.12.140;

5. A description of the procedure by which the owner may request amortization of the delinquent utility service charges;

6. A description of the procedure for the owner to obtain information on the availability of financial assistance, including private, local, state, or federal sources, if applicable;

7. A description of the opportunity to avoid termination of utility services by demonstrating that a residential owner's or occupant's household income is not more than the threshold specified in section 13.12.160.B; and

8. The telephone number of a department representative authorized to provide additional information or institute arrangements for payment.

B. Except as amended in subsection A above, all provisions of section 13.12.130 remain unchanged and in full effect.

SECTION 18.

Section 13.12.150 of the Sacramento City Code is amended to read as follows:

**13.12.150 Departmental review.**

A. A department employee designated by the director shall review and investigate a timely complaint, request for an investigation, or request for an extension of time to pay the delinquent charges. If an extension of time to pay is requested, the designated employee shall consider whether the owner should be permitted to amortize the unpaid balance of the utility services account over a reasonable period of time not to exceed 12 months, unless the designated employee finds that a longer amortization period is necessary to avoid undue hardship based on the circumstances of an individual case.

B. After this review and investigation, the designated employee shall render a written decision, which may include adjustment of the amount due or amortization of the unpaid balance of the utility services account over a specified

period of time. A copy of the decision shall be mailed to the owner at the owner's address.

C. The decision of the designated employee may be appealed pursuant to chapter 1.24 of this code, by filing a notice of appeal with the city clerk not later than ten days after the date the decision is mailed to the owner.

SECTION 19.

Section 13.12.160 of the Sacramento City Code is amended to read as follows:

**13.12.160 Limitations on termination of residential services.**

A. Notwithstanding any other provision of this article, water service for residential premises shall not be terminated for delinquent payment in the following situations:

1. During the pendency of an investigation by the city of a dispute or complaint concerning the delinquent water service charges or applicable water service;

2. During the pendency of an appeal filed in accordance with section 13.12.150.C;

3. When an owner has entered into an amortization agreement for payment of an unpaid balance, so long as the owner remains in compliance with the amortization agreement, and also keeps the water service account current as charges accrue in each subsequent billing period; or

4. When an owner submits to the director the certification of a licensed physician that termination of water service will be life-threatening to a resident of the premises, the owner is financially unable to pay for service within the normal payment period, and the owner is willing to enter into an amortization agreement with respect to all charges that the owner is unable to pay prior to delinquency. If these requirements are met the owner shall, upon request, be permitted to amortize the unpaid balance of any bill asserted to be beyond the owner's means to pay within the normal period for payment over a period not to exceed 12 months, unless the director finds that a longer amortization period is necessary to avoid undue hardship based on the circumstances of an individual case. Water service may be terminated if the owner fails to comply with the amortization agreement or fails to keep the water service account current as charges accrue in each subsequent billing period.

B. Notwithstanding any other provision of this article, no utility service to premises used for residential purposes shall be terminated if it is demonstrated prior to utility service termination that the household income of the owner or occupant of the premises is not more than 100% of the applicable federal poverty guideline established and updated periodically in the Federal Register by the U.S. Department of Health and Human Services under the authority of 42 U.S.C. section 9902(2); provided that this subsection B does not apply if the owner or occupant fails to provide notice to the department of their household income within 25 days after the date of the initial notice of impending termination provided by the director under section 13.12.130. The director may adopt requirements for the documentation of household income, including a periodic income recertification if the payment of utility service charges for the premises remains delinquent.

C. Where the city furnishes metered water service used by residential tenants in a detached single-family dwelling, or furnishes water service through separate individually metered water service connections to residential tenants in a multiunit residential structure or mobilehome park, and a notice of delinquency and impending termination for water service to the premises is mailed pursuant to section 13.12.130, the following additional requirements apply:

1. The city shall provide notice to the residential tenants as specified in subdivision (b) of section 10009 of the California Public Utilities Code; and

2. The residential tenants shall have the right to become water service customers without being required to pay the delinquency, to the extent authorized by and in accordance with the provisions of subdivision (c) of section 10009 of the California Public Utilities Code, upon execution of a water service agreement as required by the department. A residential tenant who becomes a water service customer pursuant to this subsection does so solely for the purpose of continuing the water service already being used by the tenant when the water service otherwise would be terminated for delinquent payment. This subsection does not authorize a tenant to become a water service customer under any other circumstances. A residential tenant who becomes a water service customer pursuant to this subsection after termination of water service shall pay all applicable fees for service reconnection.

D. Where the city furnishes water service through a single metered water service connection that supplies water used by multiple residential occupants in a multiunit residential structure or mobilehome park, and a notice of delinquency

and impending termination for water service to the premises is mailed pursuant to section 13.12.130, the following additional requirements apply:

1. The city shall provide notice to the residential occupants as specified in subdivision (a) of section 10009.1 of the California Public Utilities Code;

2. The residential occupants shall have the right to become water service customers without being required to pay the delinquency, to the extent authorized by and in accordance with the provisions of subdivision (b) of section 10009.1 of the California Public Utilities Code, upon execution of a water service agreement as required by the department. A residential occupant who becomes a water service customer pursuant to this subsection does so solely for the purpose of continuing the water service already being used by the occupant when the water service otherwise would be terminated for delinquent payment. This subsection does not authorize a residential occupant to become a water service customer under any other circumstances. A residential tenant who becomes a water service customer pursuant to this subsection after termination of water service shall pay all applicable fees for service reconnection; and

3. The city shall not discontinue water service if the delinquencies were incurred for services provided by another public agency, or if a public health or building officer certifies that termination of water service would result in a significant threat to the health or safety of the residential occupants or the public.

The director shall adopt rules and regulations necessary to implement this subsection D and ensure that the department has made reasonable efforts to continue water service to residential occupants in a multiunit residential structure or mobilehome park prior to any termination of the water service due to nonpayment by the owner, manager, or operator of the multiunit residential structure or mobilehome park. The rules and regulations shall include guidelines for assistance in the enforcement of section 10009.1 of the California Public Utilities Code and requirements for the notice prescribed by subdivision (a) of section 10009.1 of the California Public Utilities Code, including clear wording, large and boldface type, and instructions to ensure full notice to the residential occupants.

E. A residential tenant in a detached single-family dwelling, or a residential tenant or occupant in a multiunit residential structure or mobilehome park, may not become a water service customer except as authorized by subsection C.2 or subsection D.2 of this section. If a residential tenant or occupant becomes a

water service customer in accordance with subsection C.2 or subsection D.2 of this section:

1. The residential tenant or occupant is liable for the rates, fees, and charges applicable to water service rendered while the tenant or occupant is the water service customer, including any penalties imposed if payment of these rates, fees, and charges is delinquent;

2. Penalties imposed under section 13.04.890 for any violation of the city's outdoor water conservation requirements that occurs on the parcel inhabited by the tenant or occupant while the tenant or occupant is the water service customer shall be imposed on the tenant or occupant as the water service customer;

3. The owner of the parcel to which the water service is rendered remains liable for the utility service charges for all other utility services rendered to the parcel, and for all delinquent utility service charges, to the fullest extent allowed under this code and state law; and

4. The director may require the residential tenant or occupant to provide a security deposit equal to three times the estimated monthly water service bill, in accordance with section 10009.6 of the California Public Utilities Code. The director may establish procedures and requirements governing the collection, maintenance, use, and return of security deposits.

F. If a residential tenant or occupant who becomes a water service customer in accordance with subsection C.2 or subsection D.2 of this section fails to pay any portion of the water service charges or penalties applicable to the premises inhabited by the tenant or occupant, the water service to the premises may be terminated as provided in this article, state law, or the tenant's or occupant's water service agreement. For purposes of the termination process described in sections 13.12.130, 13.12.140, 13.12.150, and 13.12.180, the tenant or occupant shall be considered to be the "owner" of the premises.

G. When a residential tenant or occupant who becomes a water service customer in accordance with subsection C.2 or subsection D.2 of this section ceases to be a water service customer because the tenant's or occupant's water service agreement is terminated or the tenant or occupant moves from the premises to which the water service is rendered, the owner of the premises shall be liable for all utility service charges for water service rendered to the premises after the tenant or occupant ceases to be a water service customer. A tenant or occupant moving from the premises to which the water service is rendered shall not cease to be the water service customer for the premises until the tenant or occupant

actually moves, or two weeks after the tenant or occupant provides notice to the department that the tenant or occupant is moving or has moved, whichever occurs last.

SECTION 20.

Section 5473 of the California Health and Safety Code provides that an ordinance or resolution authorizing the collection of utility service charges on the tax role shall remain in effect for the time specified in the ordinance or resolution. This ordinance shall remain in effect until the Sacramento City Council adopts an ordinance repealing this ordinance.

Adopted by the City of Sacramento City Council on May 12, 2015, by the following vote:

Ayes: Members Ashby, Carr, Guerra, Hansen, Harris, Schenirer, and Warren

Noes: None

Abstain: None

Absent: Member Jennings and Mayor Johnson

Attest:

Shirley Concolino

Digitally signed by Shirley Concolino
DN: cn=Shirley Concolino, o=City of Sacramento, ou=City Clerk, email=sconcolino@cityofsacramento.org, c=US
Date: 2015.05.21 16:44:51 -07'00'

Shirley Concolino, City Clerk

Passed for Publication: April 28, 2015
Published: May 1, 2015
Effective: June 11, 2015

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**RESOLUTION NO. 2015-0162**

Adopted by the Sacramento City Council

June 2, 2015

# DECLARING CONTINUING WATER SHORTAGE AND IMPLEMENTING ADDITIONAL WATER CONSERVATION MEASURES AND USE RESTRICTIONS

## BACKGROUND

A. California is experiencing an ongoing severe drought, with snowpack runoff and reservoir storage levels at or near record lows.

B. Article XI of Chapter 13.04 of the Sacramento City Code (Outdoor Water Conservation) specifies outdoor water use limitations and restrictions to promote efficient water use and increase water conservation. City Code section 13.04.910 authorizes the City Council, by Resolution, to declare the existence of a water shortage and impose revised or additional limitations and restrictions on outdoor water use while the water shortage remains in effect.

C. The City's 2010 Urban Water Management Plan, adopted by the City Council in October 2011, includes a Water Shortage Contingency Plan that sets forth four water conservation stages designed to reduce overall water usage during a water shortage as follows:

| Water Conservation Stage | Water Use Reduction Goal |
|---|---|
| Stage 1 | 10 to 20% |
| Stage 2 | 20 to 30% |
| Stage 3 | 30 to 40% |
| Stage 4 | 40 to 50% |

D. On January 14, 2014, based on critical drought conditions, the Sacramento City Council adopted Resolution No. 2014-0018, declaring a water shortage and implementing Stage 2 of the City's water shortage contingency plan, which enacted water conservation measures and water use restrictions in addition to those already included in the City Code with the goal of reducing water use by 20% or more.

E. The City's Department of Utilities also activated an emergency drought response team, appointed an Incident Commander, and deployed an Incident Command Structure to effectively address all aspects of the drought including: operational issues, planning and

strategy, public outreach and education, funding and financing, and logistics. The drought response team meets bi-weekly.

F. The City of Sacramento has implemented numerous measures to promote water conservation, reduce water use, and increase water use efficiency, by:

- Prohibiting the use of City water to wash down sidewalks, driveways, or parking areas.

- Prohibiting the waste of City water from leaky water lines or fixtures, and prohibiting water runoff.

- Encouraging residents to limit residential car washing by patronizing carwashes that recycle water. The City also prohibits residential car washing with a hose unless the hose is equipped with an automatic shut-off nozzle attachment, and the attachment is being used to shut off the flow of water at all times when the hose is not being used to wash the vehicle.

- Limiting outdoor irrigation for residential or commercial purposes while daylight savings time is in effect to two days per week, based on the street address, with no watering allowed between 10 a.m. and 7 p.m., and no watering allowed at all on Mondays, Thursdays, and Fridays. Outdoor irrigation is restricted to one day per week when daylight savings time ends.

- Significantly increasing enforcement of the City's outdoor water use restrictions, with a doubling of violation penalties while the water shortage remains in effect.

- Maintaining a multi-departmental task force to assure that the City leads by example and significantly reduces the City's own water use.

- Working with commercial, industrial, and institutional water service customers to identify ways to reduce water usage, including reductions in outdoor irrigation usage.

- Conducting an extensive and ongoing public information effort throughout the City to inform City residents and businesses of the need for water conservation, the water use limitations and restrictions adopted and enforced by the City, and practical ways to reduce water use.

- Implementing on-line tools that allow water customers to monitor and reduce their water usage.

- Utilizing automated meter infrastructure technology to detect leaks on a real-time basis, and significantly increasing the City's ongoing leak detection and correction efforts.

- Continuing the City's participation in and funding for water use efficiency incentive programs, such as rebates programs for high-efficiency toilets and washing machines.

- Increasing the scope of the City's "River Friendly Landscape Program" (aka "cash for grass") to encourage residential customers to replace turf with drought tolerant landscaping.

- Expediting the rehabilitation of existing groundwater wells to reduce surface water usage, and entering into agreements with neighboring agencies to receive supplemental groundwater if needed due to drought-related shortages.

G. On January 17, 2014, Governor Jerry Brown signed a proclamation declaring a drought State of Emergency in California, and on April 25, 2014, Governor Jerry Brown signed a proclamation of a continued drought State of Emergency in California.

H. In May of 2014, the State Water Resources Control Board (State Board) issued notices of curtailment for surface water diversions made under post-1914 appropriative water rights in the Sacramento and San Joaquin River watersheds.

I. On June 17, 2014, the Sacramento City Council adopted Resolution No. 2014-0209, declaring a continuing water shortage and implementing additional water use restrictions.

J. On July 15, 2014, the State Board adopted drought-related emergency regulations for urban water conservation throughout the state, which include provisions prohibiting the following uses of potable water, except where necessary to address an immediate health and safety need:

- Washing down driveways and sidewalks;

- Watering of outdoor landscapes that cause excess runoff;

- Using a hose to wash a motor vehicle, unless the hose is fitted with a shut-off nozzle; and

- Using potable water in a fountain or decorative water feature, unless the water is recirculated.

K. The Sacramento City Code already prohibited these uses, except for the use of water in a fountain or decorative water feature without a recirculating pump. On August 7, 2014, the Sacramento City Council adopted Resolution No. 2014-0275, declaring a continuing water shortage and implementing the prohibition on the use of water in a fountain or decorative water feature without a recirculating pump.

L. On March 17, 2015, the State Board amended and readopted its drought-related emergency regulations for urban water conservation throughout the state.

M. On April 1, 2015, Governor Jerry Brown issued Executive Order B-29-15, which recognized the continued existence of severe drought throughout the State, and ordered the implementation of additional water use restrictions and other measures intended to reduce potable urban water usage statewide by 25% through February of 2016.

N. On May 1, 2015, the State Board issued notices of curtailment for surface water diversions made under post-1914 appropriative water rights in the Sacramento River watershed.

O. On May 5, 2015, the State Board adopted Resolution No. 2015-0032, amending its drought-related emergency regulations to implement restrictions specified in Executive Order B-29-15 and mandate tiered water use reductions by urban water suppliers, based on each supplier's average residential gallons-per-capita-per-day (R-GPCD) usage during the July-September 2014 time period. The water use reduction mandated for the City of Sacramento is a 28% reduction for the time period from June, 2015 through February, 2016, relative to the City's R-GPCD usage during the same months in 2013.

P. On May 12, 2015, the Sacramento City Council adopted Ordinance No. 2015-0011, which added provisions to Article XI of Chapter 13.04 of the Sacramento City Code prohibiting: (1) water runoff from non-irrigation uses; (2) the use of City water in a fountain or decorative water feature without a recirculating pump; and (3) outdoor irrigation during or within 48 hours after measurable rainfall.

Q. The water shortage previously declared by the Sacramento City Council continues to exist, necessitating a continuation and augmentation of the City's water conservation measures and water use restrictions to meet the State-mandated 28% reduction in water usage.

**BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE CITY COUNCIL RESOLVES AS FOLLOWS**:

Section 1. Based on the on-going drought conditions, the Sacramento City Council hereby declares that a water shortage continues to exist. This Resolution replaces and supersedes Resolution Nos. 2014-0018, 2014-0209, and 2014-0275.

Section 2. To comply with the State Board's emergency regulations adopted by State Board Resolution No. 2015-0032 and meet the State-mandated 28% reduction in water usage, it is necessary to continue implementation of Stage 2 of the City's Water Shortage Contingency Plan by implementing the measures described in Section 3 of this Resolution.

Section 3. The following water conservation measures and water use restrictions are adopted:

1. The City Manager shall enhance the City's current public information campaign to inform the City's water customers of the need for water conservation and the provisions enacted by this Resolution. The campaign shall include information to customers on ways to reduce their water use and on the preservation of trees.

2. The City Manager shall increase outreach to commercial, industrial, and institutional water service customers to identify ways to reduce water usage and comply with the State Board's emergency regulations.

3. The City Manager shall increase the City's already aggressive water waste patrols to enforce the provisions of Article XI of Chapter 13.04 of the City Code (Outdoor Water Conservation) and this Resolution, including increased night, morning, and weekend patrols.

4. The City Manager shall continue to require a reduction in the irrigation of City parks and other City facilities.

5. Shut-off valves shall be required on all hoses used for irrigation purposes, car washing, or other uses of City water.

6. While daylight savings time is in effect, outdoor irrigation shall continue to be limited to two days per week. Locations bearing a street address ending in an odd number shall be permitted to irrigate only on Tuesday and Saturday. Locations bearing a street address ending in an even number shall be permitted to irrigate only on Wednesday or Sunday. There shall be no water irrigation on Mondays, Thursdays, or Fridays. Education will be offered on correct watering methods to enhance turf viability.

7. The irrigation of new landscaping shall be subject to the same restrictions as existing landscaping, and the provisions of City Code § 13.04.880(A) allowing irrigation of new landscaping on any day of the week for a period of 21 days after planting shall not apply while this Resolution remains in effect.

8. To comply with the State Board's emergency regulations, the irrigation of ornamental turf on public street medians with potable City water is prohibited.

9. Main flushing shall be allowed only for emergency or public health and safety purposes.

Section 4. The City Manager shall monitor the effectiveness of the City's water conservation measures and water use restrictions in meeting the State-mandated 28% reduction in water usage. If the City Manager determines at any time that the City may not be on track to meet this reduction, the City Manager shall expeditiously return to the City Council with recommended additional measures or restrictions, such as limiting outdoor irrigation to one day per week.

Section 5. The water conservation measures and water use restrictions described in Section 3 of this Resolution are in addition to the provisions of Article XI of Chapter 13.04 of the City Code (Outdoor Water Conservation); in the event of any conflict between any provision of Article XI and this Resolution, the provisions of this Resolution shall govern while this Resolution remains in effect.

Section 6. The City Manager is authorized and empowered to delegate the City Manager's authority hereunder to such assistants, deputies, officers, employees, or agents of the City as the City Manager shall designate, and to establish such rules, regulations, and procedures, and to prepare or furnish such forms, as the City Manager deems necessary or appropriate to carry out the provisions of this Resolution.

Section 7. No person shall use, or cause to be used, City water in violation of any of the provisions of this Resolution while the water shortage remains in effect, as specified in City Code § 13.04.870(G).

Section 8. The penalties for violations specified in City Code § 13.04.890 shall continue to be doubled while the water shortage remains in effect, as specified in City Code § 13.04.890(D).

Section 9. This Resolution shall be effective upon its adoption, and shall remain in effect until rescinded or otherwise modified by subsequent resolution of the City Council.

Section 10. This Resolution shall be published within ten days after its adoption, pursuant to California Water Code § 376(a).

Adopted by the City of Sacramento City Council on June 2, 2015, by the following vote:

Ayes: Members Ashby, Carr, Guerra, Hansen, Harris, Jennings, Schenirer, Warren and Mayor Johnson

Noes: None

Abstain: None

Absent: None

Attest:

Shirley Concolino

Digitally signed by Shirley Concolino
DN: cn=Shirley Concolino, o=City of Sacramento, ou=City Clerk, email=sconcolino@cityofsacramento.org, c=US
Date: 2015.06.17 09:31:02 -07'00'

Shirley Concolino, City Clerk

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# APPENDIX O

Ordinance No. 2016-0015

DRAFT

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**ORDINANCE NO. 2016-0015**

Adopted by the Sacramento City Council

March 29, 2016

**AN ORDINANCE AMENDING THE CITY OF SACRAMENTO FEE AND CHARGE REPORT FOR WATER AND WASTEWATER SERVICE RATES**

**BE IT ENACTED BY THE COUNCIL OF THE CITY OF SACRAMENTO:**

SECTION 1.

The Sacramento City Council makes the following findings:

A. Articles XIIIC and XIIID of the California Constitution (Proposition 218) establish various procedures for the approval of taxes, assessments and property-related service fees by local government agencies.

B. For the imposition or increase of water and sewer (wastewater) service rates that are "property-related fees" within the meaning of Proposition 218, Proposition 218 requires that a notice describing the proposed fee or fee increase and establishing a date, time and location of a public hearing on the proposed fee or fee increase (held not less than 45 days after the notice is mailed), be mailed to the record owner of each parcel subject to the proposed fee or fee increase. Under Section 13.02.040(C) and Section 3.44.100(B) of the Sacramento City Code, for fees or fee increases proposed by the City of Sacramento, the public hearing is held by the City's Utilities Rate Advisory Commission.

C. At the public hearing, Proposition 218 requires that all protests filed against the proposed fee or fee increase be considered, and the agency may not approve the proposed fee or fee increase if written protests against the proposed fee or fee increase are presented by owners or tenants of a majority of the affected parcels (only one protest is allowed per parcel).

D. On December 2, 2015, the City mailed a notice to all owners of property subject to the City's water and wastewater service rates, which notice: (i) described proposed 4-year increases in the City's water and wastewater service rates, to take effect on July 1, 2016, July 1, 2017, July 1, 2018, and July 1, 2019, respectively; (ii) provided the date, time and location of the public hearing when

these proposed rate increases would be heard by the City's Utilities Rate Advisory Commission; and (iii) provided notice that an owner or tenant had the right to file a written protest against the proposed rate increases at or before the time set for public hearing.

E. The City's Utilities Rate Advisory Commission held such public hearing on January 27, 2016, and February 10, 2016, and considered all protests against the proposed rate increases as well as all testimony and other information presented by City staff and members of the public.

F. As of the conclusion of the public hearing, written protests against the proposed 4-year increases in the City's water and wastewater service rates were not received for a majority of the parcels that will be subject to the proposed increased rates.

G. Upon conclusion of the public hearing, the City's Utilities Rate Advisory Commission approved recommendations to the City Council relative to the proposed increases to the City's water and wastewater service rates.

H. The City Council has considered the Utilities Rate Advisory Commission's recommendations and all other information presented to it and in the public record, and finds that the amount of the water and wastewater service rates approved and imposed in Section 2 of this ordinance does not exceed the reasonable cost of providing these services, and that the revenues derived from these water and wastewater service rates will not exceed the funds required to provide water and wastewater service.

I. Based on the information presented to it and upon all information in the public record, and pursuant to Public Resources Code Section 21080(b)(8), the City Council finds that the approval and imposition of the water and wastewater service rates approved and imposed in Section 2 of this ordinance are exempt from the California Environmental Quality Act and finds that the increased rates are for the purpose of:

1. Providing funds to meet operating expenses, including employee wage rates and fringe benefits.

2. Permitting the generation of necessary cash flow to finance maintenance of the City's utility service systems and meeting financial reserve needs and requirements.

3. Funding the purchase or lease of necessary supplies and equipment for the systems.

4. Providing funds for capital projects necessary to provide and maintain service by the systems.

SECTION 2.

The 4-year utility service rates shown on Exhibit A (Water Rates), and Exhibit B (Wastewater Rates), to take effect on July 1, 2016, July 1, 2017, July 1, 2018, and July 1, 2019, respectively, are hereby approved and imposed. The City of Sacramento Fee and Charge Report is amended to include the utility service rates shown on Exhibits A and B, which exhibits are incorporated herein by this reference.

**Table of Contents**:

Exhibit A - Water Rates
Exhibit B - Wastewater Rates

Adopted by the City of Sacramento City Council on March 29, 2016, by the following vote:

Ayes: Members Carr, Guerra, Hansen, Harris, Jennings, Schenirer, and Mayor Johnson

Noes: Member Warren

Abstain: None

Absent: Member Ashby

Attest:

Shirley Concolino

Digitally signed by Shirley Concolino
DN: cn=Shirley Concolino, o=City of Sacramento, ou=City Clerk, email=sconcolino@cityofsacramento.org, c=US
Date: 2016.03.31 16:44:25 -07'00'

Shirley Concolino, City Clerk

Passed for Publication: March 22, 2016
Published: March 25, 2016
Effective: July 1, 2016

## Water Service Fees and Charges

The Fee and Charge Report of the City of Sacramento is hereby amended to include the following water service charges, which increase by 10% each year for four years, with the annual increases effective on July 1, 2016, July 1, 2017, July 1, 2018, and July 1, 2019, respectively.

| | Rates Effective: | | | |
|---|---|---|---|---|
| | July 1, 2016 | July 1, 2017 | July 1, 2018 | July 1, 2019 |
| I. WATER USE RATES, MONTHLY DOMESTIC | | | | |
| Single-family residence: | | | | |
| 1-3 rooms | 35.55 | 39.11 | 43.02 | 47.32 |
| 4-5 rooms | 46.26 | 50.89 | 55.98 | 61.58 |
| 6-9 rooms | 50.30 | 55.33 | 60.86 | 66.95 |
| 10-15 rooms | 58.12 | 63.93 | 70.32 | 77.35 |
| Over 15, each additional room | 4.08 | 4.49 | 4.94 | 5.43 |
| Multiple-family residences (for each family dwelling unit in a multiple family residence) | | | | |
| 1-3 rooms | 27.26 | 29.99 | 32.99 | 36.29 |
| 4-5 rooms | 34.89 | 38.38 | 42.22 | 46.44 |
| 6-7 rooms | 42.60 | 46.86 | 51.55 | 56.71 |
| 8-9 rooms | 50.30 | 55.33 | 60.86 | 66.95 |
| 10-15 rooms | 58.12 | 63.93 | 70.32 | 77.35 |
| Over 15, each additional room | 4.08 | 4.49 | 4.94 | 5.43 |
| Lot Irrigation, per Water Service Tap | 70.82 | 77.90 | 85.69 | 94.26 |
| II. WATER USE RATES, MONTHLY COMMERCIAL | | | | |
| Bakery, first 1,000 sq. ft. of gross floor area or fraction thereof | 98.74 | 108.61 | 119.47 | 131.42 |
| Each additional 1,000 sq. ft. or fraction thereof | 65.67 | 72.24 | 79.46 | 87.41 |
| Barber Shop or Beauty Parlor, first 1,000 sq. ft. of gross floor area or fraction thereof | 49.38 | 54.32 | 59.75 | 65.73 |
| Each additional 1,000 sq. ft. or fraction thereof | 31.86 | 35.05 | 38.56 | 42.42 |
| Bowling Alley, first 1,000 sq. ft. of gross floor area or fraction thereof | 49.38 | 54.32 | 59.75 | 65.73 |
| Each additional 1,000 sq. ft. or fraction thereof | 31.86 | 35.05 | 38.56 | 42.42 |
| Cemetery, for the irrigation season, first 1,000 sq. ft. or fraction thereof | 90.62 | 99.68 | 109.65 | 120.62 |
| Each additional 1,000 sq. ft. or fraction thereof | 7.22 | 7.94 | 8.73 | 9.60 |
| Dining Facilities (including restaurant, cafeteria, cafe, bar) first 1,000 sq. ft. of gross floor area or fraction thereof | 98.40 | 108.24 | 119.06 | 130.97 |
| Each additional 1,000 sq. ft. or fraction thereof | 64.87 | 71.36 | 78.50 | 86.35 |
| Drug Store, first 1,000 sq. ft. of gross floor area or fraction thereof | 45.49 | 50.04 | 55.04 | 60.54 |
| Each additional 1,000 sq. ft. or fraction thereof | 20.24 | 22.26 | 24.49 | 26.94 |
| Fire Hydrant Service Charge | | | | |
| Wharf Hydrant | 19.13 | 21.04 | 23.14 | 25.45 |
| Standard Hydrant | 47.28 | 52.01 | 57.21 | 62.93 |

**Exhibit A**

| | July 1, 2016 | July 1, 2017 | July 1, 2018 | July 1, 2019 |
|---|---|---|---|---|
| II. WATER USE RATES, MONTHLY COMMERCIAL (cont'd) | | | | |
| Furniture Store, first 1,000 sq. ft. of gross floor area or fraction thereof | 45.49 | 50.04 | 55.04 | 60.54 |
| Each additional 1,000 sq. ft. or fraction thereof | 5.01 | 5.51 | 6.06 | 6.67 |
| Garage, first 1,000 sq. ft. of gross floor area or fraction thereof | 45.49 | 50.04 | 55.04 | 60.54 |
| Each additional 1,000 sq. ft. or fraction thereof | 5.01 | 5.51 | 6.06 | 6.67 |
| Halls (including lodge and auditorium), first 1,000 sq. ft. of gross floor area or fraction thereof | 45.49 | 50.04 | 55.04 | 60.54 |
| Each additional 1,000 sq. ft. or fraction thereof | 20.24 | 22.26 | 24.49 | 26.94 |
| Hotel, Rest or Convalescent Homes, first 10 sleeping rooms or fraction thereof | 90.62 | 99.68 | 109.65 | 120.62 |
| Over 10 sleeping rooms, each additional sleeping room | 7.22 | 7.94 | 8.73 | 9.60 |
| Laundry, first 1,000 sq. ft. of gross floor area or fraction thereof | 196.64 | 216.30 | 237.93 | 261.72 |
| Each additional 1,000 sq. ft. or fraction thereof | 125.06 | 137.57 | 151.33 | 166.46 |
| Market, first 1,000 sq. ft. of gross floor area or fraction thereof | 49.38 | 54.32 | 59.75 | 65.73 |
| Each additional 1,000 sq. ft. or fraction thereof | 31.86 | 35.05 | 38.56 | 42.42 |
| Mortuary, first 1,000 sq. ft. of gross floor area or fraction thereof | 45.49 | 50.04 | 55.04 | 60.54 |
| Each additional 1,000 sq. ft. or fraction thereof | 20.24 | 22.26 | 24.49 | 26.94 |
| Motel, first 10 sleeping rooms or fraction thereof | 90.62 | 99.68 | 109.65 | 120.62 |
| Each additional sleeping room over 10 | 7.22 | 7.94 | 8.73 | 9.60 |
| Office Building, first 1,000 sq. ft. of gross floor area or fraction thereof | 45.49 | 50.04 | 55.04 | 60.54 |
| Each additional 1,000 sq. ft. or fraction thereof | 15.40 | 16.94 | 18.63 | 20.49 |
| Park (not municipal), for irrigation season, first 1,000 sq. ft. or fraction thereof | 90.62 | 99.68 | 109.65 | 120.62 |
| Each additional 1,000 sq. ft. or fraction thereof | 7.22 | 7.94 | 8.73 | 9.60 |
| Religious Worship, including the building used exclusively for religious worship and any other building used for religious activities, first 1,000 sq. ft. of gross floor area or | 45.49 | 50.04 | 55.04 | 60.54 |
| Each additional 1,000 sq. ft. or fraction thereof | 8.38 | 9.22 | 10.14 | 11.15 |
| School, first 100 pupils or fraction thereof | 87.41 | 96.15 | 105.77 | 116.35 |
| Each additional 100 pupils or fraction thereof | 68.07 | 74.88 | 82.37 | 90.61 |
| Service Station (no wash racks) and Used Car Lots: | | | | |
| tap size to City main: 3/4" | 49.38 | 54.32 | 59.75 | 65.73 |
| 1" | 64.87 | 71.36 | 78.50 | 86.35 |
| 1 1/2" | 105.97 | 116.57 | 128.23 | 141.05 |
| 2" | 181.18 | 199.30 | 219.23 | 241.15 |
| Store, first 1,000 sq. ft. of gross floor area or fraction thereof | 45.49 | 50.04 | 55.04 | 60.54 |
| Each additional 1,000 sq. ft. or fraction thereof | 20.24 | 22.26 | 24.49 | 26.94 |

**Exhibit A**

| | July 1, 2016 | July 1, 2017 | July 1, 2018 | July 1, 2019 |
|---|---|---|---|---|
| II. WATER USE RATES, MONTHLY COMMERCIAL (cont'd) | | | | |
| Theater, first 1,000 sq. ft. of gross floor area or fraction thereof | 49.59 | 54.55 | 60.01 | 66.01 |
| Each additional 1,000 sq. ft. or fraction thereof | 31.86 | 35.05 | 38.56 | 42.42 |
| Warehouse, first 1,000 sq. ft. of gross floor area or fraction thereof | 45.49 | 50.04 | 55.04 | 60.54 |
| Each additional 1,000 sq. ft. or fraction thereof | 5.01 | 5.51 | 6.06 | 6.67 |
| Minimum Rate: In no case shall a commercial flat-rate be less than: | 45.49 | 50.04 | 55.04 | 60.54 |
| III. SPECIAL WATER USE RATES, MONTHLY | | | | |
| Air Conditioning System: | | | | |
| Monthly demand charge (system without water conservation devices) per ton of capacity for each month of the air conditioning season of 5 months. | 30.21 | 33.23 | 36.55 | 40.21 |
| For systems on flat-rate service the following charge will apply for each month during the air conditioning season, per ton of system capacity | | | | |
| With Water Conservation Device | 6.96 | 7.66 | 8.43 | 9.27 |
| Without Water Conservation Device | 106.12 | 116.73 | 128.40 | 141.24 |
| Evaporative coolers (commercial establishments) - for units on flat rate service the following charges will apply for each month during the air conditioning season, per 1,000 cubic feet per minute unit capacity. | | | | |
| With Water Conservation Device | 4.00 | 4.40 | 4.84 | 5.32 |
| Without Water Conservation Device | 10.88 | 11.97 | 13.17 | 14.49 |
| Refrigeration Systems: | | | | |
| For systems on flat-rate service, the following charges will apply for each month during the year, per compressor horsepower. | | | | |
| With Water Conservation Device | 7.36 | 8.10 | 8.91 | 9.80 |
| Without Water Conservation Device | 69.42 | 76.36 | 84.00 | 92.40 |
| Dining Facility, (including restaurant, cafeteria, cafe, kitchen, bar) each 1,000 sq. ft. of gross floor area or fraction thereof | 53.25 | 58.58 | 64.44 | 70.88 |
| Gymnasium, each shower head | 24.05 | 26.46 | 29.11 | 32.02 |
| Hydraulically-operated elevator | | | | |
| With Water Conservation Device | 37.97 | 41.77 | 45.95 | 50.55 |
| Without Water Conservation Device | 211.23 | 232.35 | 255.59 | 281.15 |
| Irrigation: Supplemental (Commercial) | | | | |
| 0 - 10,000 sq. ft. (net irrigable area) | | | | |
| over 10,000 sq. ft. (net irrigable area), each additional 1,000 sq. ft. | 7.22 | 7.94 | 8.73 | 9.60 |
| Irrigation: Supplemental (Domestic) | | | | |
| 0 - 13,000 sq. ft. (gross lot area) | 0.00 | 0.00 | 0.00 | 0.00 |
| over 13,000 sq. ft. (gross lot area), each additional 1,000 sq. ft. | 7.22 | 7.94 | 8.73 | 9.60 |

| | | | July 1, 2016 | July 1, 2017 | July 1, 2018 | July 1, 2019 |
|---|---|---|---|---|---|---|
| III. SPECIAL WATER USE RATES, MONTHLY (Cont'd) | | | | | | |
| Private Fire Protection | Tap size to City ma | 0 - 2" | 30.21 | 33.23 | 36.55 | 40.21 |
| | | 3" | 45.49 | 50.04 | 55.04 | 60.54 |
| | | 4" | 60.38 | 66.42 | 73.06 | 80.37 |
| | | 6" | 90.62 | 99.68 | 109.65 | 120.62 |
| | | 8" | 120.85 | 132.94 | 146.23 | 160.85 |
| | | 10" | 151.04 | 166.14 | 182.75 | 201.03 |
| | | 12" | 181.18 | 199.30 | 219.23 | 241.15 |
| Swimming Pool, non-residential (where pool is not principal function of said establishment) | | | | | | |
| Under 300 cu. ft. fill & draw, per 100 cu. ft. | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Over 300 cu. ft. fill & draw, per 100 cu. ft. | | | 9.2941 | 10.2235 | 11.2459 | 12.3705 |
| Under 300 cu. ft. per 100 cu. ft., filtered | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Over 300 cu. ft. per 100 cu. ft., filtered | | | 1.7728 | 1.9501 | 2.1451 | 2.3596 |
| IV. MONTHLY METERED WATER USE, PER 100 CUBIC FEET | | | | | | |
| For all other metered water services: | | Per 100 cubic feet: | 1.0959 | 1.2055 | 1.3261 | 1.4587 |
| For metered service, monthly basic service charges, regardless of water usage, as follows: | | | | | | |
| | | Metered Size | | | | |
| | | 5/8" x 3/4" | 26.84 | 29.52 | 32.47 | 35.72 |
| | | 3/4" | 26.84 | 29.52 | 32.47 | 35.72 |
| | | 1" | 26.84 | 29.52 | 32.47 | 35.72 |
| | | 1½" | 50.55 | 55.61 | 61.17 | 67.29 |
| | | 2" | 79.00 | 86.90 | 95.59 | 105.15 |
| | | 3" | 145.37 | 159.91 | 175.90 | 193.49 |
| | | 4" | 240.21 | 264.23 | 290.65 | 319.72 |
| | | 6" | 477.27 | 525.00 | 577.50 | 635.25 |
| | | 8" | 761.74 | 837.91 | 921.70 | 1,013.87 |
| | | 10" | 1,093.64 | 1,203.00 | 1,323.30 | 1,455.63 |
| | | 12" | 2,041.91 | 2,246.10 | 2,470.71 | 2,717.78 |

## Wastewater Service Fees and Charges

The Fee and Charge Report of the City of Sacramento is hereby amended to include the following wastewater service charges, which increase by 9% each year for four years, with the annual increases effective on July 1, 2016, July 1, 2017, July 1, 2018, and July 1, 2019, respectively.

| | | | Rates Effective: | | | |
|---|---|---|---|---|---|---|
| | | | July 1, 2016 | July 1, 2017 | July 1, 2018 | July 1, 2019 |
| I. WASTEWATER SERVICE RATES - MONTHLY RESIDENTIAL | | | | | | |
| Single-family residence: | 1-3 rooms | | 16.01 | 17.45 | 19.02 | 20.74 |
| | 4-5 rooms | | 20.30 | 22.12 | 24.11 | 26.28 |
| | 6-7 rooms | | 24.44 | 26.64 | 29.03 | 31.65 |
| | 8-9 rooms | | 28.23 | 30.77 | 33.54 | 36.56 |
| | 10-15 rooms | | 32.39 | 35.31 | 38.49 | 41.95 |
| | over 15, each additional room | | 2.21 | 2.41 | 2.63 | 2.87 |
| Multiple-family residence: | Each dwelling unit charged the same as a single-family residence | | | | | |
| II. WASTEWATER SERVICE RATES - MONTHLY COMMERCIAL | | | | | | |
| Bakery, each 1,000 sq.ft. of gross floor area or fraction thereof | | | 35.34 | 38.52 | 41.98 | 45.76 |
| Barber Shop or Beauty Parlor, each 1,000 sq.ft. of gross floor area or fraction thereof | | | 18.96 | 20.66 | 22.52 | 24.55 |
| Bowling Alley, each 1,000 sq.ft. of gross floor area or fraction thereof | | | 16.55 | 18.04 | 19.66 | 21.43 |
| Dining Facilities (including restaurant, cafeteria, cafe, bar) each 1,000 sq.ft. of gross floor area or fraction thereof | | | 37.92 | 41.33 | 45.05 | 49.11 |
| Drug Store, each 1,000 sq.ft. of gross floor area or fraction thereof | | | 12.44 | 13.56 | 14.78 | 16.11 |
| Furniture Store, each 1,000 sq.ft. of gross floor area or fraction thereof | | | 4.09 | 4.46 | 4.86 | 5.29 |
| Garage, each 1,000 sq.ft. of gross floor area or fraction thereof | | | 3.35 | 3.65 | 3.98 | 4.33 |
| Halls (including lodge or auditorium), each 1,000 sq.ft. of gross floor area or fraction thereof | | | 10.99 | 11.98 | 13.05 | 14.23 |
| Hotel, per sleeping room | | | 3.75 | 4.09 | 4.45 | 4.86 |
| Laundry (where laundry is performed on premises), each 1,000 sq. ft. of gross floor area or fraction thereof | | | 73.47 | 80.08 | 87.28 | 95.14 |
| Market, each 1,000 sq.ft. of gross floor area or fraction thereof | | | 15.83 | 17.25 | 18.80 | 20.50 |
| Mortuary, each 1,000 sq.ft. of gross floor area or fraction thereof | | | 10.44 | 11.38 | 12.41 | 13.52 |
| Motel, per sleeping room or fraction thereof | | | 3.75 | 4.09 | 4.45 | 4.86 |
| Office Building, each 1,000 sq.ft. of gross floor area or fraction thereof | | | 12.84 | 14.00 | 15.26 | 16.63 |
| Religious Worship (premises), each 1,000 sq.ft. of gross floor area or fraction thereof | | | 5.68 | 6.19 | 6.75 | 7.35 |
| Rest or Convalescent Home, per sleeping room or fraction thereof | | | 6.07 | 6.62 | 7.21 | 7.86 |
| School, each 100 pupils or fraction thereof | | | 33.53 | 36.55 | 39.84 | 43.42 |
| Service Station and Used Car Lot (no wash racks): | | | | | | |
| | Water tap size to City main: | 3/4" | 19.95 | 21.74 | 23.70 | 25.83 |
| | | 1" | 25.97 | 28.31 | 30.86 | 33.64 |
| | | 1 1/2" | 42.68 | 46.53 | 50.71 | 55.28 |
| | | 2" | 73.47 | 80.08 | 87.28 | 95.14 |

| | July 1, 2016 | July 1, 2017 | July 1, 2018 | July 1, 2019 |
|---|---|---|---|---|
| Store, each 1,000 sq.ft. of gross floor area or fraction thereof | 13.16 | 14.34 | 15.63 | 17.04 |
| Theater, each 1,000 sq.ft. of gross floor area or fraction thereof | 15.63 | 17.04 | 18.57 | 20.24 |
| Warehouse, each 1,000 sq.ft. of gross floor area or fraction thereof | 3.04 | 3.31 | 3.61 | 3.94 |
| Minimum rate, not less than: | 19.81 | 21.59 | 23.53 | 25.65 |
| III. SPECIAL WASTEWATER RATES - MONTHLY | | | | |
| Air Conditioning Systems | | | | |
| For systems on flat-rate service, each month during air conditioning season, per ton of system capacity: | 31.61 | 34.45 | 37.56 | 40.94 |
| With water conservation device: | 3.04 | 3.31 | 3.61 | 3.94 |
| Evaporative coolers (commercial establishments), for each month during air conditioning season, unit capacity - per 1,000 cfm, without recirculation | 4.25 | 4.63 | 5.05 | 5.51 |
| With water conservation device, with recirculation: | 1.23 | 1.34 | 1.46 | 1.60 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| Refrigeration systems, for systems on flat-rate service, per compressor horsepower: | 31.61 | 34.45 | 37.56 | 40.94 |
| With water conservation device: | 3.04 | 3.31 | 3.61 | 3.94 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| Dining Facility, each 1,000 sq.ft. or fraction thereof | 24.55 | 26.76 | 29.16 | 31.79 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| Gymnasium, each shower head | 11.33 | 12.34 | 13.46 | 14.67 |
| | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydraulically operated elevator | 97.34 | 106.10 | 115.65 | 126.05 |
| With water conservation device | 17.01 | 18.55 | 20.22 | 22.03 |
| Swimming Pool, non-commercial, per pool capacity | | | | |
| Under 300 cu.ft. (fill & draw) | 0.00 | 0.00 | 0.00 | 0.00 |
| Over 300 cu.ft. (fill & draw), each 100 cu.ft. contents | 4.0936 | 4.4620 | 4.8636 | 5.3013 |
| Under 300 cu.ft. (filtered) | 0.00 | 0.00 | 0.00 | 0.00 |
| Over 300 cu.ft. (filtered), each 100 cu.ft. contents | 1.0600 | 1.1554 | 1.2594 | 1.3728 |
| IV. MONTHLY METERED WASTEWATER USE, UNIT RATE (Per 100 Cu.Ft. of Monthly Metered Water Use) | 1.0002 | 1.0902 | 1.1883 | 1.2953 |

The minimum monthly charge, based on water meter size and monthly metered water use, is set forth below. The minimum charge is the Unit Rate times the maximum monthly metered water use set forth below for each water meter size. Each additional 100 cubic feet of monthly metered water use, or portion thereof, will be billed at the Unit Rate.

| Water Meter Size | Monthly Metered Water Use | | | | | |
|---|---|---|---|---|---|---|
| 5/8" | 0- 1,200 | cu.ft. | 12.00 | 13.08 | 14.26 | 15.54 |
| 3/4" | 0- 1,700 | cu.ft. | 17.00 | 18.53 | 20.20 | 22.02 |
| 1" | 0- 2,100 | cu.ft. | 21.00 | 22.89 | 24.96 | 27.20 |
| 1 1/2" | 0- 3,700 | cu.ft. | 37.01 | 40.34 | 43.97 | 47.92 |
| 2" | 0- 6,200 | cu.ft. | 62.01 | 67.59 | 73.67 | 80.30 |
| 3" | 0- 12,500 | cu.ft. | 125.02 | 136.28 | 148.54 | 161.91 |
| 4" | 0- 21,800 | cu.ft. | 218.03 | 237.66 | 259.04 | 282.36 |
| 6" | 0- 50,000 | cu.ft. | 500.08 | 545.09 | 594.15 | 647.62 |
| 8" | 0- 106,200 | cu.ft. | 1,062.18 | 1,157.78 | 1,261.98 | 1,375.56 |
| 10" | 0- 168,700 | cu.ft. | 1,687.29 | 1,839.14 | 2,004.67 | 2,185.09 |
| 12" | 0- 262,500 | cu. ft. | 2,625.44 | 2,861.73 | 3,119.28 | 3,400.02 |

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# APPENDIX P

Draft Water Shortage Resolution

DRAFT

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**RESOLUTION NO. ____**

Adopted by the Sacramento City Council

**DECLARING WATER SHORTAGE AND IMPLEMENTING STAGE *[1] [2] [3] [4]* OF THE CITY OF SACRAMENTO WATER SHORTAGE CONTINGENCY PLAN**

**BACKGROUND**

A. Article XI of Chapter 13.04 of the Sacramento City Code (Outdoor Water Conservation) specifies outdoor water use limitations and restrictions to promote efficient water use and increase water conservation.

B. City Code section 13.04.910 authorizes the City Council, by Resolution, to declare the existence of a water shortage and impose revised and additional limitations and restrictions on outdoor water use, "in response to any condition necessitating increased water conservation, such as a water shortage due to drought, natural disaster, or other reduction of water supply availability, or as may otherwise be required to protect the public health, safety, and welfare." While the declaration of water shortage remains in effect, no person may use City water in violation of such revised or additional limitations or restrictions.

C. *[Describe condition(s) that necessitate declaration of water shortage]*

D. The City's 2015 Urban Water Management Plan, adopted by the City Council on _____ 2016, includes a Water Shortage Contingency Plan that sets forth four water conservation stages designed to reduce overall water usage during a water shortage as follows:

| Water Conservation Stage | Water Use Reduction Goal |
|---|---|
| Stage 1 | Up to 20% |
| Stage 2 | Up to 30% |
| Stage 3 | Up to 40% |
| Stage 4 | Up to 50% |

DRAFT

E. Each water conservation stage includes specific water conservation measures and water use restrictions designed to conserve water. Implementation of the water conservation stages is cumulative, meaning that implementation of a higher stage assumes implementation of the measures identified in all lower stages. For example, if Stage 2 is to be implemented, all of the provisions in Stage 1 also are included. The measures and restrictions identified for the various stages in the Water Shortage Contingency Plan are provided as guidelines, and the City Council may determine not to impose all listed restrictions and prohibitions, or may impose additional prohibitions and restrictions, in any declaration of water shortage and associated water conservation stage.

**BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE CITY COUNCIL RESOLVES AS FOLLOWS:**

Section 1. Based on the conditions described in Recital C above, the Sacramento City Council hereby declares that a water shortage exists and that water use within the City should be reduced by up to *[10, 20, 30, 40, 50]* percent.

Section 2. That water use reduction described in Section 1 above necessitates implementation of Stage *[1, 2, 3, 4]* of the City's Water Shortage Contingency Plan. The water conservation measures and water use restrictions for Stage *[1, 2, 3, 4]*, described below, are adopted.

Stage 1 includes the following water conservation measures and water use restrictions:

1. The City Manager shall initiate a public information campaign to inform the City's water customers of the need for water conservation and the provisions enacted by this Resolution.

2. The City Manager shall request customers to reduce their water use by 10 to 20 percent. Such request shall include information on practical ways for customers to reduce their water use.

3. The City Manager shall increase the City's water waste patrols to enforce the provisions of Article XI of Chapter 13.04 of the City Code (Outdoor Water Conservation) and this Resolution.

4. Shut-off valves shall be required on all hoses used for irrigation purposes, car washing or other water uses.

5. The irrigation of ornamental turf on public street medians with potable City water is prohibited, except where necessary to address an immediate health and safety need.

Stage 2 includes the following water conservation measures and water use restrictions:

1. All of the provisions of Stage 1 shall be implemented as stated above, unless otherwise modified by these Stage 2 provisions.

DRAFT

2. The City Manager shall intensify the public information campaign to inform the City's water customers of the need for water conservation and the provisions enacted by this Resolution.

3. The City shall further increase its water waste patrols to enforce the provisions of Sacramento Municipal Code, Chapter 13.04 Water Service System, Article XI Water Conservation.

4. Outdoor irrigation shall be limited to two days per week. Locations bearing a street address ending in an odd number shall be permitted to irrigate only on Tuesday and Saturday. Locations bearing a street address ending in an even number shall be permitted to irrigate only on Wednesday or Sunday. There shall be no water irrigation on Mondays, Thursdays, or Fridays.

5. All public water uses not required for health and safety shall be prohibited.

6. Main flushing shall be allowed only for emergency purposes.

Stage 3 includes the following water conservation measures and water use restrictions:

1. All of the provisions of Stages 1 and 2 shall be implemented as stated above, unless otherwise modified by these Stage 3 provisions.

2. The City Manager shall continue the public information campaign to inform the City's water customers of the need for water conservation and the provisions enacted by this Resolution.

3. The City Manager shall intensify the City's leak detection program.

4. Outdoor irrigation shall be limited to one day per week using manual application only. Use of automatic sprinkler systems shall be prohibited. Locations bearing a street address ending in an odd number shall be permitted to irrigate only on Saturday. Locations bearing a street address ending in an even number shall be permitted to irrigate only on Sunday. There shall be no water irrigation on Mondays, Tuesdays, Wednesdays, Thursdays, or Fridays.

5. Car washing shall be prohibited.

Stage 4 includes the following water conservation measures and water use restrictions:

1. All of the provisions of Stages 1, 2, and 3 shall be implemented as stated above, unless otherwise modified by these Stage 4 provisions.

2. The City Manager shall continue the public information campaign to inform the City's water customers of the need for water conservation and the provisions enacted by this Resolution.

3. Outdoor irrigation of residential turf areas shall be prohibited.

DRAFT

Section 3. The water conservation measures and water use restriction described in Section 2 of this Resolution are in addition to the provisions of Article XI of Chapter 13.04 of the City Code (Outdoor Water Conservation); in the event of any conflict between any provision of Article XI and this Resolution, the provisions of this Resolution shall govern while this Resolution remains in effect.

Section 4. The City Manager is authorized and empowered to: (a) establish such rules, regulations, and procedures, and to prepare or furnish such forms, as the City Manager deems necessary or appropriate to carry out the provisions of this Resolution; and (b) delegate the City Manager's authority hereunder to such assistants, deputies, officers, employees, contractors, or agents of the City as the City Manager shall designate.

Section 5. No person shall use, or cause to be used, City water in violation of any of the provisions of this Resolution while the water shortage remains in effect, as specified in City Code § 13.04.870(G).

Section 6. This Resolution shall be effective upon its adoption, and shall remain in effect until rescinded or otherwise modified by subsequent resolution of the City Council.

Section 7. This Resolution shall be published within ten days after its adoption, pursuant to California Water Code § 376(a).

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# APPENDIX Q

CUWCC Annual Reports

DRAFT

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# CUWCC BMP Retail Coverage Report **2013**

## Foundational Best Manegemant Practices for Urban Water Efficiency

### Foundational BMPs

### BMP 1.1 Operation Practices

1002 City of Sacramento - Retail

1. Conservation Coordinator provided with necessary resources to implement BMPs?

Name: William Granger

Title: Water Conservation Administrator

Email: wgranger@cityofsacramento.org

On Track

2. Water Waste Prevention Documents

| WW Document Name | WWP File Name | WW Prevention URL | WW Prevention Ordinance Terms Description |
|---|---|---|---|
| Option A Describe the ordinances or terms of service adopted by your agency to meet the water waste prevention requirements of this BMP. | | | The City of Sacramento's Water Waste ordinance restricts watering to three days a week between March and November (tied to daylight savings time), and then decreases to 1x/week between Nov and March. Fines exist for receiving NOVs with a 12 mo period |
| Option B Describe any water waste prevention ordinances or requirements adopted by your local jurisdiction or regulatory agencies within your service area. | | | |
| Option C Describe any documentation of support for legislation or regulations that prohibit water waste. | | | |
| Option D Describe your agency efforts to cooperate with other entities in the adoption or enforcement of local requirements consistent with this BMP. | | | |
| Option E Describe your agency support positions with respect to adoption of legislation or regulations that are consistent with this BMP. | | | |
| Option F Describe your agency efforts to support local ordinances that establish permits requirements for water efficient design in new development. | | | |

CUWCC BMP Retail Coverage Report **2013**

Foundational Best Manegemant Practices for Urban Water Efficiency

Foundational BMPs

BMP 1.1 Operation Practices

| |
|---|
| **On Track** |

# BMP1.1 Operation Practices - Retail Only 2013

| | | | |
|---|---|---|---|
| Agency name: | City of Sacramento | Reporting unit number: | |
| Reporting unit name (District name) | City of Sacramento - Retail | | 1002 |

Conservation Coordinator: **Yes**

## Contact Information

| | |
|---|---|
| First Name: | William |
| Last Name: | Granger |
| Title: | Water Conservation Administrator |
| Phone: | 916-808-1417 |
| Email: | wgranger@cityofsacramento.org |

## Water Waste Prevention

Option A Describe the ordinances or terms of service adopted by your agency to meet the water waste prevention requirements of this BMP.

| | |
|---|---|
| File Name: | |
| URL: | |

Description:

The City of Sacramento's Water Waste ordinance restricts watering to three days a week between March and November (tied to daylight savings time), and then decreases to 1x/week between Nov and March. Fines exist for receiving NOVs with a 12 mo period

Comments:

# BMP1.1 Operation Practices - Retail Only 2013

| | | | |
|---|---|---|---|
| Agency name: | City of Sacramento | Reporting unit number: | |
| Reporting unit name (District name) | City of Sacramento - Retail | | 1002 |

Conservation Coordinator: **Yes**

## Contact Information

| | |
|---|---|
| First Name: | William |
| Last Name: | Granger |
| Title: | Water Conservation Administrator |
| Phone: | 916-808-1417 |
| Email: | wgranger@cityofsacramento.org |

## Water Waste Prevention

Option B Describe any water waste prevention ordinances or requirements adopted by your local jurisdiction or regulatory agencies within your service area.

| | |
|---|---|
| File Name: | |
| URL: | |

Description:

Comments:

# BMP1.1 Operation Practices - Retail Only 2013

| | | | |
|---|---|---|---|
| Agency name: | City of Sacramento | Reporting unit number: | |
| Reporting unit name (District name) | City of Sacramento - Retail | | 1002 |

Conservation Coordinator: **Yes**

## Contact Information

| | |
|---|---|
| First Name: | William |
| Last Name: | Granger |
| Title: | Water Conservation Administrator |
| Phone: | 916-808-1417 |
| Email: | wgranger@cityofsacramento.org |

## Water Waste Prevention

Option C Describe any documentation of support for legislation or regulations that prohibit water waste.

| | |
|---|---|
| File Name: | |
| URL: | |

Description:

Comments:

# BMP1.1 Operation Practices - Retail Only 2013

| | | | |
|---|---|---|---|
| Agency name: | City of Sacramento | Reporting unit number: | |
| Reporting unit name (District name) | City of Sacramento - Retail | | 1002 |

Conservation Coordinator: **Yes**

## Contact Information

| | |
|---|---|
| First Name: | William |
| Last Name: | Granger |
| Title: | Water Conservation Administrator |
| Phone: | 916-808-1417 |
| Email: | wgranger@cityofsacramento.org |

## Water Waste Prevention

Option D Describe your agency efforts to cooperate with other entities in the adoption or enforcement of local requirements consistent with this BMP.

| | |
|---|---|
| File Name: | |
| URL: | |

Description:

Comments:

# BMP1.1 Operation Practices - Retail Only 2013

| | | | |
|---|---|---|---|
| Agency name: | City of Sacramento | Reporting unit number: | |
| Reporting unit name (District name) | City of Sacramento - Retail | | 1002 |

Conservation Coordinator: **Yes**

## Contact Information

| | |
|---|---|
| First Name: | William |
| Last Name: | Granger |
| Title: | Water Conservation Administrator |
| Phone: | 916-808-1417 |
| Email: | wgranger@cityofsacramento.org |

## Water Waste Prevention

Option E Describe your agency support positions with respect to adoption of legislation or regulations that are consistent with this BMP.

| | |
|---|---|
| File Name: | |
| URL: | |

Description:

Comments:

# BMP1.1 Operation Practices - Retail Only 2013

| | | | |
|---|---|---|---|
| Agency name: | City of Sacramento | Reporting unit number: | |
| Reporting unit name (District name) | City of Sacramento - Retail | | 1002 |

Conservation Coordinator: **Yes**

## Contact Information

| | |
|---|---|
| First Name: | William |
| Last Name: | Granger |
| Title: | Water Conservation Administrator |
| Phone: | 916-808-1417 |
| Email: | wgranger@cityofsacramento.org |

## Water Waste Prevention

Option F Describe your agency efforts to support local ordinances that establish permits requirements for water efficient design in new development.

| | |
|---|---|
| File Name: | |
| URL: | |

Description:

Comments:

# CUWCC BMP Coverage Report 2013

## Foundational Best Management Practices For Urban Water Efficiency

### Foundational BMPs

### BMP 1.2 Water Loss Control

1002 City of Sacramento - Retail

| | | |
|---|---|---|
| Completed Standard Water Audit Using AWWA Software? | **Yes** | **On Track** |
| AWWA File provided to CUWCC? | **No** | |

**City of Sacramento - Retail BMP1.2 FY13**

AWWA Water Audit Validity Score?

Complete Training in AWWA Audit Method

Complete Training in Component Analysis Process?

CompComponent Analysis?

Repaired all leaks and breaks to the extent cost effective?

Locate and Repar unreported leaks to the extent cost effective?

Maintain a record keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair.

Provided 7 Types of Water Loss Control Info

| Leaks Repars | Value Real Losses | Value Apparent Losses | Miles Surveyed | Press Reduction | Cost Of Interventions | Water Saved (AF) |
|---|---|---|---|---|---|---|
| 252 | 1000107 | 126360 | 242.8 | | 200000 | 4.5 |

**On Track**

At Least As Effective As

In lieau of an active leak detection program, the City has opted to replace 1% of distribution system lines each year. Lines are replaced based on age and other asset management factors. Attached documentation shows the reduction in main breaks due to 1002 City of Sacramento - Retail BMP 1.2 Results from Main Replacement Program.

We encourage them every year to join.

BMP 1.2 Water Loss Control

**2013**

Agency name: City of Sacramento

Reporting unit name (District name): City of Sacramento - Retail

Reporting unit number: 1002

## AWWA Water Audit

Agency to complete a Water Audit & Balance Using The AWWA Software: Yes

Water Audit Validity Score from AWWA spreadsheet: 72

Email to office@cuwcc.org - Worksheets (AWWA Water Audit). Enter the name of the file below:

Agency Completed Training In The AWWA Water Audit Method: Yes

Agency Completed Training In The Component Analysis Process: Yes

Completed/Updated the Component Analysis (at least every 4 years)? Yes

Component Analysis Completed/Updated Date: 11/29/2012 12:00:00 AM

## Water Loss Performance

Agency Repaired All Reported Leaks & Breaks To The Extent Cost Effective: No

**Recording Keeping Requirements:**

- Date/Time Leak Reported
- Type of Leaking Pipe Segment or Fitting
- Leak Volume Estimate
- Leak Location
- Leak Running Time From Report to Repair
- Cost of Repair

Agency Located and Repaired Unreported Leaks to the Extent Cost Effective: Yes

Type of Program Activities Used to Detect Unreported Leaks

We have a 2 person leak detection crew that investigates for leaks in our system and then submits work orders to have those leaks repaired.

Does your agency maintain in-house records of audit results or the completed AWWA worksheet for the completed audit which could be forwarded to CUWCC? No

Does your agency keeps records of each component analysis performed, and incorporates results into future annual standard water balances? Yes

## Annual Summary Information

Complete the following table with annual summary information (required for reporting years 2-5 only)

| Total Leak 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) |
|---|---|---|---|---|---|---|
| 252 | 1000107 | 126360 | 242.8 | | 200000 | 4.5 |

Comments:

# CUWCC BMP Coverage Report 2013

Foundational Best Manegemant Practices for Urban Water Efficiency

## Foundational BMPs

## BMP 1.3 Metering With Commodity

| | |
|---|---|
| 1002 | City of Sacramento - Retail |

| | | |
|---|---|---|
| Numbered Unmetered Accounts | Yes | **Not On Track** |
| Metered Accounts billed by volume of use | Yes | **On Track** |
| Number of CII Accounts with Mixed Use Meters | | |
| Conducted a feasibility study to assess merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? | No | **Not On Track** |
| Feasibility Study provided to CUWCC? | No | **Not On Track** |
| Completed a written plan, policy or program to test, repair and replace meters | Yes | **On Track** |

At Least As Effective As **No**

## BMP 1.3 Metering With Commodity

## 2013

Agency name: City of Sacramento

Reporting unit number:

Reporting unit name (District name): City of Sacramento - Retail

1002

### Implementation

Does your agency have any unmetered service connections? Yes

If YES, has your agency completed a meter retrofit plan? Yes

Enter the number of previously unmetered accounts fitted with meters during reporting year: 219

Are all new service connections being metered? Yes

Are all new service connections being billed volumetrically? Yes

Has your agency completed and submitted electronically to the Council a written plan, policy or program to test, repair and replace meters? Yes

### Meters Matrix

Error: Subreport could not be shown.

Number of CII Accounts with Mixed-use Meters

Number of CII Accounts with Mixed-use Meters Retrofitted with Dedicated Irrigation Meters during Reporting Period

### 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? No

If YES, please fill in the following information:

A. When was the Feasibility Study conducted

1/1/0001 12:00:00 AM

B. Describe,

upload or provide an electronic link to the Feasibility Study Upload File

Comments:

Please see the attached letter.

City of
SACRAMENTO
Department of Utilities

August 5, 2015

Greg Weber
California Urban Water Conservation Council
716 10th Street, Suite 200
Sacramento, CA 95814

Re: BMP Exemption Claim Submittal (BMPs 1.3 and 1.4) for Reporting Years 2014-15, 2015-16 and 2016-17

Dear Mr. Weber:

The City of Sacramento Department of Utilities is claiming an exemption for Best Management Practices (BMPs) 1.3 and 1.4, pursuant to the CUWCC Memorandum of Understanding (MOU), for fiscal years 2014-15, 2015-16 and 2016-17. This exemption is based on existing local conditions that affect implementation of these BMPs, as described below.

BMP 1.3 and BMP 1.4 Exemption

As of May 2015, 62 percent (approximately 84,000) of the City's water accounts are metered. The City has approximately 51,000 service connections without meters. Given this, the City is unable to currently satisfy the coverage requirements for Metering with Commodity Rates for All New/Retrofit of Existing Connections (BMP 1.3), and Conservation Pricing (BMP 1.4).

The City of Sacramento embarked on a significant capital intensive Water Meter Program in 2005, and on February 24, 2015, the City Council approved an acceleration of the Water Meter Program in response to the drought. This program will bring meter installations throughout the City to 100% completion by the end of second quarter of fiscal year 2020-21, significantly earlier than the City's previous plans to complete the program on or before AB 2572's January 1, 2025 deadline. Under this accelerated schedule the City will achieve over 90% completion within the first three years of the accelerated program, as indicated below in Table 1 below.

**Table 1. Accelerated Meter Installation Schedule**

| Year | Meters installed per year | % Completion |
|---|---|---|
| FY 2016-17 | 10,194 | 70% |
| FY 2017-18 | 24,835 | 88% |
| FY 2018-19 | 7,192 | 93% |
| FY 2019-20 | 4,490 | 97% |
| FY 2020-21 | 4,490 | 100% |
| **Total** | **51,201** | |

This is an aggressive schedule for completion of meter retrofits that will require approval of water rate adjustments for FYs 2017-2020, as funding currently budgeted and available to install water meters is only sufficient for completion of meter installations planned for FY 2016. The City also has diligently

City of Sacramento Department of Utilities
916-808-1400
1395 35th Avenue
Sacramento, CA 95822

sought and received federal/state grant funding for meter installation, and continues to pursue grant funding wherever possible, but the lion's share of funding for the City's accelerated meter installation program necessarily comes from water rate revenues, and no other funding source is reasonably available. Assuming the approval of water rate adjustments needed to fund the City's planned acceleration of meter installation, the City expects to be over 90% metered in 2018, as noted. Until such time as the City is substantially metered, full compliance with BMPs 1.3 and 1.4 is not possible.

The City of Sacramento has committed to ongoing analysis of rate structures to increase water use efficiency and comply with guiding laws and best practices. In 2014, the City retained RFC Inc. to complete a study of alternative conservation pricing structures and to identify the advantages and disadvantages of such structures. The study provided a preliminary assessment of the existing volumetric charges, and identified potential alternatives. Based on the results, and given the need to meet cost-of-service requirements as underscored in the recent *San Juan Capistrano* decision, the City has determined that additional analysis is necessary to perform a thorough cost-of-service analysis, determine the most effective method to engage stakeholders, and ultimately provide final recommendations for a legally-defensible water rate structure for future adoption. A component of this next rate study will include the feasibility of the implementation of a tiered water rate structure that meets the dictates of the *San Juan Capistrano* decision, in 2018, when water meter installation will be over 90% completed as noted above. City staff will continue to provide ongoing updates to the City's Utilities Rate Advisory Commission and City Council on possible conservation rate strategies and timelines. As more meters are installed, the City will monitor water usage characteristics of residential customers to ensure any new water rate structure is fair to customers and adequately recovers costs.

With respect to establishing wastewater rates based on metered water usage (BMP 1.4), the City already has metered wastewater rates for some nonresidential customers. The City intends to evaluate the feasibility of expanding metered wastewater rates to residential customers once substantially all of the City's residential water service customers are metered.

Conservation Progress

Despite the number of unmetered water service accounts that limit the City's current coverage requirements with regard to BMP 1.3 and 1.4, the City will be following the GPCD compliance option for its future BMP reports, and is fully committed to meeting its 20% by 2020 requirement. In fact, the City's current water usage level is well below that target.

- On October 29, 2013, the City Council adopted the City of Sacramento's Water Conservation Plan, which outlines the approach to be taken that will allow the City to successfully remain below its 2020 target of 233 GPCD.
- As California experiences its fourth year of unprecedented drought conditions, the City of Sacramento is in its second year of declared water shortage conditions and has enacted significant conservation activities to reduce water demands. Through this aggressive conservation effort, the City of Sacramento achieved a GPCD usage level of 179 in calendar year 2014, and currently is on track to exceed that reduction in 2015 and exceed the State Water Resources Control Board's drought reduction mandate.

City of
SACRAMENTO
Department of Utilities

- The City continues to aggressively pursue funding opportunities so that it can speed meter installations to support conservation efforts in the state and minimize the program's financial burden on ratepayers.
- The City expects to spend approximately $249 Million on the meter installation program over the next five years.

Please contact William Granger, Water Conservation Administrator, at 916.808.1417 to assist you with further questions or information.

Sincerely,

William O. Busath
Director, Department of Utilities

City of Sacramento Department of Utilities
916-808-1400
1395 35th Avenue
Sacramento, CA 95822

# CUWCC BMP Coverage Report 2013

Foundational Best Manegemant Practices for Urban Water Efficiency

## Foundational BMPs

## BMP 1.4 Retail Consrvation Pricing

1002 City of Sacramento - Retail

Implementation (Water Rate Structure)

Implementation Option: Use Annual Revenue As Reported

Agency Provide Sewer Service: No

At Least As Effective As **No**

## BMP 1.4 Retail Conservation Pricing

**2013**

Agency name: City of Sacramento

Reporting unit number: 1002

Reporting unit name (District name): City of Sacramento - Retail

### Implementation (Water Rate Structure)

Enter the Water Rate Structures that are assigned to the majority of your customers, by customer class

### Implementation (Conservation Pricing Option)

- [ ] Use Annual Revenue As Reported
- [ ] Use CWWA Rate Design Model
- [ ] Use 3 years average instead of most recent year

### Retail Waste Water (Sewer) Rate Structure by Customer Class

Agency Provide Sewer Service: No

Select the Retail Waste Water (Sewer) Rate Structure assigned to the majority of your customers within a specific customer class.

Comments:

# CUWCC BMP Coverage Report 2013

Foundational Best Manegemant Practices for Urban Water Efficiency

## Foundational BMPs

## BMP 2.1 Public Outreach

1002 City of Sacramento - Retail Retail Only

Does a wholesale Agency implement Public Outreach Programs? Yes

List of wholesale Agencies

| | Public Outreach Program List | Number |
|---|---|---|
| | Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets | 135000 |
| | Website | 10000 |
| | Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets | 135000 |
| | General water conservation information | 181000 |
| | General water conservation information | 181000 |
| | Email Messages | 6875 |
| | **Total** | **648875** |

**On Track**

| | Number Media Contacts | Number |
|---|---|---|
| | News releases | 50 |
| | News releases | 50 |
| | Television contacts | 3 |
| | Radio contacts | 2 |
| | **Total** | **105** |

**On Track**

An actively maintained website that is updated regularly (minimum = 4 times per year, i.e., at least quarterly) Yes

| | Annual Budget Category | Annual Budget Amount |
|---|---|---|
| | Public Outreach | 100000 |
| | **Total Amount:** | **100000** |

**On Track**

Description of all other Public Outreach programs

Twice a year we update our watering schedule, as it changes with daylight savings time. We also add updates to our website when there is a Spare the Water alert, which is when there are expected to be three of more days when it exceeds 100 degrees.

**On Track**

| Public Outreah Additional Programs |
|---|
| Dept of Utilities Facebook page |

**CUWCC BMP Coverage Report 2013**

Foundational Best Manegemant Practices for Urban Water Efficiency

Foundational BMPs

BMP 2.1 Public Outreach

At Least As Effective As **No**

## BMP 2.1 Public Outreach

## 2013

Agency name: City of Sacramento

Reporting unit # 1002

Reporting unit name (District name): City of Sacramento - Retail / Retail Only

Does a wholesale Agency implement Public Outreach Programs? Yes

List of wholesale Agencies

Please provide the name of Agency if not CUWCC Group1 members

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 duringeach quarter of the reporting year? Yes

**Public Information Programs List**

| Number of Public Contacts | Public Information Programs Name | |
|---|---|---|
| 135000 | Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets | |
| 10000 | Website | |
| 135000 | Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets | |
| 181000 | General water conservation information | |
| 181000 | General water conservation information | |
| 6875 | Email Messages | |

**Contact with the Media**

Does a wholesale Agency implement Public Outreach Programs? Yes

List of wholesale Agencies

Please provide the name of Agency if not CUWCC Group1 members

OR Retail Agency (Contacts with the Media)

Did at least one contact take place during each quarter of the reporting year? Yes

**Media Contacts List**

| Number of Media Contacts | Public Outreach Media Contact Name List | |
|---|---|---|
| 50 | News releases | |
| 50 | News releases | |
| 3 | Television contacts | |
| 2 | Radio contacts | |

## BMP 2.1 Public Outreach

## 2013

Does a wholesale Agency implement Public Outreach Programs? No

List of wholesale Agencies

Please provide the name of Agency if not CUWCC Group1 members

Is Your Agency Performing Website Updates?

| | |
|---|---|
| Enter your agency's URL (website address): | www.sparesacwater.org and RWA's www.bewatersmart.info |
| Describe a minimum of four water conservationrelated updates to your agency's website thattook place during the year: | Twice a year we update our watering schedule, as it changes with daylight savings time. We also add updates to our website when there is a Spare the Water alert, which is when there are expected to be three of more days when it exceeds 100 degrees. |

Did at least one Website Update take place duringeach quarter of the reporting year? Yes

**Public Outreach Annual Budget**

Enter budget for public outreach programs. You may enter total budget in a single line or brake the budget into discretecategories by entering many rows. Please indicate if personnel costs are included in the entry.

| Annual Budget Category | Annual Budget Amount | Personal Cost Included? | Comments | |
|---|---|---|---|---|
| Public Outreach | 100000 | | Outreach budget before WC Plan was approved | |

**Public Outreach Expenses**

Enter expenses for public outreach programs. Please include the same kind of expenses you included in the question relatedto 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.

| Public Outreach Expense Category | Expense Amount | Personal Cost Included? | |
|---|---|---|---|
| bill insert creation and printing | 5000 | | |
| Public Relations | 95000 | | |

**Additional Public Information Program**

Please report additional public information contacts. List these additional contacts in order of howyour agency views their importance / effectiveness with respect to conserving water, with the mostimportant/ effective listed first (where 1 = most important).

Were there additional Public Outreach efforts? Yes

**Public Outreach Additional Information**

| Public Information Additional Programs | Importance | |
|---|---|---|
| Dept of Utilities Facebook page | 2 | |

**Social Marketing Programs**

**Branding**

## BMP 2.1 Public Outreach

## 2013

Does your agency have a water conservation"brand," "theme" or mascot? Yes

Describe the brand, theme or mascot. We partner with the Regional Water Authority but also had our own Spare Sacramento Water branding.

**Market Research**

Have you sponsored or participated inmarket research to refine your message? Yes

Market Research Topic: Through RWA's efforts

Brand Message: "Be Water Smart:" use water wisely/"Blue Thumb:" use water efficiently outdoors

Brand Mission Statement:

**Community Committees**

Do you have a community conservationcommittee? Yes

Enter the names of the community committees: Sacramento Water Conservation Advisory Group, Water Conservation Ambassadors

**Training**

| Training Type | Number of Trainings | Number of Attendees | Description of Other |
|---|---|---|---|
| 1 | 2 | 53 | Green Gardener Professional Classes |

**Social Marketing Expenditures**

**Public Outreach Social Marketing Expenses**

**Partnering Programs - Partners**

| Name | Type of Program |
|---|---|
| CLCA? | |
| Green Building Programs? | |
| Master Gardeners? | |
| Cooperative Extension? | |
| Local Colleges? | |
| Other | |

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**

## BMP 2.1 Public Outreach

## 2013

| | |
|---|---|
| Describe other utilities your agency partners with, including electrical utilities | Partnership with the Regional Water Authority's Blue Thumb Campaign |

**Conservation Gardens**

| | |
|---|---|
| Describe water conservation gardens at your agency or other high traffic areas or new homes | We have a water conservation demonstration garden outside our Water Conservation office at 2260 Glen Ellen Circle. The garden was planted in 2010. |

**Landscape contests or awards**

| | |
|---|---|
| Describe water wise landscape contest or awards program conducted by your agency | |
| Additional Programs supported by Agency but not mentioned above: | |

Comments

# CUWCC BMP Coverage Report 2013

Foundational Best Manegemant Practices for Urban Water Efficiency

## Foundational BMPs

## BMP 2.2 School Education Programs

1002 City of Sacramento - Retail — Retail Only

Does a wholesale Agency implement School Education Programs? Yes

List of wholesale Agencies

Materials meet state education framework requirements and are grade-level appropriate? Yes

Curriculum materials developed and/or provided by Agency:

In addition to the same material provided in 2011, A high school newspaper supplement called Living Rivers of the Sacramento Valley was created and distributed through a partnership between the RWA and US Bureau of Reclamation

Materials Distributed to K-6? Yes

Describe K-6 Materials

Materials are the same as what was provided in 2011.

Materials distributed to 7-12 students? Yes (Info Only)

Annual budget for school education program: 31000.00

Description of all other water supplier education programs

In addition to the same material provided in 2011, A high school newspaper supplement called Living Rivers of the Sacramento Valley was created and distributed through a partnership between the RWA and US Bureau of Reclamation Materials are the same as what was provided in 2011. Project WET (Water Education for Teachers) workshop for K-12 educators is sponsored by RWA and Bureau of Reclamation. The activities of each program are designed to enhance current curriculum and are aligned with CA Standards. 1 class, 25 attendees Video Contest

**On Track**

At Least As Effective As **No**

# WMP 2.2 School Education Programs
## 2013

School Education Programs

1002 City of Sacramento - Retail

Retail Only

Does a wholesale Agency implement School Education Programs? Yes

List of wholesale Agencies

Please provide the name of Agency if not FORTECH Group1 members

| | | | |
|---|---|---|---|
| V | Materials meet state education framework requirements? | Description | In addition to the same material provided in 2011, A high school newspaper supplement called Living Rivers of the Sacramento Valley was created and distributed through a partnership between the RWA and US Bureau of Reclamation |
| V | Materials distributed to K-6 Students? | Description | Materials are the same as what was provided in 2011. |
| | Number of students reached | 7381 | |
| V | Materials distributed to 7-12 Students? (optional) | Description | the Water Spots Video Contest was created to encourage young film makers in grades 9-12 to create a short public service announcement about water conservation |
| | Annual budget for school education program | 31000.00 | |

Description of all other water supplier educationprograms: Project WET (Water Education for Teachers) workshop for K-12 educators is sponsored by RWA and Bureau of Reclamation. The activities of each program are designed to enhance current curriculum and are aligned with CA Standards. 1 class, 25 attendees

School Programs Activities

Classroom Presentation:

Number of presentation: 12 Number of attendees: 60

Describe the topics covered in your classroom presentations: Regional Water Authority provided a judge for this event. Sac City Unified's groundbreaking Project Green adds a real-world application to classroom instruction about the environment and sustainable living. 5 or more students presented.

Large group assemblies:

Number of presentation: Number of attendees:

Children's water festivals or other events:

Number of presentation: Number of attendees:

Cooperative efforts with existing science/water education programs (various workshops, science fair awardsor judging) and follow-up:

Number of presentation: Number of attendees:

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:

## WMP 2.2 School Education Programs
## 2013

Water conservation contests such as poster and photo:

Description | Number of participants

Offer monetary awards/funding or scholarships to students:

Number offered | Total funding

Teacher training workshops:

Number of presentation: 1 | Number of attendees: 20

Fund and/or staff student field trips to treatment facilities, recycling facilities, water conservation gardens,etc.:

Number of tours or fieldtrips | Number of participants

College internships in water conservation offered:

Number of internship | Total funding

Career Fairs / Workshops:

Number of presentation | Number of attendees

Additional program(s) supported by agency but not mentioned above:

| Description | Number of events | Number of participants |
|---|---|---|
| | | |

Comments

## CUWCC BMP Coverage Report 2013

1002 City of Sacramento - Retail

**GPCD in 2006:** 274.67

GPCD in 2013

**GPCD Target for 2018:** 265.80

**Biennial GPCD Compliance Table** **ON TRACK**

| | | Target | | Highest Acceptable Bound | |
|---|---|---|---|---|---|
| Year | Report | % Base | GPCD | % Base | GPCD |
| 2010 | 1 | 96.4% | **270.90** | 100% | **281.00** |
| 2012 | 2 | 92.8% | **260.70** | 96.4% | **270.90** |
| 2014 | 3 | 89.2% | **250.60** | 92.8% | **260.70** |
| 2016 | 4 | 85.6% | **240.50** | 89.2% | **250.60** |
| 2018 | 5 | 82.0% | **265.80** | 82.0% | **230.40** |

1002 City of Sacramento - Retail

**GPCD in 2006:**

GPCD in 2013

**GPCD Target for 2018:**

**Biennial GPCD Compliance Table** **ON TRACK**

| | | Target | | Highest Acceptable Bound | |
|---|---|---|---|---|---|
| Year | Report | % Base | GPCD | % Base | GPCD |
| 2010 | 1 | 96.4% | | 100% | |
| 2012 | 2 | 92.8% | | 96.4% | |
| 2014 | 3 | 89.2% | | 92.8% | |
| 2016 | 4 | 85.6% | | 89.2% | |
| 2018 | 5 | 82.0% | | 82.0% | |

## CUWCC BMP Coverage Report 2013

1002 City of Sacramento - Retail

**GPCD in 2006:**

GPCD in 2013

**GPCD Target for 2018:**

**Biennial GPCD Compliance Table**

**ON TRACK**

| | | Target | | Highest Acceptable Bound | |
|---|---|---|---|---|---|
| Year | Report | % Base | GPCD | % Base | GPCD |
| 2010 | 1 | 96.4% | | 100% | |
| 2012 | 2 | 92.8% | | 96.4% | |
| 2014 | 3 | 89.2% | | 92.8% | |
| 2016 | 4 | 85.6% | | 89.2% | |
| 2018 | 5 | 82.0% | | 82.0% | |

1002 City of Sacramento - Retail

**GPCD in 2006:**

GPCD in 2013

**GPCD Target for 2018:**

**Biennial GPCD Compliance Table**

**ON TRACK**

| | | Target | | Highest Acceptable Bound | |
|---|---|---|---|---|---|
| Year | Report | % Base | GPCD | % Base | GPCD |
| 2010 | 1 | 96.4% | | 100% | |
| 2012 | 2 | 92.8% | | 96.4% | |
| 2014 | 3 | 89.2% | | 92.8% | |
| 2016 | 4 | 85.6% | | 89.2% | |
| 2018 | 5 | 82.0% | | 82.0% | |

## CUWCC BMP Coverage Report 2013

1002 City of Sacramento - Retail

**GPCD in 2006:**

GPCD in 2013

**GPCD Target for 2018:**

**Biennial GPCD Compliance Table**

**ON TRACK**

| | | Target | | Highest Acceptable Bound | |
|---|---|---|---|---|---|
| Year | Report | % Base | GPCD | % Base | GPCD |
| 2010 | 1 | 96.4% | | 100% | |
| 2012 | 2 | 92.8% | | 96.4% | |
| 2014 | 3 | 89.2% | | 92.8% | |
| 2016 | 4 | 85.6% | | 89.2% | |
| 2018 | 5 | 82.0% | | 82.0% | |

1002 City of Sacramento - Retail

**GPCD in 2006:**

GPCD in 2013

**GPCD Target for 2018:**

**Biennial GPCD Compliance Table**

**ON TRACK**

| | | Target | | Highest Acceptable Bound | |
|---|---|---|---|---|---|
| Year | Report | % Base | GPCD | % Base | GPCD |
| 2010 | 1 | 96.4% | | 100% | |
| 2012 | 2 | 92.8% | | 96.4% | |
| 2014 | 3 | 89.2% | | 92.8% | |
| 2016 | 4 | 85.6% | | 89.2% | |
| 2018 | 5 | 82.0% | | 82.0% | |

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# CUWCC BMP Retail Coverage Report **2014**

## Foundational Best Manegemant Practices for Urban Water Efficiency

### Foundational BMPs

### BMP 1.1 Operation Practices

1002 City of Sacramento - Retail

1. Conservation Coordinator provided with necessary resources to implement BMPs?

| | |
|---|---|
| Name: | William Granger |
| Title: | Water Conservation Administrator |
| Email: | wgranger@cityofsacramento.org |

On Track

2. Water Waste Prevention Documents

| WW Document Name | WWP File Name | WW Prevention URL | WW Prevention Ordinance Terms Description |
|---|---|---|---|
| Option A Describe the ordinances or terms of service adopted by your agency to meet the water waste prevention requirements of this BMP. | | http://www.cityofsacramento.org/utilities/conservation | Excessive watering or watering on the wrong days and times is prohibited. Fines doubled with City Council declaring a stage 2 drought on January 14, 2014. |
| Option B Describe any water waste prevention ordinances or requirements adopted by your local jurisdiction or regulatory agencies within your service area. | | | |
| Option C Describe any documentation of support for legislation or regulations that prohibit water waste. | | | |
| Option D Describe your agency efforts to cooperate with other entities in the adoption or enforcement of local requirements consistent with this BMP. | | | |
| Option E Describe your agency support positions with respect to adoption of legislation or regulations that are consistent with this BMP. | | | |
| Option F Describe your agency efforts to support local ordinances that establish permits requirements for water efficient design in new development. | | | |

**On Track**

# BMP1.1 Operation Practices - Retail Only 2014

| | | | |
|---|---|---|---|
| Agency name: | City of Sacramento | Reporting unit number: | |
| Reporting unit name (District name) | City of Sacramento - Retail | | 1002 |

Conservation Coordinator: **Yes**

## Contact Information

| | |
|---|---|
| First Name: | William |
| Last Name: | Granger |
| Title: | Water Conservation Administrator |
| Phone: | 916-808-1417 |
| Email: | wgranger@cityofsacramento.org |

## Water Waste Prevention

Option A Describe the ordinances or terms of service adopted by your agency to meet the water waste prevention requirements of this BMP.

| | |
|---|---|
| File Name: | |
| URL: | http://www.cityofsacramento.org/utilities/conservation |

Description:

Excessive watering or watering on the wrong days and times is prohibited. Fines doubled with City Council declaring a stage 2 drought on January 14, 2014.

Comments:

# BMP1.1 Operation Practices - Retail Only 2014

| | | | |
|---|---|---|---|
| Agency name: | City of Sacramento | Reporting unit number: | |
| Reporting unit name (District name) | City of Sacramento - Retail | | 1002 |

Conservation Coordinator: **Yes**

## Contact Information

| | |
|---|---|
| First Name: | William |
| Last Name: | Granger |
| Title: | Water Conservation Administrator |
| Phone: | 916-808-1417 |
| Email: | wgranger@cityofsacramento.org |

## Water Waste Prevention

Option B Describe any water waste prevention ordinances or requirements adopted by your local jurisdiction or regulatory agencies within your service area.

| | |
|---|---|
| File Name: | |
| URL: | |

Description:

Comments:

# BMP1.1 Operation Practices - Retail Only 2014

| | | | |
|---|---|---|---|
| Agency name: | City of Sacramento | Reporting unit number: | |
| Reporting unit name (District name) | City of Sacramento - Retail | | 1002 |

Conservation Coordinator: **Yes**

## Contact Information

| | |
|---|---|
| First Name: | William |
| Last Name: | Granger |
| Title: | Water Conservation Administrator |
| Phone: | 916-808-1417 |
| Email: | wgranger@cityofsacramento.org |

## Water Waste Prevention

Option C Describe any documentation of support for legislation or regulations that prohibit water waste.

| | |
|---|---|
| File Name: | |
| URL: | |

Description:

Comments:

# BMP1.1 Operation Practices - Retail Only 2014

| | | | |
|---|---|---|---|
| Agency name: | City of Sacramento | Reporting unit number: | |
| Reporting unit name (District name) | City of Sacramento - Retail | | 1002 |

Conservation Coordinator: **Yes**

## Contact Information

| | |
|---|---|
| First Name: | William |
| Last Name: | Granger |
| Title: | Water Conservation Administrator |
| Phone: | 916-808-1417 |
| Email: | wgranger@cityofsacramento.org |

## Water Waste Prevention

Option D Describe your agency efforts to cooperate with other entities in the adoption or enforcement of local requirements consistent with this BMP.

| | |
|---|---|
| File Name: | |
| URL: | |

Description:

Comments:

# BMP1.1 Operation Practices - Retail Only 2014

| | | | |
|---|---|---|---|
| Agency name: | City of Sacramento | Reporting unit number: | |
| Reporting unit name (District name) | City of Sacramento - Retail | | 1002 |

Conservation Coordinator: **Yes**

## Contact Information

| | |
|---|---|
| First Name: | William |
| Last Name: | Granger |
| Title: | Water Conservation Administrator |
| Phone: | 916-808-1417 |
| Email: | wgranger@cityofsacramento.org |

## Water Waste Prevention

Option E Describe your agency support positions with respect to adoption of legislation or regulations that are consistent with this BMP.

| | |
|---|---|
| File Name: | |
| URL: | |

Description:

Comments:

# BMP1.1 Operation Practices - Retail Only 2014

| | | | |
|---|---|---|---|
| Agency name: | City of Sacramento | Reporting unit number: | |
| Reporting unit name (District name) | City of Sacramento - Retail | | 1002 |

Conservation Coordinator: **Yes**

## Contact Information

| | |
|---|---|
| First Name: | William |
| Last Name: | Granger |
| Title: | Water Conservation Administrator |
| Phone: | 916-808-1417 |
| Email: | wgranger@cityofsacramento.org |

## Water Waste Prevention

Option F Describe your agency efforts to support local ordinances that establish permits requirements for water efficient design in new development.

| | |
|---|---|
| File Name: | |
| URL: | |

Description:

Comments:

# CUWCC BMP Coverage Report 2014

## Foundational Best Management Practices For Urban Water Efficiency

### Foundational BMPs

### BMP 1.2 Water Loss Control

1002 City of Sacramento - Retail

| | | |
|---|---|---|
| Completed Standard Water Audit Using AWWA Software? | **Yes** | **On Track** |
| AWWA File provided to CUWCC? | **No** | |

**City of Sacramento - Retail BMP1.2 FY14**

AWWA Water Audit Validity Score?

Complete Training in AWWA Audit Method

Complete Training in Component Analysis Process?

CompComponent Analysis?

Repaired all leaks and breaks to the extent cost effective?

Locate and Repar unreported leaks to the extent cost effective?

Maintain a record keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair.

Provided 7 Types of Water Loss Control Info

| Leaks Repars | Value Real Losses | Value Apparent Losses | Miles Surveyed | Press Reduction | Cost Of Interventions | Water Saved (AF) |
|---|---|---|---|---|---|---|
| 241 | 763101 | 120609 | 650.4 | | 400000 | 27.1 |

**On Track**

At Least As Effective As

In lieau of an active leak detection program, the City has opted to replace 1% of distribution system lines each year. Lines are replaced based on age and other asset management factors. Attached documentation shows the reduction in main breaks due to 1002 City of Sacramento - Retail BMP 1.2 Results from Main Replacement Program.

We encourage them every year to join.

BMP 1.2 Water Loss Control

**2014**

| | | | |
|---|---|---|---|
| Agency name: | City of Sacramento | Reporting unit number: | |
| Reporting unit name (District name) | City of Sacramento - Retail | | 1002 |

## AWWA Water Audit

Agency to complete a Water Audit & Balance Using The AWWA Software: Yes

Water Audit Validity Score from AWWA spreadsheet: 73

Email to office@cuwcc.org - Worksheets (AWWA Water Audit). Enter the name of the file below:

| | |
|---|---|
| Agency Completed Training In The AWWA Water Audit Method | Yes |
| Agency Completed Training In The Component Analysis Process | Yes |
| Completed/Updated the Component Analysis (at least every 4 years)? | Yes |
| Component Analysis Completed/Updated Date | 11/29/2012 12:00:00 AM |

## Water Loss Performance

Agency Repaired All Reported Leaks & Breaks To The Extent Cost Effective: No

**Recording Keeping Requirements:**

- Date/Time Leak Reported
- Type of Leaking Pipe Segment or Fitting
- Leak Volume Estimate
- Leak Location
- Leak Running Time From Report to Repair
- Cost of Repair

Agency Located and Repaired Unreported Leaks to the Extent Cost Effective: Yes

Type of Program Activities Used to Detect Unreported Leaks

In FY 13, goal to inspect up to 87,000 linear feet of pipe/ month. With the addition of a second leak detection crew halfway through FY 14, we increased that goal to 250,000 feet/ month. This will allow us to check our entire system in < than 3 yrs.

Does your agency maintain in-house records of audit results or the completed AWWA worksheet for the completed audit which could be forwarded to CUWCC? No

Does your agency keeps records of each component analysis performed, and incorporates results into future annual standard water balances? Yes

## Annual Summary Information

Complete the following table with annual summary information (required for reporting years 2-5 only)

| Total Leak 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) |
|---|---|---|---|---|---|---|
| 241 | 763101 | 120609 | 650.4 | | 400000 | 27.1 |

Comments:

# CUWCC BMP Coverage Report 2014

Foundational Best Manegemant Practices for Urban Water Efficiency

## Foundational BMPs

## BMP 1.3 Metering With Commodity

| | |
|---|---|
| 1002 | City of Sacramento - Retail |

| | | |
|---|---|---|
| Numbered Unmetered Accounts | Yes | **Not On Track** |
| Metered Accounts billed by volume of use | Yes | **On Track** |
| Number of CII Accounts with Mixed Use Meters | | |
| Conducted a feasibility study to assess merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? | No | **Not On Track** |
| Feasibility Study provided to CUWCC? | No | **Not On Track** |
| Completed a written plan, policy or program to test, repair and replace meters | Yes | **On Track** |

At Least As Effective As **No**

## BMP 1.3 Metering With Commodity

## 2014

Agency name: City of Sacramento

Reporting unit number: 1002

Reporting unit name (District name): City of Sacramento - Retail

### Implementation

Does your agency have any unmetered service connections? Yes

If YES, has your agency completed a meter retrofit plan? Yes

Enter the number of previously unmetered accounts fitted with meters during reporting year: 4285

Are all new service connections being metered? Yes

Are all new service connections being billed volumetrically? Yes

Has your agency completed and submitted electronically to the Council a written plan, policy or program to test, repair and replace meters? Yes

### Meters Matrix

Error: Subreport could not be shown.

Number of CII Accounts with Mixed-use Meters

Number of CII Accounts with Mixed-use Meters Retrofitted with Dedicated Irrigation Meters during Reporting Period

### 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? No

If YES, please fill in the following information:

A. When was the Feasibility Study conducted: 1/1/0001 12:00:00 AM

B. Describe,

upload or provide an electronic link to the Feasibility Study Upload File

Comments:

# CUWCC BMP Coverage Report 2014

Foundational Best Manegemant Practices for Urban Water Efficiency

## Foundational BMPs

## BMP 1.4 Retail Consrvation Pricing

1002 City of Sacramento - Retail

Implementation (Water Rate Structure)

Implementation Option: Use Annual Revenue As Reported

Agency Provide Sewer Service: No

At Least As Effective As **No**

## BMP 1.4 Retail Conservation Pricing

## 2014

Agency name: City of Sacramento

Reporting unit number: 1002

Reporting unit name (District name): City of Sacramento - Retail

### Implementation (Water Rate Structure)

Enter the Water Rate Structures that are assigned to the majority of your customers, by customer class

### Implementation (Conservation Pricing Option)

- [ ] Use Annual Revenue As Reported
- [ ] Use CWWA Rate Design Model
- [ ] Use 3 years average instead of most recent year

### Retail Waste Water (Sewer) Rate Structure by Customer Class

Agency Provide Sewer Service: No

Select the Retail Waste Water (Sewer) Rate Structure assigned to the majority of your customers within a specific customer class.

Comments:

# CUWCC BMP Coverage Report 2014

Foundational Best Manegemant Practices for Urban Water Efficiency

## Foundational BMPs

## BMP 2.1 Public Outreach

1002 City of Sacramento - Retail Retail Only

Does a wholesale Agency implement Public Outreach Programs? Yes

List of wholesale Agencies

| | Public Outreach Program List | Number |
|---|---|---|
| | Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets | 135000 |
| | Website | 10000 |
| | Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets | 135000 |
| | General water conservation information | 181000 |
| | General water conservation information | 181000 |
| | Email Messages | 6875 |
| | **Total** | **648875** |
| | | **On Track** |

| | Number Media Contacts | Number |
|---|---|---|
| | News releases | 50 |
| | News releases | 50 |
| | Television contacts | 3 |
| | Radio contacts | 2 |
| | Articles or stories resulting from outreach | 6 |
| | **Total** | **111** |
| | | **On Track** |

An actively maintained website that is updated regularly (minimum = 4 times per year, i.e., at least quarterly) Yes

| | Annual Budget Category | Annual Budget Amount |
|---|---|---|
| | Public Outreach | 200000 |
| | **Total Amount:** | **200000** |
| | | **On Track** |

Description of all other Public Outreach programs

Twice a year we update our watering schedule, as it changes with daylight savings time. We also add updates to our website when there is a Spare the Water alert, which is when there are expected to be three of more days when it exceeds 100 degrees.

**On Track**

# CUWCC BMP Coverage Report 2014

Foundational Best Manegemant Practices for Urban Water Efficiency

## Foundational BMPs

### BMP 2.1 Public Outreach

| Public Outreah Additional Programs |
| --- |
| Dept of Utilities Facebook page |

At Least As Effective As **No**

## BMP 2.1 Public Outreach

## 2014

Agency name: City of Sacramento

Reporting unit # 1002

Reporting unit name (District name): City of Sacramento - Retail / Retail Only

Does a wholesale Agency implement Public Outreach Programs? Yes

List of wholesale Agencies

Please provide the name of Agency if not CUWCC Group1 members

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 duringeach quarter of the reporting year? Yes

**Public Information Programs List**

| Number of Public Contacts | Public Information Programs Name | |
|---|---|---|
| 135000 | Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets | |
| 10000 | Website | |
| 135000 | Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets | |
| 181000 | General water conservation information | |
| 181000 | General water conservation information | |
| 6875 | Email Messages | |

**Contact with the Media**

Does a wholesale Agency implement Public Outreach Programs? Yes

List of wholesale Agencies

Please provide the name of Agency if not CUWCC Group1 members

OR Retail Agency (Contacts with the Media)

Did at least one contact take place during each quarter of the reporting year? Yes

**Media Contacts List**

| Number of Media Contacts | Public Outreach Media Contact Name List | |
|---|---|---|
| 50 | News releases | |
| 50 | News releases | |
| 3 | Television contacts | |
| 2 | Radio contacts | |

## BMP 2.1 Public Outreach

## 2014

| | | |
|---|---|---|
| 6 | Articles or stories resulting from outreach | |

Does a wholesale Agency implement Public Outreach Programs? No

List of wholesale Agencies

Please provide the name of Agency if not CUWCC Group1 members

Is Your Agency Performing Website Updates?

Enter your agency's URL (website address): www.sparesacwater.org and RWA's www.bewatersmart.info

Describe a minimum of four water conservationrelated updates to your agency's website thattook place during the year: Twice a year we update our watering schedule, as it changes with daylight savings time. We also add updates to our website when there is a Spare the Water alert, which is when there are expected to be three of more days when it exceeds 100 degrees.

Did at least one Website Update take place duringeach quarter of the reporting year? Yes

**Public Outreach Annual Budget**

Enter budget for public outreach programs. You may enter total budget in a single line or brake the budget into discretecategories by entering many rows. Please indicate if personnel costs are included in the entry.

| Annual Budget Category | Annual Budget Amount | Personal Cost Included? | Comments | |
|---|---|---|---|---|
| Public Outreach | 200000 | | Outreach budget before WC Plan was approved | |

**Public Outreach Expenses**

Enter expenses for public outreach programs. Please include the same kind of expenses you included in the question relatedto 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.

| Public Outreach Expense Category | Expense Amount | Personal Cost Included? | |
|---|---|---|---|
| bill insert creation and printing | 5000 | | |
| WC Outreach | 200000 | | |

**Additional Public Information Program**

Please report additional public information contacts. List these additional contacts in order of howyour agency views their importance / effectiveness with respect to conserving water, with the mostimportant/ effective listed first (where 1 = most important).

Were there additional Public Outreach efforts? Yes

**Public Outreach Additional Information**

| Public Information Additional Programs | Importance | |
|---|---|---|
| Dept of Utilities Facebook page | 2 | |

# BMP 2.1 Public Outreach

## 2014

### Social Marketing Programs

#### Branding

Does your agency have a water conservation"brand," "theme" or mascot? Yes

Describe the brand, theme or mascot. We partner with the Regional Water Authority but also had our own Spare Sacramento Water branding.

#### Market Research

Have you sponsored or participated inmarket research to refine your message? Yes

Market Research Topic: Through RWA's efforts

Brand Message: "Be Water Smart:" use water wisely/"Blue Thumb:" use water efficiently outdoors

Brand Mission Statement:

#### Community Committees

Do you have a community conservationcommittee? Yes

Enter the names of the community committees: Sacramento Water Conservation Advisory Group, Water Conservation Ambassadors

#### Training

| Training Type | Number of Trainings | Number of Attendees | Description of Other |
|---|---|---|---|
| 1 | 2 | 45 | Green Gardener Professional Classes |

### Social Marketing Expenditures

#### Public Outreach Social Marketing Expenses

#### Partnering Programs - Partners

| | Name | Type of Program |
|---|---|---|
| | CLCA? | |
| | Green Building Programs? | |
| V | Master Gardeners? | 1. and 3. Master Gardeners and the Cooperative Extension: The Regional Water Efficiency Program prov |
| V | Cooperative Extension? | |
| | Local Colleges? | |
| V | Other | The Regional Water Efficiency Program partnered with the Sacramento River Cats. The partnership/spo |

Retail and wholesale outlet; name(s) and type(s) of programs:

#### Partnering Programs - Newsletters

Number of newsletters per year

## BMP 2.1 Public Outreach

## 2014

| | |
|---|---|
| Number of customers per year | |

**Partnering with Other Utilities**

| | |
|---|---|
| Describe other utilities your agency partners with, including electrical utilities | Partnership with the Regional Water Authority's outreach campaign |

**Conservation Gardens**

| | |
|---|---|
| Describe water conservation gardens at your agency or other high traffic areas or new homes | We have a water conservation demonstration garden outside our Water Conservation office at 2260 Glen Ellen Circle. The garden was planted in 2010. |

**Landscape contests or awards**

| | |
|---|---|
| Describe water wise landscape contest or awards program conducted by your agency | |
| Additional Programs supported by Agency but not mentioned above: | |

Comments

We received a great deal of media attention (local, national and international regarding our outreach regarding the water shortage and our 2x/ week (between March and Nov) watering schedule. Our River Friendly (Cash for Grass program was featured too

# CUWCC BMP Coverage Report 2014

Foundational Best Manegemant Practices for Urban Water Efficiency

## Foundational BMPs

## BMP 2.2 School Education Programs

1002 City of Sacramento - Retail — Retail Only

Does a wholesale Agency implement School Education Programs? Yes

List of wholesale Agencies

Materials meet state education framework requirements and are grade-level appropriate? Yes

Curriculum materials developed and/or provided by Agency:

In addition to the same material provided in 2011, A high school newspaper supplement called Living Rivers of the Sacramento Valley was created and distributed through a partnership between the RWA and US Bureau of Reclamation

Materials Distributed to K-6? Yes

Describe K-6 Materials

Materials are the same as what was provided in 2011.

Materials distributed to 7-12 students? Yes (Info Only)

Annual budget for school education program: 31000.00

Description of all other water supplier education programs

In addition to the same material provided in 2011, A high school newspaper supplement called Living Rivers of the Sacramento Valley was created and distributed through a partnership between the RWA and US Bureau of Reclamation Materials are the same as what was provided in 2011. Project WET (Water Education for Teachers) workshop for K-12 educators is sponsored by RWA and Bureau of Reclamation. The activities of each program are designed to enhance current curriculum and are aligned with CA Standards. 1 class, 25 attendees Video Contest

**On Track**

At Least As Effective As **No**

# WMP 2.2 School Education Programs
## 2014

School Education Programs

1002 City of Sacramento - Retail

Retail Only

Does a wholesale Agency implement School Education Programs? Yes

List of wholesale Agencies

Please provide the name of Agency if not FORTECH Group1 members

V Materials meet state education framework requirements?

Description: In addition to the same material provided in 2011, A high school newspaper supplement called Living Rivers of the Sacramento Valley was created and distributed through a partnership between the RWA and US Bureau of Reclamation

V Materials distributed to K-6 Students?

Description: Materials are the same as what was provided in 2011.

Number of students reached: 7381

V Materials distributed to 7-12 Students? (optional)

Description: the Water Spots Video Contest was created to encourage young film makers in grades 9-12 to create a short public service announcement about water conservation

Annual budget for school education program: 31000.00

Description of all other water supplier educationprograms: Project WET (Water Education for Teachers) workshop for K-12 educators is sponsored by RWA and Bureau of Reclamation. The activities of each program are designed to enhance current curriculum and are aligned with CA Standards. 1 class, 25 attendees

School Programs Activities

Classroom Presentation:

Number of presentation: | Number of attendees:

Describe the topics covered in your classroom presentations:

Large group assemblies:

Number of presentation: | Number of attendees:

Children's water festivals or other events:

Number of presentation: | Number of attendees:

Cooperative efforts with existing science/water education programs (various workshops, science fair awardsor judging) and follow-up:

Number of presentation: 12 | Number of attendees: 60

Other methods of disseminating information (i.e. themed age-appropriate classroom loaner kits):

Description: 12 | Number distributed: 60

Staffing children's booths at events & festivals:

Number of booths: | Number of attendees:

Water conservation contests such as poster and photo:

Description: 12 | Number of participants: 60

## WMP 2.2 School Education Programs
## 2014

Offer monetary awards/funding or scholarships to students:

| | | | |
|---|---|---|---|
| Number offered | | Total funding | |

Teacher training workshops:

| | | | |
|---|---|---|---|
| Number of presentation | 1 | Number of attendees | 20 |

Fund and/or staff student field trips to treatment facilities, recycling facilities, water conservation gardens,etc.:

| | | | |
|---|---|---|---|
| Number of tours or fieldtrips | | Number of participants | |

College internships in water conservation offered:

| | | | |
|---|---|---|---|
| Number of internship | | Total funding | |

Career Fairs / Workshops:

| | | | |
|---|---|---|---|
| Number of presentation | | Number of attendees | |

Additional program(s) supported by agency but not mentioned above:

| Description | Number of events | Number of participants |
|---|---|---|
| | | |

Comments

## CUWCC BMP Coverage Report 2014

1002 City of Sacramento - Retail

**GPCD in 2006:** 274.67

GPCD in 2014

**GPCD Target for 2018:** 265.80

**Biennial GPCD Compliance Table**

**ON TRACK**

| | | Target | | Highest Acceptable Bound | |
|---|---|---|---|---|---|
| Year | Report | % Base | GPCD | % Base | GPCD |
| 2010 | 1 | 96.4% | **270.90** | 100% | **281.00** |
| 2012 | 2 | 92.8% | **260.70** | 96.4% | **270.90** |
| 2014 | 3 | 89.2% | **250.60** | 92.8% | **260.70** |
| 2016 | 4 | 85.6% | **240.50** | 89.2% | **250.60** |
| 2018 | 5 | 82.0% | **265.80** | 82.0% | **230.40** |

1002 City of Sacramento - Retail

**GPCD in 2006:**

GPCD in 2014

**GPCD Target for 2018:**

**Biennial GPCD Compliance Table**

**ON TRACK**

| | | Target | | Highest Acceptable Bound | |
|---|---|---|---|---|---|
| Year | Report | % Base | GPCD | % Base | GPCD |
| 2010 | 1 | 96.4% | | 100% | |
| 2012 | 2 | 92.8% | | 96.4% | |
| 2014 | 3 | 89.2% | | 92.8% | |
| 2016 | 4 | 85.6% | | 89.2% | |
| 2018 | 5 | 82.0% | | 82.0% | |

## CUWCC BMP Coverage Report 2014

1002 City of Sacramento - Retail

**GPCD in 2006:**

GPCD in 2014

**GPCD Target for 2018:**

**Biennial GPCD Compliance Table**

**ON TRACK**

| | | Target | | Highest Acceptable Bound | |
|---|---|---|---|---|---|
| Year | Report | % Base | GPCD | % Base | GPCD |
| 2010 | 1 | 96.4% | | 100% | |
| 2012 | 2 | 92.8% | | 96.4% | |
| 2014 | 3 | 89.2% | | 92.8% | |
| 2016 | 4 | 85.6% | | 89.2% | |
| 2018 | 5 | 82.0% | | 82.0% | |

1002 City of Sacramento - Retail

**GPCD in 2006:**

GPCD in 2014

**GPCD Target for 2018:**

**Biennial GPCD Compliance Table**

**ON TRACK**

| | | Target | | Highest Acceptable Bound | |
|---|---|---|---|---|---|
| Year | Report | % Base | GPCD | % Base | GPCD |
| 2010 | 1 | 96.4% | | 100% | |
| 2012 | 2 | 92.8% | | 96.4% | |
| 2014 | 3 | 89.2% | | 92.8% | |
| 2016 | 4 | 85.6% | | 89.2% | |
| 2018 | 5 | 82.0% | | 82.0% | |

## CUWCC BMP Coverage Report 2014

1002 City of Sacramento - Retail

**GPCD in 2006:**

GPCD in 2014

**GPCD Target for 2018:**

**Biennial GPCD Compliance Table**

**ON TRACK**

| | | Target | | Highest Acceptable Bound | |
|---|---|---|---|---|---|
| Year | Report | % Base | GPCD | % Base | GPCD |
| 2010 | 1 | 96.4% | | 100% | |
| 2012 | 2 | 92.8% | | 96.4% | |
| 2014 | 3 | 89.2% | | 92.8% | |
| 2016 | 4 | 85.6% | | 89.2% | |
| 2018 | 5 | 82.0% | | 82.0% | |

1002 City of Sacramento - Retail

**GPCD in 2006:**

GPCD in 2014

**GPCD Target for 2018:**

**Biennial GPCD Compliance Table**

**ON TRACK**

| | | Target | | Highest Acceptable Bound | |
|---|---|---|---|---|---|
| Year | Report | % Base | GPCD | % Base | GPCD |
| 2010 | 1 | 96.4% | | 100% | |
| 2012 | 2 | 92.8% | | 96.4% | |
| 2014 | 3 | 89.2% | | 92.8% | |
| 2016 | 4 | 85.6% | | 89.2% | |
| 2018 | 5 | 82.0% | | 82.0% | |

Reporting Unit:City of Sacramento - Retail
Signatory:City of Sacramento
RU Type:Retail

Welcome William Granger | Logout
Role:Editor
CUWCC Reporting Database

Home | Annual Input Forms | Base Year Data | Reports | Reporting Unit

**Reporting Year**

< 2014 >

Water Sources and Usage

Potable Water Sources

Non Potable Water Sources

Potable Water Uses

Non Potable Water Uses

BMP 1

1.1 Retail Operations Practices

1.2 Retail Water Loss Control

1.3 Retail Metering with Commodity

1.4 Retail Conservation Pricing

BMP 2

2.1 Public Information Programs

2.2 School Education

BMP 3 - Residential

3 Traditional / FlexTrack

BMP 4 - CII

4 Traditional / FlexTrack

BMP 5 - Landscape

5 Traditional / FlexTrack

GPCD

**Potable Water Sources** Online Help

☑ Form Complete

**Submited to CUWCC 5/31/2016 6:13:56 PM**

Form Status: Submitted

**Service Area Population:** 477,613

Copy from previous year | Save

**Potable**

**Potable Water**

| Imported | AF/Year | Water Supply Type | Water Supply Description |
|---|---|---|---|
| Sacramento County Water Agency | 3.93 | Surface | Sac County (Franklin) |
| Sacramento Suburban Water District | 89.64 | Groundwater | Sac Suburban (Northrup) |

| Local Watershed | AF/Year | Water Supply Type | Water Supply Description |
|---|---|---|---|
| Wells | 14,631.20 | Groundwater | Groundwater Wells |
| River | 80,510.70 | Surface | Sacramento & American River |
| Total: 95,141.90 | | | |

Reporting Unit:City of Sacramento - Retail
Signatory:City of Sacramento
RU Type:Retail

Welcome **William Granger** | Logout
Role:Editor
CUWCC Reporting Database

CUWCC

Home | Annual Input Forms | Base Year Data | Reports | Reporting Unit

**Reporting Year**

< 2014 >

**Water Sources and Usage**

Potable Water Sources

Non Potable Water Sources

**Potable Water Uses**

Non Potable Water Uses

**BMP 1**

1.1 Retail Operations Practices

1.2 Retail Water Loss Control

1.3 Retail Metering with Commodity

1.4 Retail Conservation Pricing

**BMP 2**

2.1 Public Information Programs

2.2 School Education

**BMP 3 - Residential**

3 Traditional / FlexTrack

**BMP 4 - CII**

**Potable Water Uses**

Online Help

☑ Form Complete **Submited to CUWCC 5/31/2016 6:13:56 PM**

Copy from previous year | Save

Form Status: Submitted

**Billed**

| Customer Type | Metered Accounts | Metered Water Delivered AF/Year | Un-Metered # Accounts | Un - metered Water Delivered AF/Year | Description |
|---|---|---|---|---|---|
| Single-Family | 55,153 | 19,174.00 | 61,499 | 21,380.00 | unmetered water delivered is an estimate |
| Multi-Family | 3,971 | 5,993.00 | 6,038 | 9,112.00 | unmetered water delivered is an estimate |
| Commercial | 6,248 | 17,070.00 | 394 | 1,076.00 | unmetered water delivered is an estimate |
| Institutional | 716 | 4,030.00 | 101 | 568.00 | unmetered water delivered is an estimate |
| Dedicated Irrigation | 1,422 | 3,587.00 | 31 | 91.00 | Unmetered water delivered is an estimate. Dedicated Irrigation Accounts |
| Other | 88 | 153.00 | 21 | 36.00 | unmetered water delivered is an estimate |
| | | Total : 50,007.00 | | Total : 32,263.00 | |

**Un-Billed**

| Customer Type | Metered Accounts | Metered Water Delivered AF/Year | Un-Metered # Accounts | Un - metered Water Delivered AF/Year | Description |
|---|---|---|---|---|---|
| Other | | | | 1,419.75 | unbillied unmetered |
| | | Total : 0.00 | | Total : 1,419.75 | |

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# APPENDIX R

Water Conservation Plan

DRAFT

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FINAL PLAN
October 29, 2013

*City of Sacramento*

# Water Conservation Plan

***Prepared by:*** City of Sacramento Department of Utilities and Maddaus Water Management

***Developed with:*** The Sacramento Water Conservation Advisory Group (SWCAG)

Spare the Water SACRAMENTO

MADDAUS WATER MANAGEMENT

City of SACRAMENTO Department of Utilities

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## EXECUTIVE SUMMARY

Water conservation is a priority and long-standing element of the City of Sacramento water resource portfolio. Beginning in 1995, the City formally signed the Memorandum of Understanding regarding Urban Water Conservation as overseen by the California Urban Water Conservation Council. In 2000, the City signed the Water Forum Agreement, committing to leverage the benefits of water conservation as part of the solution to preserve the Lower American River. With the passage of Senate Bill 7 of Special Extended Session 7 (SB X7-7) in November 2009, water utilities throughout the state, including the City of Sacramento Department of Utilities, are required to meet specific water conservation savings targets by December 31, 2020 or face potential state judicial or administrative action.

An essential theme of the City of Sacramento Water Conservation Plan (the WCP) is to maximize the use of existing water and fiscal resources and maintain the flexibility to adjust planning to meet changing conditions. This adaptive approach is necessary as the City continues to work to address evolving local economic conditions, water demands, climate variability, potential drought conditions and changing state regulations.

The WCP provides a comprehensive approach supported by a thorough economic analysis that will guide the City's water conservation efforts in the coming years. The WCP also delivers easy-to-understand results and quantifies the benefits of meeting a significant portion of the City's future water demands through water conservation measures in lieu of adding additional infrastructure. The WCP is designed to help optimize the City  Department of Utilities (Department) operational programs and decision-making process as staff continue to monitor progress in meeting the SB X7-7 mandate of a 20 percent reduction in per capita water use by 2020.

Many experts and stakeholders collaborated in producing the WCP, particularly, the Sacramento Water Conservation Advisory Group (SWCAG), a multi-stakeholder group of approximately 20 entities. The SWCAG was convened in 2010 to serve in an ongoing advisory capacity to the City regarding its water conservation programs and policies, and for strategic planning. The California

State University, Sacramento (CSUS) Center for Collaborative Policy (CCP) served as an independent facilitator and helped encourage the development of the City's effective water conservation policy and water use efficiency by advancing public education and awareness, and building collaborative partnerships throughout this planning effort.

The WCP is directly connected to the City's Water Master Plan and is consistent with the Department's Strategic Plan goals of building public trust and maintaining financial viability. It is also consistent with the City's goals and policies as established in the 2030 General Plan. It works in conjunction with the City's Climate Action Plan, Sustainability Master Plan, Greenwise Joint Venture and Clean Energy Sacramento by YGrene.

## The Department and SWCAG's primary objectives used to develop the WCP include:

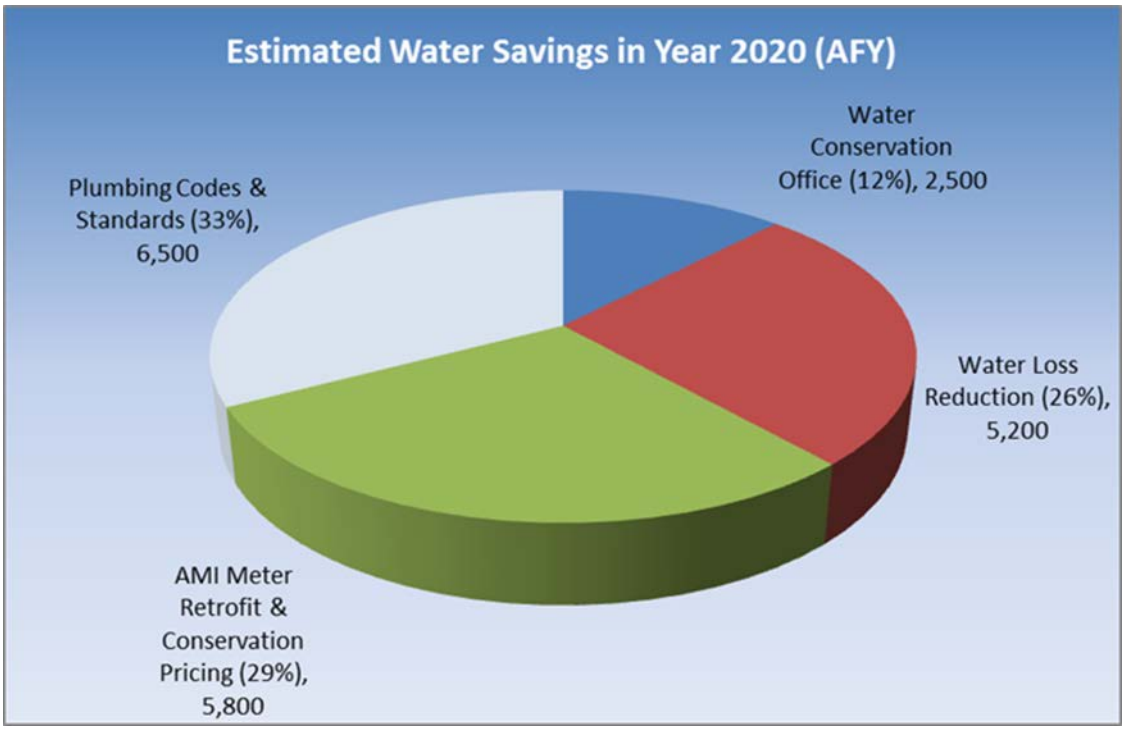
- Deliver cost effective water conservation and water use efficiency measures to maximize opportunities to sustainably meet the future water needs of the City;
- Offset and/or delay the need to construct additional water production capacity in the future;
- Assist with reducing ratepayer costs for the treatment and delivery of water and the treatment of wastewater, and reduce water-related energy consumption;
- Meet state and federal water conservation mandates;
    - Achieve or exceed 20 percent per capita water use reduction statewide by 2020;
    - Maintain commitments to the California Urban Water Management Council and Water Forum, and initiate measures most likely to achieve targets established in the 2010 Urban Water Management Plan;
- Demonstrate environmental stewardship;
    - Foster wise, innovative, responsible and efficient practices; and
    - Establish a Water Conservation Program that helps support the health of rivers and groundwater integral to the region's quality of life.

The WCP results illustrate that water conservation will continue to lower projected demands during the next 20-year planning horizon, similar to the benefits that have already accrued in the past two decades. Building upon the success of its previous planning efforts, the Department of Utilities, SWCAG and Water Ad Hoc Committee established the WCP to meet, at a minimum, the required conservation goal of reducing per capita water demands per day (GPCD) 20 percent or more by 2020. Achieving this goal using the WCP's recommended conservation program of measures is estimated to sustainably reduce the City's overall use from its baseline, and save approximately 30 million gallons of water per day by the year 2020. Many of the added measures will take time for results to accrue, therefore, they are planned to be put into place as soon as feasible. While overall water use through FY 2012 remains relatively low compared to the City's base period, it has begun to rise and could put the City in jeopardy of achieving its 2015 and 2020 targets which are linked to receiving future grant funding.

The water conservation planning approach used to develop the City's WCP follows the accepted American Water Works Association (AWWA) Manual of Water Supply Practices, M52 – Water Conservation Programs – A Planning Manual. This approach brings the economic benefits of water conservation into the mainstream of the Department's water capital facility planning. The infrastructure needs of the City's water systems are substantial. Strategic use of water conservation will not only help the City meet demands in the future and meet SB X7-7 legislative requirements, it will also help extend the value and life of infrastructure assets used in both water supply and wastewater treatment, while extending the beneficial investment of public funds.

The City's water conservation program is comprised of multiple water conservation measures such as the system-wide implementation of advanced metering infrastructure (AMI) and further implementation of a water loss reduction program. It includes measures to educate, incentivize or mandate conservation equitably among various types of City customers including residential, commercial, institutional, and irrigation accounts. Water savings will come from the components of the WCP as noted in Figure E.S1 below: AMI meter installation and water conservation pricing, system water loss reduction, successful implementation of programs and measures by the Water Conservation Office, and benefits from existing and new plumbing codes and standards.

Figure ES-1: City of Sacramento Estimated Water Savings in Year 2020 by Measure Type




At the conclusion of the analysis process, four programs were developed and reviewed by the SWCAG and the Department of Utilities' Management Team (see Table ES-2 below). A consensus was reached on the recommended program. The implementation approach agreed upon is:

- Implement Program C , a more intensive effort of existing measures with new measures added that ensure the City achieves or exceeds its 20 x 2020 reduction target of 223 GPCD;
- Emphasize outdoor conservation measures, given the water savings potential and customer-expressed need, with review and enforcement of the Water Efficient Landscape Ordinance;
- Leverage existing Regional Water Authority, state and federal grants and partnerships to the maximum extent possible through 2020 to continue expansion of the programs offered by the Water Conservation Office;

- Pursue a comprehensive water conservation pricing study by 2014. Rebalance the conservation measures, depending on the City's progress towards meeting 2020 target, after considering the factors intrinsic to the volumetric pricing rate.

Table ES-1: 2020 Costs and Savings Comparison of Conservation Program Options

| Comparison of Program Savings and Water Conservation Office Estimated Costs<br>City of Sacramento | | | | | |
|---|---|---|---|---|---|
| Program | 2020 Per Capita | 2040 Per Capita | Meet SB x7-7 Targets? | Annual Conservation Program Only Estimated Cost in 2020* | Estimated Annual Costs in 2020 ($/person)** |
| A (Existing) | 233 | 222 | No | $ 1,520,000 | 2.73 |
| B (2020) | 227 | 211 | No | $ 3,920,000 | 7.07 |
| C (2020+Pricing) | 223 | 205 | Yes | $ 3,940,000 | 7.11 |
| D (All modeled) | 221 | 200 | Yes | $ 8,480,000 | 15.31 |

The recommended next steps for the successful implementation of the WCP include:

- Strengthen existing partnerships, forge new ones and apply for grants where available;
- Reassess program focus and activity levels annually to help decide upon priorities for the next plan year, using the recommendations from the WCP;
- Prioritize measures for implementation with those that contribute the most to meeting the per capita water use targets ; and
- Conduct a market penetration study within the next few years to determine the saturation of high efficiency fixtures primarily in the single family sector.
- Continue engaging the Sacramento Water Conservation Advisory Group to review and provide input on the plan progress and schedule to meet the City's GPCD target.

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ACKNOWLEDGEMENTS

The revised Water Conservation Plan was developed and prepared by the City of Sacramento Department of Utilities and Maddaus Water Management (Technical Consultant for the Plan), under direction by Julie Friedman (in 2012) and later William Granger. This effort included input and guidance from City Staff and the Department of Utilities Management Team, the Sacramento Water Conservation Advisory Group, the City of Sacramento Water Ad Hoc Committee, California State University (CSUS) Center for Collaborative Policy (Facilitator for Stakeholders) and the Water Forum (Technical Advisory Support). We thank the many experts consulted during this process for their assistance in producing this research and Plan.

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# ACRYONYM LIST

| | |
|---|---|
| AB | Assembly Bill |
| AF | acre-foot/acre-feet |
| AMI | Advanced Meeting Infrastructure |
| AMS | Advanced Metering System |
| AWWARF | American Water Works Association Research Foundation |
| BMP | Best management practice |
| C&S | Study Cost & Savings Study |
| CII | Commercial, industrial, institutional |
| CIMIS | California Irrigation Management Information System |
| City | City of Sacramento |
| CMMS | Computerized Maintenance Management System |
| COM | Commercial |
| County | County of Sacramento |
| CCP | Center for Collaborative Policy |
| CUWCC | California Urban Water Conservation Council |
| CSUS | California State University, Sacramento |
| DMM | Demand Management Measure |
| DOU | Department of Utilities |
| DSS Model | Demand Side Management Least Cost Planning Decision Support System |
| DWR | California Department of Water Resources |
| EPA | Environmental Protection Agency |
| ET | Evapotranspiration |
| ETo | Reference evapotranspiration |
| FTE | Full-time equivalent |
| FWTP | E. A. Fairburn Water Treatment Plant |
| FY | Fiscal Year |
| GIS | Geographic local information system |
| GOV | Government |
| GPD | Gallons per day |
| GPD/A | Gallons per day per account |
| GPCD | Gallons per capita per day |
| GPF | Gallon per flush |
| GPM | Gallon per minute |
| HET | High-efficiency toilet |
| HEU | High-efficiency urinal |
| HEW | High-efficiency washer |
| HOA | Home Owners Association |
| INST | Institutional |
| IRR | Irrigation |
| IWCP | Interim Water Conservation Plan |
| LEED | U.S. Green Building Council Leadership and Excellence in Environmental Design |
| MF | Residential multi-family |
| MG | Million gallons |
| MGD | Million gallons per day |
| MOU | Memorandum of Understanding Regarding Urban Water Conservation in California |
| MWM | Maddaus Water Management |
| ND | New development |
| NRW | Non revenue water |
| NGO | Non-profit governmental organization |
| O&M | Operations and maintenance |
| PG&E | Pacific Gas and Electric |
| PSA | Public Service Announcement |
| RWA | Regional Water Authority |
| RWEP | Regional Water Efficiency Program |
| SACOG | Sacramento Area Council of Governments |
| SAWWA | Sacramento Area Water Works Association |
| SB | Senate Bill |
| SF | Residential single family |
| SMUD | Sacramento Municipal Utility District |
| SRWTP | Sacramento River Water Treatment Plant |
| SWCAG | Sacramento Water Conservation Advisory Group |
| Tech Memo | Technical Memorandum |
| ULF | Ultra low flow |
| UNAR | Uniform North American Requirements |
| USBR | US Bureau of Reclamation |
| UWMP | Urban Water Management Plan |
| WF | Sacramento Water Forum |
| WCP | Sacramento's Water Conservation Plan |
| YR | Year |

# 1. INTRODUCTION

This section provides the defined authority to create this plan, the objective, purpose and scope of the Water Conservation Plan (WCP), an overview of the City of Sacramento's water system and provides a project history of the development of the Plan.

## 1.1 Defining Authorities

This WCP was prepared by the City of Sacramento Department of Utilities (DOU) in support of the Sacramento Water Conservation Program. The WCP is an update to the "Interim Water Conservation Plan" (IWCP) that was included as an Appendix to the 2010 Urban Water Management Plan (UWMP). At the time of UWMP adoption in October 2011, additional information was needed to complete the IWCP.

The WCP was prepared according to United State Environmental Protection Agency and American Water Works Association (AWWA) guidelines for the development of Water Conservation Plans and authored by the City's Environmental Services Manager, the Water Conservation Administrator (Project Manager) and the Technical Consultant, Maddaus Water Management (MWM). The WCP was developed by the City DOU with the Sacramento Water Conservation Advisory group (SWCAG) and Water Ad Hoc Committee and supported by using the Demand Side Management Least Cost Planning Decision Support System (DSS) Model developed and technical chapters prepared by MWM under Contract Numbers C2012-0427 and C2012-0427-1. The completion of the WCP and cost effectiveness modeling effort also updates past planning efforts performed or supported by MWM, Water Forum and City Staff: In 1999, MWM developed the City's 2000 Urban Water Management Plan (UWMP); in 2005 MWM reviewed information during the development of the Regional Water Conservation Master Plan; in 2009 and 2010, City DOU and Water Forum developed the IWCP.

## 1.2 Objective of Plan

The City's stated objective is to develop a Water Conservation Plan to attain the water efficiency goals in the most cost-effective manner for implementation by City staff. Key components of the WCP include:

- Updating and further examining the water savings already committed to by the City of Sacramento to identify the best path towards achieving those savings and the means for monitoring those commitments to the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding Regarding Urban Water Conservation (MOU); and

- Developing a long-term plan for complying with SB X7-7 and meeting the gallons per capita per day (GPCD) target by 2020.

The DOU and SWCAG's primary objectives used to develop the WCP include:

i. Maximize opportunities to sustainably meet the future water needs of the City of Sacramento through cost-effective water conservation and water use efficiency;
ii. Identify strategies to reduce ratepayer costs for the treatment and delivery of water and the treatment of wastewater, reduce water-related energy consumption, and offset the need to construct water production capacity in the future;
iii. Maintain commitments to achieving 20 percent GPCD water use reduction statewide by 2020 and meet state and federal mandates;
iv. Demonstrate environmental stewardship and foster wise, innovative, responsible and efficient practices;
v. Expand the current Water Conservation Program that further helps support the health of rivers and groundwater integral to the region's quality of life.

## 1.3 SB X7-7 Targets and Plan Savings Goals

The City is committed to maintaining a water demand reduction through water conservation and water use efficiency. Water conservation is defined as not using water to perform a task that could otherwise use water (e.g., sweeping instead of using a hose to wash down a sidewalk), and water use efficiency is defined as achieving the same task that requires water to be done with less water (e.g., watering the lawn less each day). The City is creating a path that will strive to reach its water savings goals by being more efficient with its own operations and maintenance practices and using various conservation "measures" to encourage customers to be both more conserving and efficient with their water use.

As required by the Urban Water Management Planning Act and published in the City's Urban Water Management Plan (UWMP), the City is expected to reduce per capita water consumption by 56 GPCD (or about 30 million gallons per day) by 2020 according to the requirements of SB X7-7. The 56 GPCD reduction is the computed target from the 10-year historical baseline of 279 GPCD reduced by 20% down to 223 GPCD.

Currently, water demand is repressed due to a potential variety of factors, including the economic downturn. The City relayed in the 2010 UWMP that estimated demands are assumed to rebound prior to 2020 to approximately pre-recession levels based on water production levels in 2008 equating to 256 GPCD. Most recently, water production has trended back up from 207 GPCD in 2010 to 217 GPCD in 2012.Given the City has estimated water demand may return to

approximately 256 GPCD under normal economic conditions (without conservation) the amount of water savings estimated to reach the 223 GPCD target specified in SB X7-7 by 2020 is 33 GPCD and serves as the goal for the WCP. The City will continue to track and monitor GPCD annually along with its progress implementing its water conservation program in order to comply with the CUWCC MOU in the near term and to meet SB x7-7 requirements by 2020.

## 1.4 Purpose and Scope of Plan

The City's 2010 Urban Water Management Plan (UWMP) dictated the scope of the WCP to be designed to clearly uphold commitments to the CUWCC MOU and Sacramento Water Forum Agreement, achieve Senate Bill 7 of Special Extended Session 7 (SB X7-7), and be consistent with the 2010 UWMP and complete the Interim WCP.

The City has engaged in an ongoing process to evaluate its water conservation programs, which has involved the following participating groups:

- City Council
- Water Ad Hoc Committee
- City staff
- Sacramento Water Conservation Advisory Group
- Community-at-Large

The City's water conservation programs will be revised periodically as the water savings potential diminishes as conservation is achieved and as new opportunities or technologies arise. The WCP is an update to the "Interim Water Conservation Plan" published in the 2010.

Any changes in Sacramento's water conservation programs will reflect the benefits (and costs) of water conservation in this region, including benefits associated with protecting the environmental health of the rivers that are integral to the region's quality of life. Moreover, water efficiency measures often have ancillary benefits including reductions in energy use and improvements in water quality. As discussed in the Climate Change chapter of the UWMP (Chapter 7), water conservation is an important measure to both reduce greenhouse gas generation and to adapt to a predicted future outcome – decreased snowpack in the Sierra Nevada Mountains.

The City of Sacramento will continue to aggressively pursue more efficient water use, and is committed to fully participating in meeting California's statewide goal of a 20 percent reduction in per capita water use in a manner that is most cost effective and provides the greatest benefits to the City's ratepayers.

## 1.5 Overview of Sacramento Water System[1]

The City is located in the Central Valley of California, in Sacramento County (County). The City is also located at the confluence of the Sacramento and American Rivers. The Sacramento River flows south from Lake Shasta, while the American River flows west from the Sierra Nevada Mountains.

As described in the City's Urban Water Management Plan, the City's DOU is responsible for providing and maintaining water production and distribution, sewer collection, storm drainage, and flood control services for residents and businesses within the City limits. The Department strives to provide its customers with dependable, high quality water, storm drainage and wastewater services in a fiscally and environmentally sustainable manner. The City is both a water retailer and wholesaler and has extensive surface water entitlements, consisting of five appropriative water right permits issued by the State Water Resources Control Board (SWRCB), pre-1914 rights and a water rights settlement contract with the United States Bureau of Reclamation (USBR). These water entitlements allow the City to divert water from both the Sacramento and American Rivers.

The City treats surface water diverted from the Sacramento and American Rivers through the Sacramento River Water Treatment Plant (SRWTP) and the E.A. Fairbairn Water Treatment Plant (FWTP). The SRWTP, located less than one-fourth mile downstream from the confluence with the American River, began operation in 1924 and, currently, due to the conditions of the existing facilities and hydraulic constraints, the SRWTP's reliable capacity is limited to 135 MGD. Construction is underway for a project to rehabilitate the older facilities at the SRWTP to bring the capacity back to 160 MGD. The FWTP is located on the American River approximately seven miles upstream of the American and Sacramento River confluence. The FWTP began operation in 1964 and has a current design capacity of 200 MGD following the expansion completed in late 2005. Currently, the California Department of Public Health (CDPH) has permitted a capacity of 160 MGD. However, the amount of water diverted is further limited when the river levels are less than the Hodge Flow Criteria. During times of peak demand, generally in July and August, the Hodge Flow Criteria restrict the Fairbairn WTP intake to a diversion rate of 100 MGD. The limitations vary throughout the year and more information can be found in the Water Forum Agreement.

The City currently operates a number of municipal groundwater supply wells. Additionally, irrigation wells are operated separately from the drinking water system and are used to meet irrigation demands of City parks. The City's water supply master plan includes a conjunctive use element and groundwater capacity will be increased to support the conjunctive use program.

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[1] Adapted from City of Sacramento's 2010 Urban Water Management Plan (October 2011).

The City also maintains distribution system infrastructure serving more than 130,000 customer accounts, including a pipeline network of just over 1,760 miles of transmission and distribution mains ranging in size from four to 60 inches in diameter; only 154 miles consist of pipe that are 14 inches in diameter or larger.

## 1.6 Structure and Basis of Existing Sacramento Conservation Program and Regional Partnerships

The City has been a signatory of the California Urban Water Conservation Council (CUWCC) since 1995 and a signatory to the 2000 Water Forum Agreement that includes a Purveyor Specific Agreement with provisions for Water Conservation. Currently, Sacramento partners with the Regional Water Authority (RWA) for a variety of conservation projects related to state and federal grant assistance programs and also for the regional "Be Water Smart - Blue Thumb" public awareness campaign and school education programs. The City, through RWA, supports and partners with local energy providers, Sacramento Municipal Utility District (SMUD), and the Sacramento County Regional County Sanitation District (SRCSD) to implement conservation rebate programs.

Over the past decade rebate programs have been historically offered to the City's customers through City run programs and the RWA regional partnerships. These programs range from toilet and washing machine rebate incentives for residential and business customers to state-of-the-art weather based "smart" irrigation controller rebates. Given that more than 70 percent of the City's demand is estimated to be residential and the region's warm and dry Mediterranean climate, an emphasis on residential outdoor water use is important because as much as 60 percent of residential water use goes to irrigating residential landscapes.

The success of the WCP will require that the City be proactive in marketing and educating customers as to the benefits of installing water efficient devices and changing water use habits. It is anticipated that many of these programs will increase in participation as more customers become metered and pay a volumetric rate for water used.

### 1.6.1 Laws, Regulations and Agreements

There are a number of water conservation related agreements, laws, codes and regulations that frame the requirements of the WCP; these are listed below. The WCP responds to these requirements and includes the conservation measures necessary for the City to stay in compliance with the requirements. Approval of the updated Water Conservation Element for the Water Forum Agreement is consistent with the City of Sacramento's Sustainability Master Plan Goals.

i. California State Senate Bill (SB X7-7) requires urban water agencies to reduce statewide per capita water consumption 20 percent by 2020.

ii. SB 407 – Requires residential and commercial property owners of pre-1994 buildings or dwelling units to replace existing plumbing fixtures with water conserving fixtures by 2017 and 2019 respectively and to upgrade existing buildings upon any remodel initiated after January 1, 2014; and authorizes the City to enact local ordinances for greater amount of water savings.

iii. Assembly Bill (AB) 715 – California Plumbing Code includes the new California Code of Regulations (CCR) Title 20 Appliance Efficiency Standards requiring High Efficiency Toilets and High Efficiency Urinals to be exclusively sold in the state by January 1, 2014.

iv. AB 1881 – State Model Water Efficient Landscape Ordinance adopted by the City in 2009; improves efficiency in water use in new and existing urban irrigated landscapes.

- In 2009, Sacramento City Council adopted an ordinance repealing and adding Chapter 15.92 to the Sacramento City Code related to water efficient landscape and irrigation. Additionally, City Council adopted an Ordinance amending Article XI of Chapter 13.04 of the Sacramento City Code relating to Outdoor Water Conservation to prevent waste and ensure reasonable use of water, and that promoted low volume irrigation methods to reduce the per capita amount of water used by City customers.

v. AB 1420 – Effective Jan. 1, 2009, eligibility for any water management grant or loan made to an urban water supplier, awarded or administered by the State be conditioned on the implementation of the Demand Management Measures (DMMs) (the Best Management Practices (BMPs).

vi. AB 2572 – Requires the City to install water meters by January 1, 2025 and charge upon volume of delivery. To meet California state law, the City is required to install over 60,000 water meters on unmetered single-family connections before 2025. As part of the City of Sacramento's capital improvement program, the City installs between 5,000-7,100 residential water meters per year with a goal to have all connections metered before January 1, 2025.

vii. Prop 84 – Requires priority project lists be included in Integrated Regional Water Management Plan for the American River Basin for the City and other local agencies to gain grant eligibility.

viii. AB797 – Urban Water Management Planning Act requires the City to implement either Demand Management Measures or Best Management Practices.

ix. California Urban Water Conservation Council (CUWCC) 2008 MOU – City has been signatory since 1995 and committed to implementing the Water Conservation Best Management Practices (BMP's).

x. Water Forum Agreement (City Agreement No. 199-222, updated in 2009 with Resolution No. 2009-433) –In 2009, the City adopted the updated Water Conservation Element (WCE)

to the 2000 Water Forum Agreement. The WCE is essential to meeting both of the co-equal objectives of the Water Forum, to meet the region's water supply needs, and preserve and enhance the lower American River. The Water Forum signatories agree to replace current water conservation plans with the California Urban Water Conservation Council Memorandum of Understanding (CUWCC MOU). Adoption is consistent with the City's Sustainability Plan.

xi. National Plumbing Code – passed in 1992 has long required more efficient plumbing fixtures to be for sale through the United States.

xii. SB 610 and 221–passed in 2003; these bills require coordination between land and water agencies to ensure that adequate water supplies are available before approval of large land development projects.

## 1.7 Plan Development with Stakeholders

Many experts were consulted during this collaborative process for their assistance in producing the WCP, particularly, the Sacramento Water Conservation Advisory Group (SWCAG), a multi-stakeholder group of approximately 20 entities, the City Water Ad Hoc Committee and City Manager, and the City DOU Management Team.

The SWCAG was established in November 2010 to serve in an on-going advisory capacity regarding the Sacramento water conservation programs and policies, and for strategic planning. The California State University, Sacramento (CSUS) Center for Collaborative Policy (CPP) helped to serve as a neutral facilitator. The DOU convened with the stakeholders to encourage effective water conservation policy and water use efficiency, advance public education and awareness, and build collaborative partnerships. The SWCAG members helped develop the City Water Efficiency Plan. Specifically, they:

- Provided input on water conservation policies and programs to support staff to achieve City's water conservation efficiency goals and targets.
- Worked with staff to collaboratively develop a SWCAG "work plan" including key advisory objectives and timelines.
- Provided specific feedback to the Water Conservation Interim Plan.
- Assisted in expanding public awareness, education and technical assistance including developing and relaying key water conservation messages to the community.
- Expanded partnerships with organizations to leverage results.

The WCP Project was conducted over a two year period. Significant stakeholder involvement was used to develop the most appropriate plan for the City. In 2012, City DOU presented possible Goals and Measures List (a list of 80 Water Conservation Measures that the City was currently providing and new Measures) to the SWCAG for comment at the meetings held between March

and June, 2012. The Facilitator assisted with achieving consensus on the Goals and the Measures that were evaluated. SWCAG Workgroups, DOU Workgroups and a Technical Advisory Workgroup were put in place to assist in reviewing, rating and ranking the Measures prior to evaluation. The final results were provided to the technical consultant, Maddaus Water Management, for the Decision Support System Cost Benefit Analyses.

City staff actively sought and considered input from SWCAG members and other interested stakeholders before finalizing the Measures that were evaluated. City staff was open to any and all input provided by SWCAG participants, and retained the flexibility to revise the scope in consideration of new information, advice, or events which were discussed with the SWCAG. The staff's goal was to direct facilitated discussion toward topics that would significantly benefit the City's water demand management and water conservation efficiency goals within a defined scope and limited resources.

The role of the SWCAG members is to provide informed advice to City Utilities staff about the City's water conservation programs and policies as outlined by the Water Conservation Plan. In order to provide the best possible comment on conservation issues, members learned about existing city policy and practices, water conservation community best practices, and the City's analysis of how best practices might be applied in Sacramento, e.g. the Water Conservation Plan cost-benefit analysis and any constraints in the City of Sacramento context. Members discussed their concerns and suggestions with each other and with City staff, and, where possible, utilized the neutral Facilitator to resolve any differences of opinion within the SWCAG in order to provide consensus-based recommendations to the City.

## Each SWCAG member had the following responsibilities:

- Become conversant with the City's Water Conservation Interim Plan, Goals and BMP Targets, Mission and Vision (2010-2015 Strategic Plan), programs, and policies (including ordinances).
- Attend all regularly scheduled SWCAG meetings and be prepared by having reviewed previous meeting summaries and materials distributed in advance of each meeting; or, if attendance is not possible, to check in with City staff or the facilitators to learn what was missed and to notify staff of an alternate that may attend the meetings, keeping in mind that consistent participation is important.
- Provide feedback and guidance to staff on the project work plan, upcoming meeting agendas, and other relevant issues.
- Work toward agreement on joint advice where possible by making good faith efforts to understand differing points of view.
- Provide effective representation by informing his or her organization of SWCAG discussions and consulting them on upcoming issues.

- City Staff had the following responsibilities: The Department of Utilities' Engineering and Field Services Divisions provided staff for the SWCAG and collaboratively created and managed the SWCAG work plan to ensure timely progress toward meeting the City's water conservation goals.
- Accurately convey information about water conservation program and policy issues, as well as resource and time constraints.
- Represent the interest of City ratepayers as well as Department of Utilities during SWCAG discussions.
- Work with the facilitators to coordinate logistics for meetings, including meeting dates, room bookings, and audio-visual equipment.
- Coordinate and prepare informational briefings and materials for SWCAG members.
- Actively solicit SWCAG member feedback throughout the planning process and incorporate input.
- Ensure City policy makers are briefed periodically throughout the planning process and consulted on any pressing issues.

## Facilitators

The Center for Collaborative Policy provided facilitation to the SWCAG. The role of the facilitator was to:

I. Provide recommendations to City staff for structuring SWCAG discussions, and facilitate those discussions.
II. Actively seek to help all parties express their concerns and recommendations to the full SWCAG and City staff, and to help SWCAG members resolve differences of opinion where possible.
III. Remain impartial as to the content of the policy and controversial issues under discussion.
IV. Coordinate with the project manager to develop agendas and meeting materials, and track meeting discussions and outcomes.

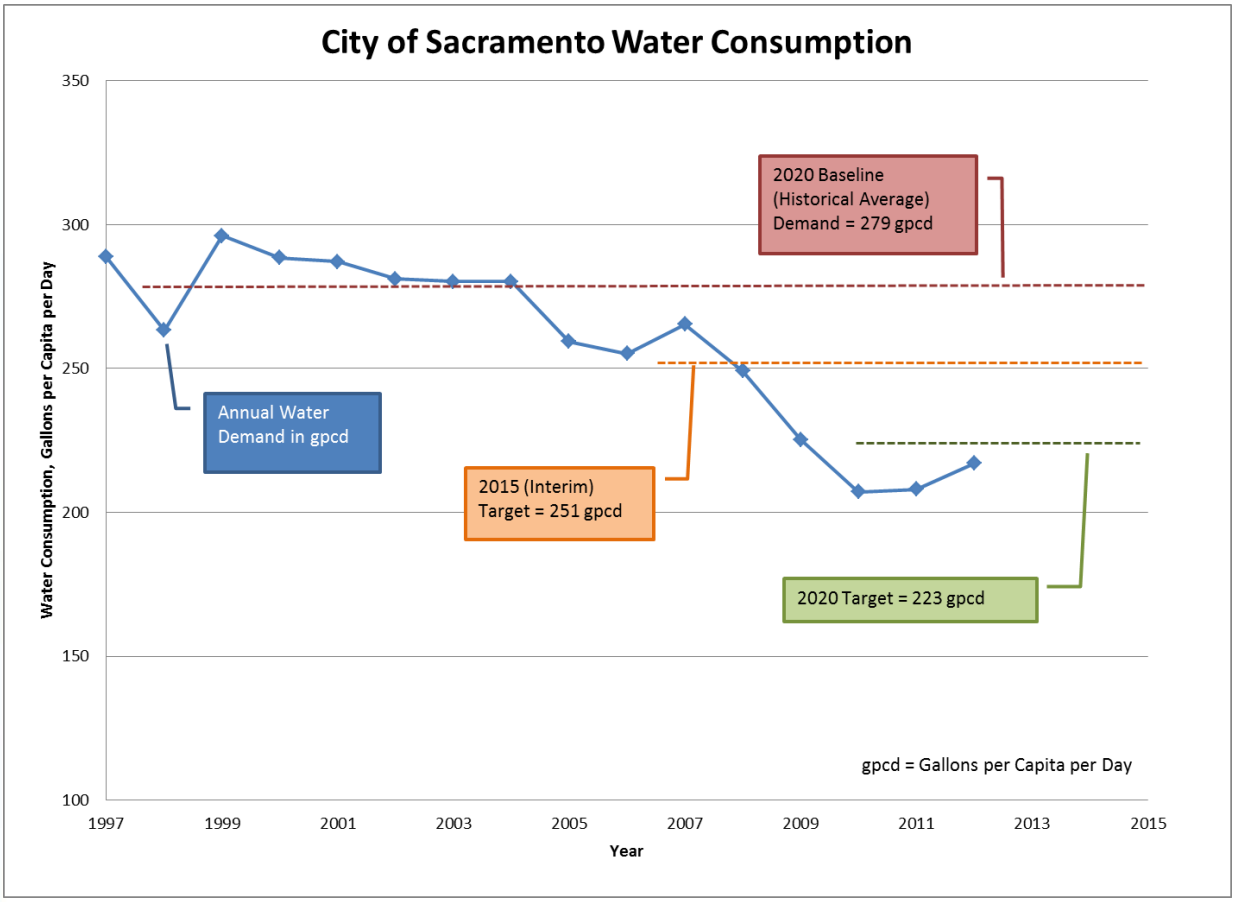
All decisions regarding City of Sacramento water conservation programs and policies remained the responsibility of the staff as directed by City Council. The SWCAG members were briefed and consulted throughout any City decision-making process and provided input at key decision points in an advisory capacity.

SWCAG members did not need to reach consensus on advice to the City; however, the facilitator assisted the SWCAG members in working toward consensus when it seemed achievable and would benefit the planning process.

# 2. ANALYSIS OF HISTORICAL WATER DEMAND

This section presents the City's water use patterns that were analyzed based on water production and consumption data provided by City staff to Maddaus Water Management in 2012 and 2013. A review of the historical demand trend in gallons per capita per day provided in the City's 2010 Urban Water Management Plan is presented in Figure 2-1. This historical trend is reflective of the current economic conditions that prevail across the United States including in the City's service area. For the UWMP and the analysis in the WCP, the "normal" base year without the influences of the current economic recession was assumed to be 256 GPCD as experienced in 2008. In 2012, demands have been modestly increasing across the Sacramento area as some economic recovery is occurring and is expected to continue, as discussed in Section 3.3. However, data for the past few years has yet to be weather normalized. The CUWCC's weather normalization tool will be available for use sometime in late 2013.

*Figure 2-1: Analysis of Historical Water Demand*




*Source: City of Sacramento, Urban Water Management Plan, 2010*

Given the City is not a fully metered system, assumptions were necessary and made based on existing consumption data for metered accounts for those accounts that are not yet metered (for purposes of developing the water balance in the DSS Model described in Section 3).

The available metered billing data was analyzed and considered only partially representative, given the City's system is being incrementally metered and not all neighborhood demand patterns are similar. Eight years of monthly water use data were analyzed (years 2005 to 2012) to derive average per account per day water use and are presented for informational purposes in Section 2.2). Data from each customer category was analyzed separately. Based on the City's water billing system of metered accounts, residential water use was broken down into single-family and multi-family categories. Historical data was segregated into indoor and outdoor water use by customer type using the monthly billing data. The residential per capita water use values were then checked based on available data that is calculated within the DSS Model for water use inside the home and outside the home. It is assumed that the relative difference between indoor use and outdoor for unmetered accounts would be similar. These estimates for per account and per capita consumption values were validated with other sources of municipal water use data applicable to the area. Other non-residential categories of use were analyzed separately. Average daily commercial/industrial and public water use was expressed on a gallons per account or gallons per employee basis. During this analysis, City water loss was also estimated after reasonable estimates were made to account for estimated total consumption compared to total production.

## 2.1 Comparison of Production versus Metered Consumption

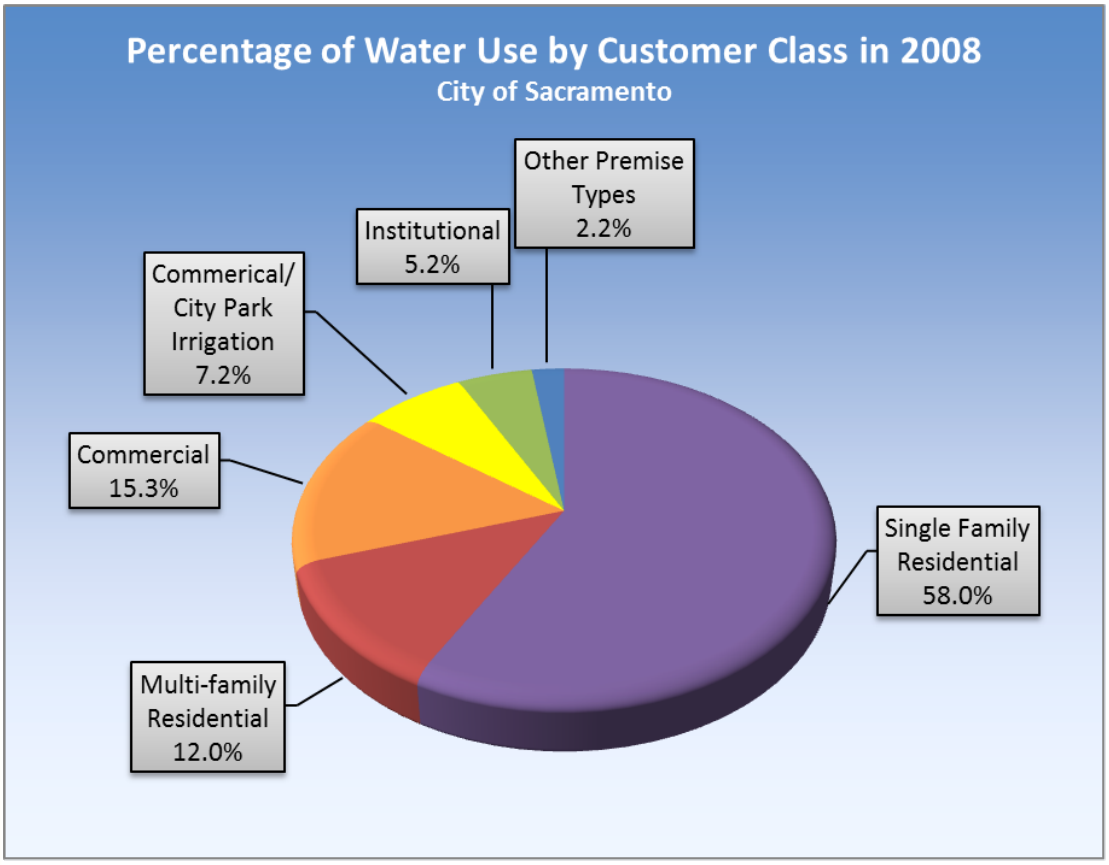
Water production data for the City was analyzed on a monthly basis for the period of March 2005 to April 2013. Water production data was measured at their respective sources. Water consumption data was measured at the customer meters. The difference between the amount of water produced and the amount of water billed is termed the non-revenue water. It is also quantified by what is called the "metered sales ratio" or the ratio of the volume of water consumption to volume of water production. The City roughly estimates that the metered sales ratio is approximately 85 percent (or water loss of approximately 15 percent) based on the 2010 City of Sacramento Urban Water Management Plan. A precise estimate cannot be made since the City is not fully metered. The CUWCC BMP 1.2 goal is to have the metered sales ratio above 90 percent (or total water losses less than 10 percent).

## 2.2 Estimated Total Consumption by User Category

The City has several different types of water users (e.g., customers that use water supplied by the City water distribution system). The City's various user categories may be generally classified as single family residential, multifamily residential, commercial, institutional, landscape irrigation,

and other premise types. The City is predominantly a residential community, with some light commercial and large institutional users (California State University Sacramento and Sacramento City Community College, State Capitol, government buildings, and regional hospitals). The largest category of users of water in the City is single family residential users that consume an estimated 60 percent of the water sold. Figure 2-2 shows the estimated annual consumption of the various user categories, based on the calendar year 2008 water use data from the City. Where necessary, consumption for unmetered accounts was estimated based on best available information[2]. The total average daily consumption was 118 MGD in 2008, excluding wholesale and wheeling[3] demands.

*Figure 2-2: Estimated Annual Breakdown based on Total Consumption by User Category*



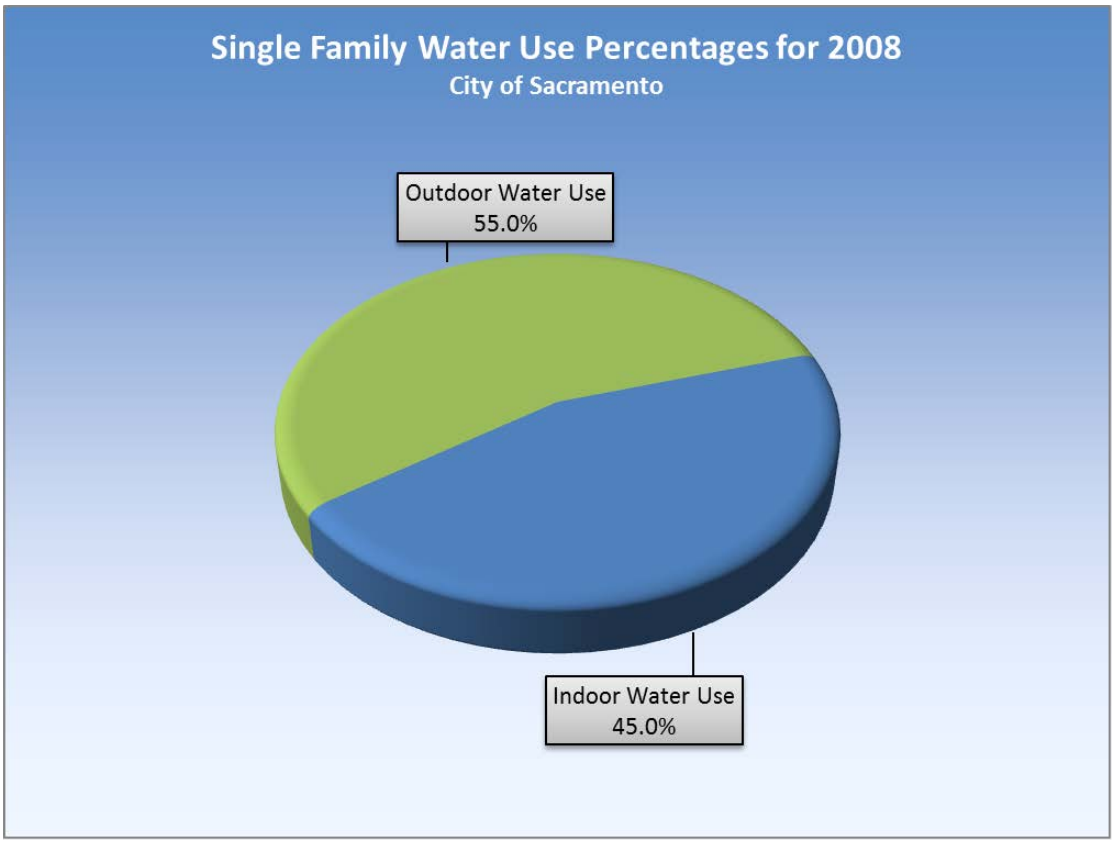

[2] 2008 based on rainfall data and billing data was considered the best representation of recent City Water Use. The 2009-2012 years were not selected for the base period for analysis due to the depressed economic conditions.

[3] Wheeling demand refers to the City using its treatment and distribution system to deliver water to another water provider, such as the County of Sacramento, that has its own rights to that water.

Overall residential use is estimated to be 70 percent of the total, which is typical of a city without significant industrial uses. Since single family residential uses formed the major portion of the City's water use (58%), it was analyzed further. Figure 2-2 highlights the breakdown of single family residential use as indoor and outdoor based on the assumption that indoor use is approximately equal to the minimum use in the winter. The year 2008 was selected for this profile as it was evident that there was minimal winter watering of landscape in this year. Recent water use has been depressed due to economic conditions and low rainfall, therefore 2009-2012 data was not directly used in the Annual Consumption by User Category analysis. The goal of the analysis by customer sector, shown in Figure 2-2, and the breakdown of indoor and outdoor water use, shown in Figure 2-3, was provided to help planners design conservation programs and key marketing messages to educate customers on ways to obtain the highest water savings.

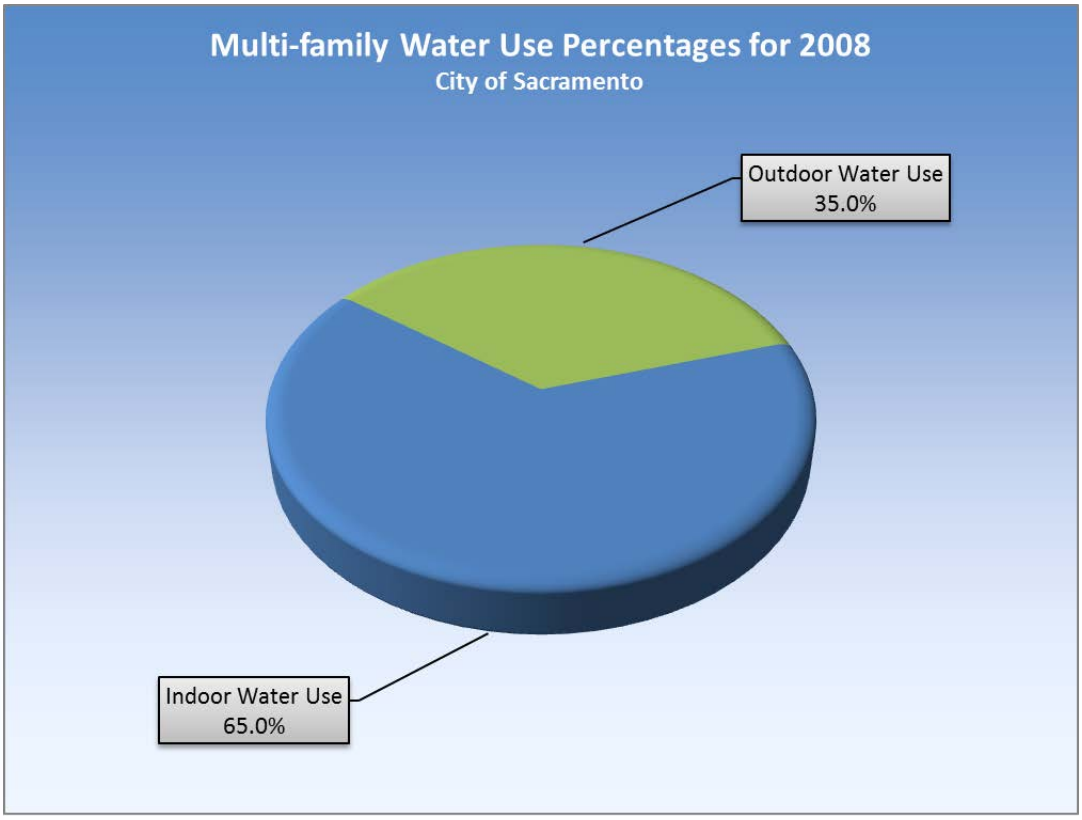
As seen in Figure 2-3, an estimated 45 percent of the average single family water use may be indoors based on winter use. Given residential customers are partially metered; winter outdoor irrigation will remain an estimate until the City is fully metered in 2025.

*Figure 2-3: Single Family Residential Water Use: Indoor vs. Outdoor*



As seen in Figure 2-4, an estimated 65 percent of the average multi-family accounts water use may be indoors based on winter use and the remaining 35% is estimated as outdoor use. Given that multi-family accounts typically are served by a master meter, winter outdoor irrigation may not be fully quantifiable even after the City is fully metered.

*Figure 2-4: Multifamily Residential Water Use: Indoor vs. Outdoor*



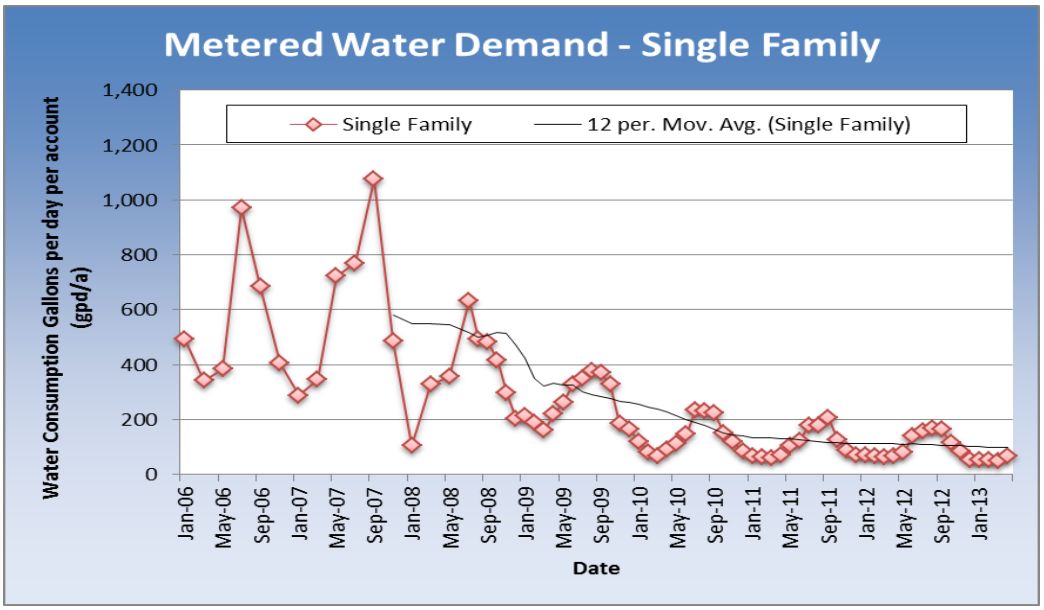

The remaining charts that follow show the average monthly usage per account per day for the specific types of customer categories: single family, multi-family, commercial, institutional, dedicated irrigation and other premise types. All categories exhibit a strong seasonal pattern where water use is higher in the summer.

## Several observations can be made when looking at Figures 2-5 through 2-10 as follows:

- Base Year Demands are set at 2008 levels to match pre-economic down turn levels
- The Non-Revenue Water (NRW) percentage is assumed to be 15% based on available information, which matches the percentage used in the 2010 UWMP. Since only 45% of all accounts are metered as of July 2012, NRW was not able to be calculated directly and was estimated.
- Population estimates were from the City's 2010 UWMP while employment estimates were from the Sacramento Climate Action Plan, Appendix E.
- Water billing records and census information was used to create an estimate of what type of residential accounts house the City's population as listed below.
- Household sizes for single family accounts were set to 2.97 people per dwelling, which closely matches the 2010 census value of 2.80 for one attached and/or one detached unit per structure.
- The household size for multifamily dwellings within a water billing account was set to 2.25 people per dwelling, which closely matches the 2010 census value of 2.12 for two or more dwelling units per structure.
- The indoor residential per capita use for single family homes is set to 73 GPCD, which is about 45% of the total single family residential per capita water use of 161 GPCD.
- The indoor residential per capita use for multifamily homes is set to 63 GPCD, which is about 65% of the total water use.
- The total population was split into three categories, single family (SF), multifamily (MF) and institutional population. The percentages were set to 73% single family, 25% multifamily and 2% institutional.
- When MWM prepared the City's water balance based on water demand from the City's billing system and compared to 2010 Census data for institutional population, the usage on a gallon per day per person basis appeared low. It was estimated that demands for the institutional customer category should be on the order of about 8% to align the demand with the anticipated gallons per day per account. There was no additional population or water consumption data available to validate this observation. The assumed missing population may be due to temporary population from CSUS or other housing developments or institutional occupants (i.e. hospital patients) which are classified by the census as MF or SF or reside outside of City limits and are not classified by the City of Sacramento as institutional population.
- Economic conditions starting in late 2008 and statewide drought conditions in 2007 led to a reduction in demand. Therefore, some of the decrease in water use is not actually a true long term reduction in water use, but only a reflection of the abnormal economic and drought conditions.

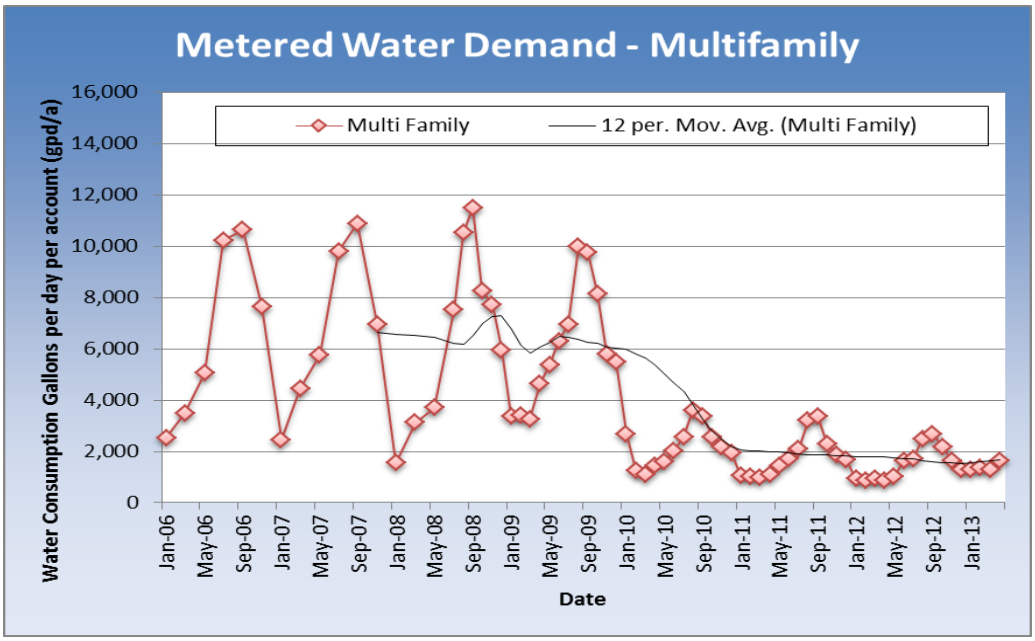
- The residential growth is predicted to occur equally in both single family and multifamily accounts at about 1% growth per year in each category. Single family and multifamily accounts have grown on average 1% per year over the last six years. Commercial accounts are predicted to grow at 1% per year based on the Sacramento Climate Action Plan. Single family per account water use for the metered accounts had a stable average daily water use per account over the past six years. This can indicate that new homes have a similar water use pattern as existing homes (per account) over the past six year period. Growth in recent years has slowed due to the current economic conditions.
- Multifamily water use per account has a downward trend that suggests that newer accounts may have lower occupancy (i.e. vacant or only one resident), and have been of the smaller size units, or have separate irrigation meters and/or conservation programs that drive the lower use per account.
- Irrigation water use per account remains the same, suggesting that new accounts may continue to use approximately the same amount of water without intervention from conservation activities (like a large landscape survey or incentive to upgrade).

*Figure 2-5: Single Family Consumption per Metered Account per Day*



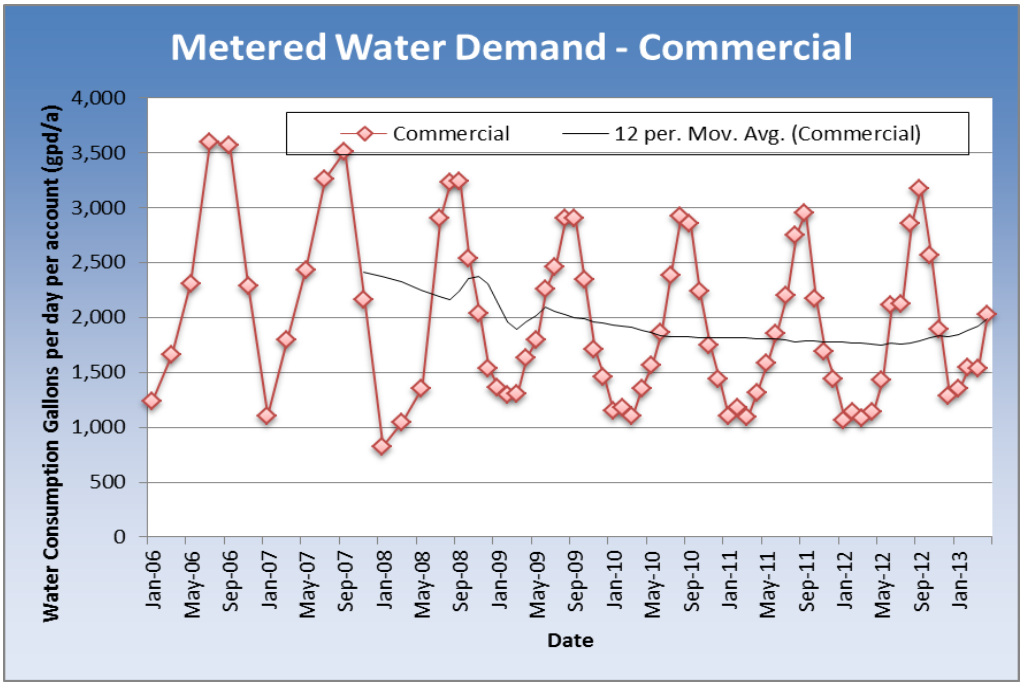

*Note: As of the end of FY 2012, approximately 40% approximately or 44,000 of the City's single-family accounts were metered.*

*Figure 2-6: Multifamily Consumption per Metered Account per Day*



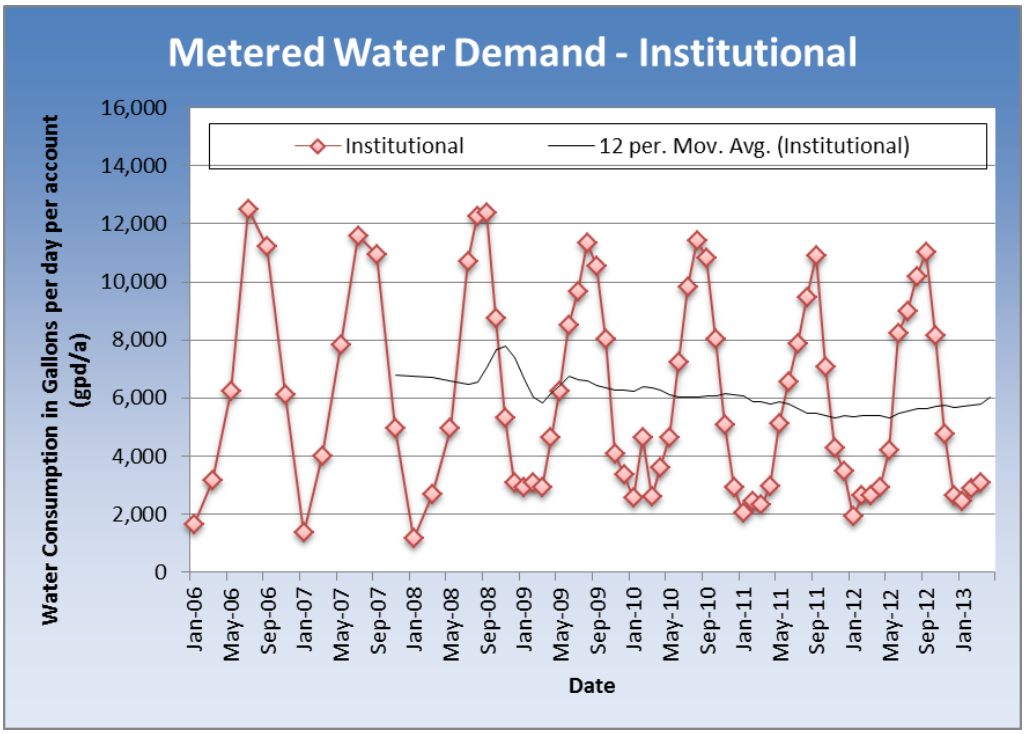

*Note: As of the end of fiscal year 2012 (June 30, 2012), 2900 or approximately 30% of the City's multi-family accounts are metered.*

*Figure 2-7: Commercial Consumption per Metered Account per Day*



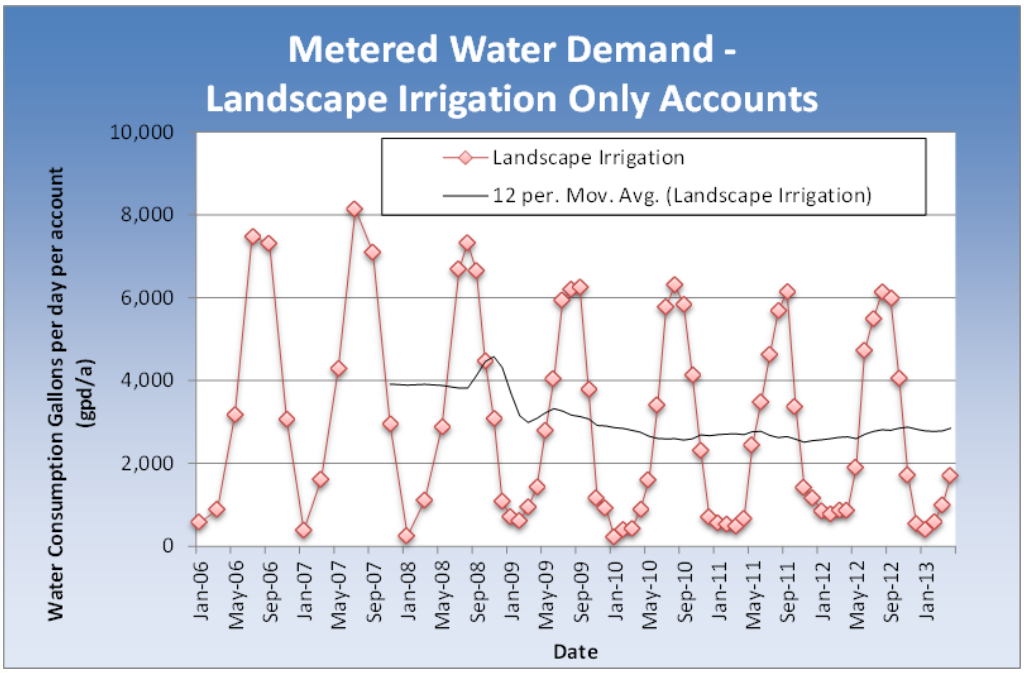

*Note: As of June 30, 2012 (end of fiscal year 2012), approximately 95% of the City's commercial accounts are metered.*

*Figure 2-8: Institutional Consumption per Metered Account per Day*



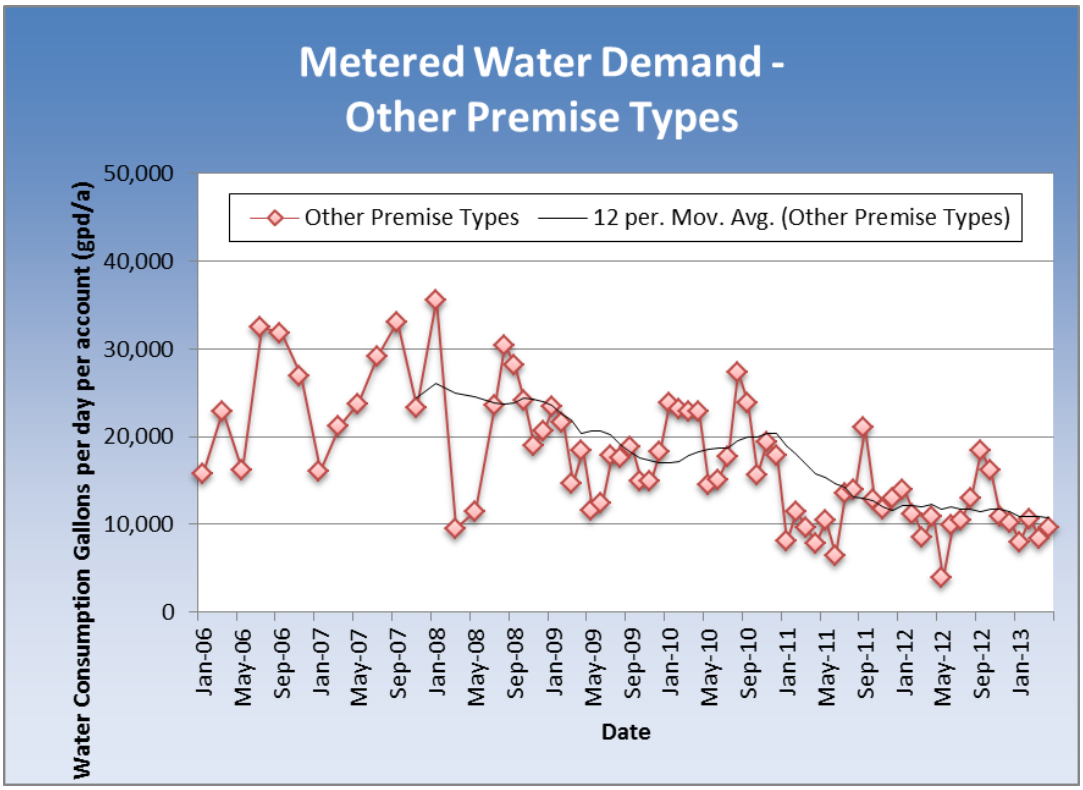

*Note: As of June 30, 2012 (end of fiscal year 2012), 88% of the City's institutional accounts were metered*

*Figure 2-9: Irrigation Consumption per Dedicated Metered Account per Day*




*Note: As of June 30, 2012 (end of fiscal year 2012), 97% of the City's landscape irrigation accounts were metered*

*Figure 2-10: Other Premise Types Consumption per Metered Account per Day*




Note: *As of June 30, 2012 (end of fiscal year 2012), 91% of the City's accounts coded as "other premise types" were metered*

The age of housing was analyzed for the City from the 2010 census data and provided in Table 2-1. The Table shows that the age of City homes is mostly older with about 62 percent of the homes built before 1980. Typically, older homes have older fixtures and more leaks and, therefore, have higher indoor usage. We would expect commercial and governmental buildings to be of a similar age (although the City has many historical buildings like the State Capitol with legacy fixtures and appliances). Building age is important in determining what types of plumbing fixtures were in the buildings when constructed. California began modifying plumbing codes starting in 1977. The latest requiring 1.6 gallon/flush toilets and water efficient shower heads and faucets (U.S. Energy Policy Act) took effect nationally in 1992. Since that time only about 16 percent of the buildings in Sacramento would have been built with these newer fixtures. Prior to 1977 toilets flushed with 4.5-7.0 gallons and there was no requirement on shower heads and faucets. Since January 2011, the California State Building Standards have new water efficiency requirements (referred to as Cal-Green building code) for new and remodeled homes and have required 20% more indoor water efficiency, commonly met by installing 1.28 gallons per flush (GPF) toilets. A new state law will take effect in the year 2014 requiring only 1.28 GPF toilets and 0.5 GPF urinals or lower to be sold in California, but as this law is not yet in effect, it has not significantly impacted the natural replacement of toilets for sale at this time.

However, note that the age of a building is only an indicator of its water usage. Additional analysis is required to determine the number of homes that have been remodeled or upgraded with more water efficient fixtures. This typically occurs at the rate of 3-5 percent of fixture replacements per year. In addition, the City has sponsored rebates on fixtures and given away thousands of conservation retrofit kits containing higher efficiency showerheads and faucet aerators. So clearly, although the buildings started out inefficient by today's standard, the stock of more efficient fixtures is unknown without a statistically valid saturation survey, which is not available at this time.

*Table 2-1: Age of Housing from Census 2010*

| Age of Housing from Census 2010<br>City of Sacramento | | | |
|---|---|---|---|
| **Year Structures Built** | **No. of Structures** | **Percentage** | **Cumulative Percentage** |
| Built 2005 or later | 13,741 | 7.14% | 100.00% |
| Built 2000 to 2004 | 16,906 | 8.79% | 92.86% |
| Built 1990 to 1999 | 14,624 | 7.60% | 84.07% |
| Built 1980 to 1989 | 26,958 | 14.01% | 76.47% |
| Built 1970 to 1979 | 31,951 | 16.61% | 62.45% |
| Built 1960 to 1969 | 24,479 | 12.72% | 45.84% |
| Built 1950 to 1959 | 25,910 | 13.47% | 33.12% |
| Built 1940 to 1949 | 17,411 | 9.05% | 19.65% |
| Built 1939 or earlier | 20,392 | 10.60% | 10.60% |
| **Total** | **192,372** | **100.00%** | |

The breakdown of indoor versus outdoor water use taken into account along with the age of building indicates that further conservation efforts provided by City staff focused toward the indoor uses of water may be warranted. Further research is needed to determine saturation of water efficient fixtures due to rebates, replacements and remodels. Subsequent sections of this WCP describe the conservation programs already being run by the City and further programs that the City could consider to reduce its water use.

## 2.3 Analysis of High Water Users

An analysis was conducted of the City's top 100 water users. The users were organized by type of customer such as single family, irrigation, commercial, multifamily, and institutional. The top 10 accounts have an average use of more than 268,000 gallons per day and the average of all 100 customers was 75,900 gallons per day. The average daily use falls off dramatically moving down the list, so that the user that is ranked number 100 uses about 30,850 gallons per day. The higher use per day may indicate increased opportunities to save water. The major top users fall into the following categories:

- Large commercial businesses (power companies, Proctor & Gamble, Nestle Waters, LPB Energy Management, Air Products & Chemicals)
- City and County of Sacramento (parks and city buildings)
- State of California (State and Federal buildings)
- Large landscape irrigation (parks and golf courses)
- Schools (California State University Sacramento, Los Rios Junior College, Sacramento Unified)
- Hospitals (UC Davis Hospital, Sutter General Hospital, Methodist Hospital, Shriners Hospital)
- Hotels (Hyatt, Sheraton)
- Large apartment and mobile home parks

The average use for all 8,500 commercial customers is approximately 1,880 gallons per day. This is almost four times the use of a typical single family home. However many of the commercial accounts are small and use less water than a home.

One use of this data would be to set a goal of water use reduction through targeted conservation efforts. If the City set a goal to save 10 percent of Commercial/Industrial (CII) water use, that would amount to 1.58 MGD. This goal could be achieved by working with the top 100 high-water customers and attempting to average 21 percent per large account. Identifying these additional opportunities for conservation may require detailed analysis to determine customer specific opportunities for water savings.

## 2.4 Local Climate Effects on Irrigation

The City's climate is characterized by hot dry summers and cool moist winters with moderate rainfall. The hot dry summers result in heavy irrigation water use while the winter demands are mostly for domestic uses. Rainfall occurs generally from October to April, averaging 20 inches a year, but varying widely from year to year. Monthly precipitation has been as high as 10 inches (February 2000) and as low as 0 inches in summer months.

Temperatures range from lows in the 20's in the winter to above 100 degrees Fahrenheit in the summer and fall, and the relative humidity ranges from 41 to 92 percent. Monthly evapotranspiration (ET0) values, which serve as indicators of how much water is required to maintain healthy agriculture and landscaping, range from 0.94 inches during December to 8.02 inches in June. The 30-year average is estimated to be 56 inches, one of the highest Climate Zones in the state, which helps to explain the higher GPCD compared to coastal communities. Additional climate information may be found in the City of Sacramento 2010 Urban Water Management Plan (UWMP).

## 2.5 Effects of Drought and Climate Change on Future Demands

As is noted in City's 2010 UWMP, there are a number of likely impacts due to climate change that will affect the City's future water demand:

- More frequent, intense and longer-duration of heat waves, which could cause a significant rise in heat-related mortality
- More frequent, intense or persistent periods of drought due to decreasing snow pack in the Sierra Nevada mountains
- Significant increases in sustained peak electrical power demand and greater stress placed on local utilities and emergency responders

Implementation of the City's WCP will help it meet the challenges of climate change, as demand is reduced through improved water efficiency. The City's peak demand, influenced heavily by irrigation demand, will be reduced and the City will be better able to mitigate the impacts of future drought.

# 3. WATER DEMANDS WITH AND WITHOUT PLUMBING CODE

This section presents the demographic and future water demands forecasted for the City of Sacramento.

## 3.1 Future Population and Employment Projections

There are generally three main sources of population and employment projections commonly used to generate future water demands for Water Conservation Master Plans.

### Available Demographic Projections

1. Water Supply & Utility Planning Reports including the 2010 Sacramento Urban Water Management Plan, Climate Action Plans, etc.
2. Local General Plan (population and employment) – Typically these plans, depending upon when they were published, have a population and jobs forecast through 2030.
3. Sacramento Area Council of Governments (SACOG) (population and employment) -The SACOG is an association of Sacramento region governments formed from the six area counties—El Dorado, Placer, Sacramento, Sutter, Yolo and Yuba—and the 22 member cities.

At the City's request, the population projections is based on Table 3 in the 2010 Urban Water Management Plan (City of Sacramento, October 2011) and employment projections were based on the Sacramento Climate Action Plan Appendix E, Page E-3 Projections (the report contains a table summarizing employment figures for 2005, 2020, 2030 and 2050) as presented below in Figure 3-1 and Table 3-1. Climate Action Plan projections are consistent with the 2030 General Plan projections adopted in 2009, which were used for Green House Gas (GHG) emission forecasts in the Climate Action Plan. The projections data have not been adjusted for the economic downturn.

For existing population and employment information for 2011, information is available from the California Department of Finance *E-1 Cities, Counties, and the State Population Estimates* (January 1, 2012 and 2013) Research and Demographic Reports, from http://www.dof.ca.gov/research/demographic/reports/estimates/e-1/

SACOG's adjusted regional projections were used in the recently adopted 2035 Metropolitan Transportation Plan (MTP). City Planning has not officially updated projections to match the SACOG projections, but will consider doing so in the development of the General Plan 5-Year Update, which will begin late 2012 and be completed by 2014. More information on SACOG's 2035 MTP growth projections can be found at the Metropolitan Transportation Plan Sustainable

Communities Strategy *Blueprint for Sustainable Communities* from: http://www.sacog.org/demographics/

*Figure 3-1: Population and Employment Projections*

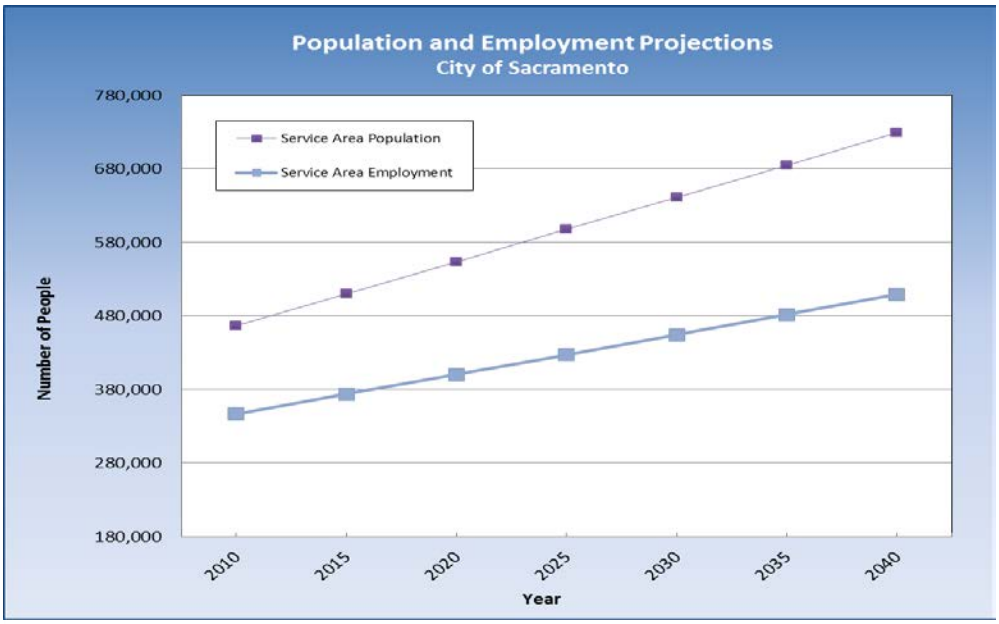



*Table 3-1: Population and Employment Projections*

**Current and Projected Population and Employment**
**City of Sacramento**

| Year | Service Area Population | Service Area Employment |
|---|---|---|
| 2010 | 466,488 | 346,697 |
| 2015 | 510,086 | 373,440 |
| 2020 | 553,724 | 400,183 |
| 2025 | 597,362 | 427,202 |
| 2030 | 641,000 | 454,221 |
| 2035 | 684,638 | 481,514 |
| 2040 | 728,276 | 508,806 |

*Sources: 2010 Urban Water Management Plan for Population Estimates, 2011 Climate Action Plan, Appendix E for Employment Projections*

## 3.2 Key Assumptions for the DSS Model

Table 3-2 shows the key assumptions used in the Demand Side Management Least Cost Planning Decision Support System (DSS) Model which is described further in Appendix A. The assumptions having the most dramatic effect on future demands are the natural replacement rate of fixtures, how residential or commercial future use is projected, and finally the percent of estimated real water losses.

*Table 3-2: List of Key Assumptions*

| List of Baseline Demand Projection Assumptions for DSS Model<br>City of Sacramento | |
|---|---|
| **Parameter** | **Model Input Value, Assumptions, and Key References** |
| Model Start Year | 2010 |
| Water Demand Factor Year(s) | 2008 |
| Peak Day Factor | 1.60 |
| Water Loss in the Start Year | 15.0% |
| Population Projection Source | Sacramento 2010 UWMP Table 3 Page 2-8 |
| Employment Projection Source | Sacramento Climate Action Plan Appendix E |
| Number of Water Accounts for Start Year | 133,696 |
| Avoided Cost of Water $/AF | Conversion AF to MG |
| Distribution of Water Use Among Categories | Single Family: 58% |
| | Multifamily: 12% |
| | Commercial: 15.3% |
| | Institutional: 7.2% |
| | Landscape Irrigation: 5.2% |
| | Other Premise Types: 2.2% |
| Indoor Water Use by Category | Single Family: 45% |
| | Multifamily: 65% |
| | Commercial: 63% |
| | Institutional: 42.2% |
| | Other Premise Types: 66.9% |
| Water Demand Factor by Customer Class for 2012 in gallons per day per account (gpd/a) | Single Family: 513 gpd/a |
| | Multifamily: 1,220 gpd/a |
| | Commercial: 1,920 gpd/a |
| | Institutional: 7,541 gpd/a |
| | Landscape Irrigation: 3,780 gpd/a |
| | Other Premise Types: 20,512 gpd/a |
| Residential End Uses | AWWARF Report "Residential End Uses of Water" 1999, DWR California Single Family Home Water Use Efficiency Study, 2011 |
| Non-Residential End Uses, % | AWWARF Report Commercial End Uses of Water" 2000 |
| Efficient Residential Fixture Current Installation Rates | U.S. Census, Housing age by type of dwelling plus natural replacement plus rebate program (if any). |
| | Reference "High Efficiency Plumbing Fixtures - Toilets and Urinals" Koeller & Company July 23, 2005. |
| | Reference Consortium for Efficient Energy (www.cee1.org) |
| Water Savings for Fixtures, gal/capita/day | AWWARF Report "Residential End Uses of Water" 1999, , CUWCC Cost and Savings Study April 28, 2005, Agency supplied data on costs and savings, professional judgement where no published data availble |

*Table 3-2: List of Key Assumptions Cont.*

| List of Baseline Demand Projection Assumptions for DSS Model<br>City of Sacramento | |
|---|---|
| **Parameter** | **Model Input Value, Assumptions, and Key References** |
| Non-Residential Fixture Efficiency Current Installation Rates | U.S. Census, assume commercial establishments built at same rate as housing, plus natural replacement |
| Residential Frequency of Use Data, Toilets, Showers, Washers, Uses/user/day | Falls within ranges in AWWARF Report "Residential End Uses of Water" 1999 |
| Non-Residential Frequency of Use Data, Toilets and Urinals, Uses/user/day | Estimated based using AWWARF Report "Commercial and Institutional End Uses of Water" 1999 |
| Natural Replacement Rate of Fixtures | Residential Toilets 3% (1.28 gpf toilets), 3% (1.6 gpf and higher toilets) |
| | Commercial Toilets 2% (1.28 gpf toilets), 2-4% (1.6 gpf and higher toilets) |
| | Residential Showers 4% |
| | Residential Clothes washers 9.1% |
| | A 3% replacement rate corresponds to 33 year life of a new fixture. |
| | A 9.1% replacement rate corresponds to 11 year washer life based on Energy Star web site July 2012, Internet address: www.energystar.gov |
| Future Residential Water Use | Increases Based on Population Growth |
| Future Commercial Water Use | Increases Based on Employment Growth |
| Future Non-Residential Non-Commercial Water | Increases Based on Population Growth |

## 3.3 Water Demand Projections With and Without the Plumbing Code

Water demand projections were developed out to the year 2040 using the DSS Model.

### This model incorporates information from the:

- Table 3-2: "Key Assumptions"
- Questions asked of the City of Sacramento staff
- Agency provided data including the following:
    - Historical water use data on a monthly basis for the different classes of water users.
    - Peaking factors for the water system.
    - Complete descriptions of past, present, and proposed future conservation programs including historic annual participation rates (described in Section 5).
    - Results of any independent analyses of water savings due to prior City programs.
    - Historical and projected water system service area population, employment, land use data, and growth projections through the year 2040, along with maps of the water system, political jurisdiction boundaries, and study area(s).

    - Customer characteristics and data needed to characterize water conservation measures, such as household size, dwelling unit mix, and number of facilities or businesses of a particular type.
- 2000 and 2010 Census data
- Local General Plans
- Sacramento Climate Action Plan Projection (Employment projection)

Water demand projections were inputted for 30 years using the DSS Model.

This model incorporates information from the:

- City selected population and employment forecasts.
- Data provided by City of Sacramento staff including estimates for value of water saved, historical water use, past conservation efforts, and water system facilities.

Table 3-3 shows the projected demands with and without plumbing codes and appliance standards. This data is presented both as a table and a graph. Key codes and standards are described below.

### National Plumbing Code

California is subject to national and state standards. The most stringent standards apply to new construction and fixture replacement. The Federal Energy Policy Act of 1992, as amended in 2005 requires only fixtures meeting the following standards can be installed in new buildings nationwide:

- Toilet – 1.6 GPF maximum
- Urinals – 1.0 GPF maximum
- Showerhead - 2.5 GMP at 80 psi
- Residential Faucets – 2.2 GPM at 60 psi
- Public Restroom Faucets - 0.5 GPM at 60 psi
- Dishwashing pre-rinse spray valves – 1.6 GPM at 60 psi

Replacement of fixtures in existing buildings is also governed by the Federal Energy Policy Act that requires only devices with the specified level of efficiency (shown above) can be sold today (since 2006). The net result of the plumbing code is that new buildings will have more efficient fixtures and old inefficient fixtures will slowly be replaced with new more efficient models. The national plumbing code is an important piece of legislation and must be carefully taken into consideration when analyzing the overall water efficiency of a service area.

In addition to the plumbing code, the U.S. Department of Energy regulates appliances such as residential clothes washers. Regulations to make these appliances more energy efficient has driven manufactures to dramatically reduce the amount of water these efficient machines use. Generally, high efficiency models of clothes washing machines use 30-50 percent less water than conventional models (which are still available). In the analysis for the City, the DSS Model forecasts a gradual transition to high efficiency clothes washers (using 19 gallons or less) so that by the year 2020 this will be the only type of machines purchased. In addition to the industry becoming more efficient, rebate programs for washers have been successful in encouraging customers to buy more water efficient models. Given that machines commonly last about 15 years, eventually all machines in the City service area will be of this type.

### State Plumbing Code

The Plumbing Code includes the new CCR Title 20 California State Law (AB 715) requiring High Efficiency Toilets and High Efficiency Urinals to be exclusively sold in the state by 2014. The California building code has required water efficient fixtures as part of the Cal Green code that was effective January 1, 2011. Please see Section 6.1 for more information on Cal Green required elements.

Figure 3-2 below describes conceptually how the above listed items are incorporated into the flow of information in the DSS Model.

*Figure 3-2: DSS Model Overview Used to make Potable Water Demand Projections "With the Plumbing Code"*

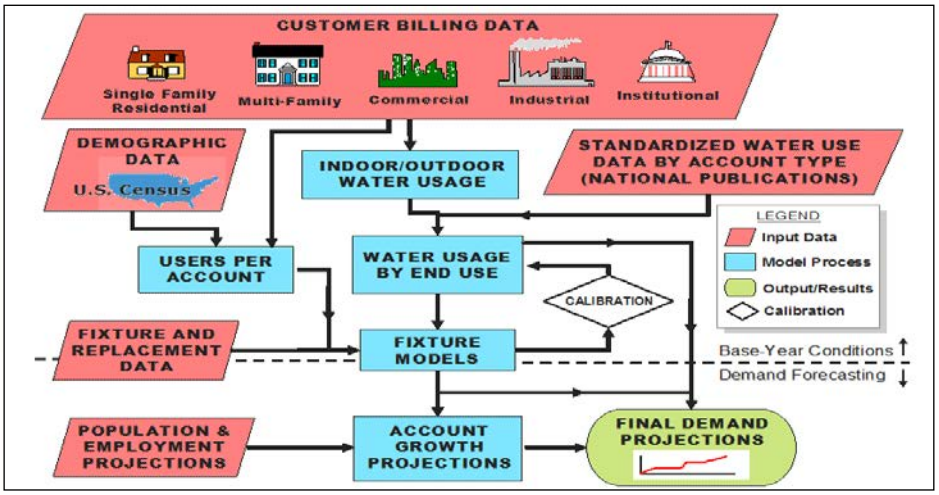


Figure 3-2 shows the potable water demand projection at five-year increments. The graph shows projections for demand with and without the plumbing code through 2040. This graph illustrates that the DSS Model demand projection is consistent with 2010 UWMP projections.

Starting more than 5 years ago, water demand has been repressed due to a potential variety of factors, including the economic downturn. In the 2010 UWMP, the City projected that estimated demands will rebound prior to 2020 to approximately pre-recession levels based on water production levels in 2008 equating to 256 GPCD.

Currently, the City has estimated water demand may return to approximately 256 GPCD under normal economic conditions (without conservation), the amount of water savings estimated to reach the 223 GPCD target specified in SB X7-7 by 2020 is 33 GPCD and serves as the goal for the WCP. Most recently, water production has trended back up from 207 GPCD in 2011 to 217 GPCD in 2012.

### Table of water demand projections (Table 3-3)

The table of water demands projections includes:

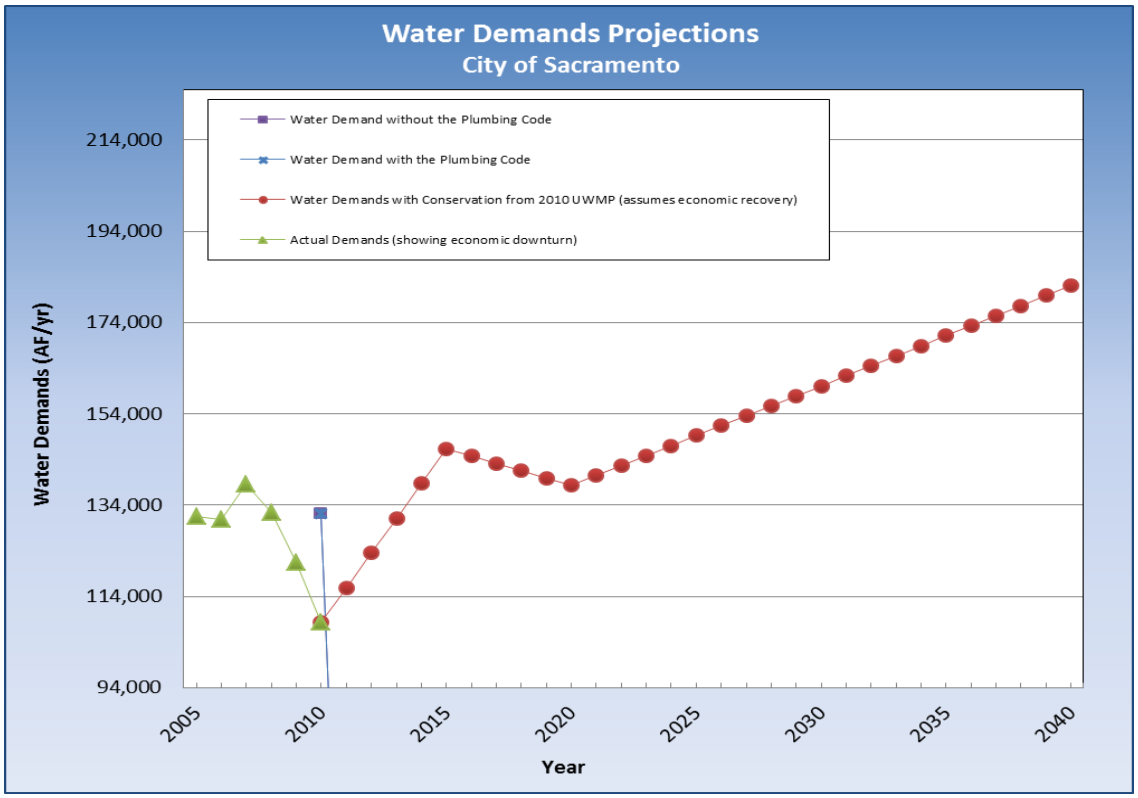
- The water demand projections shown in Table 3-3 are based on the future population projections provided in Table 3-1. The DSS Model uses demands under normal economic conditions in order to accurately reflect changes in demand due plumbing code and conservation program savings.
- Projections were made *with and without* the plumbing codes.
- Projections are for potable water only.

### Dry Year and Abnormal Economic Demands

The demand projections reflect average weather conditions and **do not** reflect drier, hotter, non-drought conditions. The demands projections also do not factor in abnormal economic conditions, and conservatively assume the economy will rebound to pre-recession (2008) demands.

The City will continue to track and monitor its water demands (at minimum on an annual basis) and adjust its demand projection and its water conservation program as needed to comply with the CUWCC MOU in the near term and to meet SB X7-7 requirements by 2020. The City will need to remain flexible in gauging the work remaining to lower per capita demands to meet the targets.

Figure 3-3: Water Demand Projections




*Source: DSS Model May 2013*

*Table 3-3: Water Demand Projections*

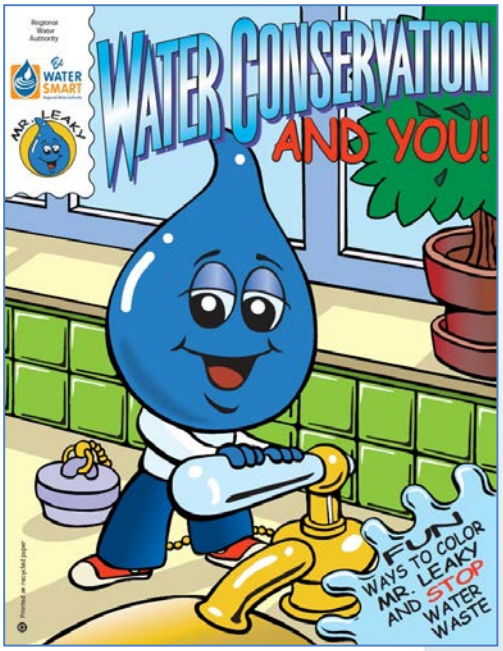
| Water Demands Projections<br>City of Sacramento | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Water Demand (AF/Yr)** | 2010 | 2015 | 2020 | 2025 | 2030 | **2035** | **2040** |
| Water Demand without the Plumbing Code | 132,176 | 145,408 | 158,020 | 170,512 | 183,008 | 195,508 | 208,439 |
| Water Demand with the Plumbing Code | 132,176 | 142,160 | 158,020 | 170,512 | 183,008 | 195,508 | 208,439 |
| Water Demands with Conservation from 2010 UWMP (assumes economic recovery) | 108,276 | 146,300 | 138,300 | 149,200 | 160,100 | 171,100 | 182,100 |

*Source: DSS Model May 2013. Data is not weather normalized.*

# 4. CURRENT WATER CONSERVATION PROGRAM

The purpose of this section is to evaluate the City's existing water conservation program, and identify appropriate conservation opportunities that would further meet the City's water conservation goals.

## 4.1 Historical Background




The City has had an evolving conservation program for decades. The City's conservation efforts, like many California water utilities dated back to the extreme drought in the 1970s. The City is a long standing member of Sacramento Area Water Works Association (SAWWA) beginning when it was founded in 1958. The SAWWA Conservation Committee that started during the drought in 1976-77 primarily focused on water waste prevention. In the early 1990s, the City helped lead SAWWA's efforts to begin a regional public outreach and school education program, including a Mr. Leaky mascot that continues today through support by the Regional Water Authority. More information related to SAWWA is found online at www.sacwaterworks.com.

The City also became a formal signatory member of the Memorandum of Understanding for Urban Water Conservation (MOU) overseen by the California Urban Water Conservation Council (CUWCC) in 1995. The City's initial efforts focused on the original list of 16 CUWCC Best Management Practices (BMPs) that was revised to the CUWCC 14 BMPs created in 1997. These 14 BMPs were required of the CUWCC signatories until the end of 2008. Effective January 1, 2009, the CUWCC members are expected to comply with the new and revised CUWCC BMPs. In addition, the City was also a signatory to the 2000 Sacramento Water Forum Agreement that included a Purveyor Specific Agreement for Conservation that followed the original 16 BMPs and in 2009 was modified to follow the CUWCC MOU and future updates. More information related to the CUWCC is found online at www.cuwcc.org and for the Sacramento Water Forum at www.waterforum.org.

As a member of the Regional Water Authority (RWA), a joint powers authority of 22 water purveyors, the City of Sacramento participates in the Regional Water Efficiency Program (RWEP) designed to implement best management practices on a regional basis. Over the past 10 years,

the City has been participating as a dues paying member in active leadership, committee and implementation support roles. As a direct benefit to the City's customers, the RWEP provides dedicated staffing to support regional public outreach and school education programs and regional grant assistance projects through Proposition 13, 50 and 84. More information on RWEP is found online at: www.bewatersmart.info.

The City has been an active participant serving on many committees for both the CUWCC and RWA. The City's current water conservation program design is based on a combination of the City's commitment to carrying out the CUWCC Best Management Practices (BMPs) including Programmatic BMP requirements and the City's desire to be water efficient. This planning effort is charting the new path forward to meeting both the CUWCC MOU and Water Forum Agreement commitments using the CUWCC Gallons Per Capita Per Day (GPCD) track in addition to the SB X7-7 requirements.

## 4.2 Current Program Overview

The DOU demonstrated its dedication to water conservation and water use efficiency to help meet future water demands and uphold commitments in its recent reporting to CUWCC and the Water Forum. Additionally, the DOU and the Water Forum collaborated to produce the "Interim Water Conservation Plan" (IWCP) in 2009 and 2010. The IWCP was included in the Appendices to the Urban Water Management Plan adopted by City Council in 2010, and communicated the City's approach and commitment to implement a program that reflects environmental stewardship and continues to foster water efficient practices.

The DOU works with its regional and statewide partners to implement the objectives of the CUWCC and Water Forum. In addition to RWA's programs, the City works with several regional associations to promote collaboration and provide a unified voice on Northern California water issues. The City specifically partners with the regional sanitation district, local energy providers, and storm water quality agencies. These agencies and partnerships provide multiple resources and outlets for public education, including but not limited to school education in the classroom, media campaigns, and regional and City-wide special events. They also provide resources for water efficiency programs for businesses, water audits, rebate programs, collaborate grant funding and discount rates for purchasing plumbing and landscape products.

The Sacramento Water Conservation Advisory Group (SWCAG) was established in November, 2010 and works to provide input on water conservation goals, measures and implementation strategies. The DOU Staff, including the Water Conservation Office are dedicated to implementing the most cost-effective programs many of which also benefit the health of the rivers and groundwater resources which are integral to the region's quality of life.

## 4.3 Description of Current Programs

The following section provides a summary of the City's current water conservation program including partnerships and funding from three main categories: (1) Programs offered directly by the City of Sacramento, (2) Programs offered by the Regional Water Authority (RWA), and (3) Grant funded programs.

Historically, without residential meters, the customer participation rates in the City's conservation program have been lower than desired. As more than 6-7,000 meters are installed per year, more and more customers have an added incentive to participate in the City's programs.

Highlights of the current program are below.

### Foundational BMPs

#### Outdoor Water Conservation Ordinance and Water Waste calls

- Advanced Meter Infrastructure (AMI) and water conservation protocol for addressing customers with leakage. DOU has improved leak detection and reduced lost water, enhanced conservation measures, and encouraged the repair of leaky fixtures.
    - In 2010, AMI Pilot Program resulted in savings in production costs, lower costs to the customer, and water savings. Of approximately 7,000 residences identified with irregular water use, 10 percent were field investigated; 155 million gallons aggregate annual water loss was identified.
        - 20 percent of the customers investigated utilized a free Water Wise House Call resulting in 114 million gallons of water saved.

- Updated the Outdoor Water Conservation ordinance to include leakage, as well as provisions for enforcement such as escalated penalties for outdoor water waste.
- Water Waste Inspectors respond to an average of more than 2,000 Water Waste calls from customers observing water waste annually; all calls are followed up on and approximately three percent of these are issued a Notice of Violation.

#### Water Loss Control Programs

- The DOU Operations and Maintenance Division currently has one in-house leak detection crew that actively detects and repairs leaks throughout its distribution system. The City intends to add crews over time, as budget allows, to address leak detection and repair.

- Field Services has also been actively addressing apparent losses and replacing large meters along with its meter retrofit program. This includes modifying large meters to be compound meters on sites where irrigation budgets are planned, and replacing aging and often leaking mains located in the back yards of many of the homes within our community.

### Metering with Commodity Rates

- The DOU is aggressively pursuing funding opportunities to accelerate meter installations. In 2009, the City secured $22.6M in federal grant and loan funds from the American Recovery and Reinvestment Act (ARRA) which allowed the program to triple the number of meters installed in one year compared to the previous four years combined.

  As of the end of FY 2012, the City installed 61,888 meters (47 percent of all accounts), and had $860,000 budgeted in corrective leak maintenance and $100,000 in leak detection programs.

### Conservation Pricing

Now with nearly half of residential customers having meters and paying a volumetric rate for their water use, there is some modest monetary incentive to participate in City programs. Participation is envisioned to increase based on the City taking steps to change its rate structure as described in Section 4.4 below.

### Public Outreach Programs

Public Education and Outreach is a major focus of the Water Conservation Office as the City strives to garner more participation in the City's programs.

### Water Conservation Brochures, Handouts, Billing Inserts, Website and Partnerships

- Staff participates annually in about 40 outreach events annually;
- Staff sends billing inserts to 136,000 customers, conducts media interviews and community presentations.
- The City's Water Conservation Programs website is www.SpareSacWater.org
- City participates in an Energy-Water Partnership with Sacramento Municipal Utility District (SMUD) including the business walk.

### City and Regional Media Campaign

- The City's current water conservation media campaign is "Spare the Water." The DOU announces a

"Spare the Water Alert" when three consecutive days of 100+ degree temperatures are forecasted. During an Alert the City asks customers to voluntarily cut back on their nonessential water use, to follow the City's watering rules, only water on their watering days, and to water lawns before 10 a.m. and after 7 p.m.

- The City participates in the regional "Blue Thumb" program run by the Regional Water Authority focusing on water customer's savings. The Mayor of Sacramento, Kevin Johnson, is featured in the campaign's Public Service Announcement. The Public Information Officer for the City has been a key member of the regional Public Outreach and Education Committee.

"Blue Thumb" pledge promotes the reduction of outdoor water use; from stopping runoff to using a shut-off nozzle on the hose, to watering efficiently. RWA helps people understand that in Sacramento region's hot, dry climate and long summer season, more than 55 percent of a household's yearly water consumption typically goes toward landscape irrigation. Of that, 30 percent is lost due to overwatering or evaporation. The Blue Thumb campaign is being promoted and supported by funding from the 22 local water purveyors throughout Sacramento, Placer and El Dorado Counties and the City of West Sacramento in Yolo County. For more information or photos of people who have taken the "Blue Thumb Pledge" please see the following website: www.bewatersmart.info/blue-thumb/

## River Friendly Demonstration Gardens

- The Water Conservation Program has a River Friendly demonstration garden at the City of Sacramento Department of Utilities Water Conservation Office. The Sacramento Water Wise Garden opened on May 23, 2011 and features drought tolerant plants such as butterfly bush, Santa Barbara daisy, lavender and rosemary. It also features high efficiency sprinklers and drip irrigation that help to limit its water usage. The site also utilizes a "smart" irrigation controller that uses local weather data to determine how much water to apply. There is educational signage onsite to provide visitors tips on ways that they can spare Sacramento's water while maintaining a beautiful landscape.

- The Sacramento Water Wise Garden has had success in demonstrating water savings. The City estimates that the new landscaping and irrigation has helped the Office location save about 44% of the water it previously used to irrigate the property. The garden is open to the public year-round. More information regarding the water conservation is located on the City's website, www.sparesacwater.org

## Sacramento Water Conservation Community Workshops

- The City Water Conservation Team offers free Water Conservation workshops during the spring and summer. Attendees learn about water efficiency, the City's watering ordinance and how to maintain a beautiful yard while saving water and money.
- Past workshops have been held at the City of Sacramento Department of Utilities Water Conservation Office and utilize the City's Water Efficient Demonstration Garden Attending workshops qualifies attendees to become City of Sacramento Water Conservation Ambassadors and offers customers that have received a second water waste notice the ability to waive the fine.

## Sacramento Water Conservation Ambassadors

- Sacramento Water Conservation Ambassadors help spread the word about water conservation and protection of Sacramento's water sources. Ambassadors help educate neighbors, friends, family, and community organizations about conservation and attend community events, conduct "knock and talks," and present at community meetings.
- The City has recruited and trained about 35 Water Conservation Ambassadors. The trainings are held multiple times per year, primarily during the summer months.

## School Education Programs

- The City's support for school education programs dates back to more than two decades with the regional SAWWA Conservation Committee activities and continues to this day.
- The Sacramento Bee is the regional newspaper that has long supported the Newspaper in Education Program that touches on a number of topics each week throughout the school year

and has traditionally distributed the "Water: Here to Eternity" print materials out to hundreds of teachers and thousands of students within the City between K through 5th grades.

- The City participated through RWA in a regional video contest among high school students on outdoor water conservation messages. Winning videos are posted online: www.bewatersmart.info.

### Outdoor Landscape Ordinance and Audit Programs

The City has multiple programs focused on outdoor water use described below:

### Outdoor Water Conservation Ordinance, Water Efficient Landscape Ordinance and AB 1881 Compliance

- Worked with City-wide Technical Advisory Committee to adopt the State's Model Water Efficient Landscape Ordinance in December, 2009.
    - City DOU plans to initiate review of the Water Efficient Landscape Ordinance and enforcement.
- Adopted an Ordinance amending Article XI of Chapter 13.04 of the Sacramento City Code relating to Outdoor Water Conservation and included escalated penalties for water waste in November, 2009. The amendments improved the Outdoor Water Conservation Ordinance, facilitated implementation of the water conservation program, and aided in meeting the City's commitments to improved water efficiency.

### Free Surveys/Audits - "Water Wise House Calls" and "Parks Water Use Analyses"

- Water Wise House Calls involve a trained Water Conservation Specialist visiting a home or business to identify potential water savings. Indoors, they check appliances and plumbing fixtures for water leaks and measure the flow rate of faucets and showerheads. Outdoors, they test the irrigation system and look for leaks or broken sprinkler heads, discuss how much water the landscape really needs to be healthy, and help set customer's irrigation timer.

  Water Conservation Specialists perform large landscape water use analyses on approximately 120 City Parks annually. Previously, 2/3 of the parks used more than the maximum applied water allowance, and after the program was initiated, only 1/3 of the parks used more.

### Incentive / Rebate Programs

The City program provides rebates for water users to improve their efficiency through appliance and equipment retrofits and replacements. The rebate programs described below are

coordinated with support from the Regional Water Authority's Regional Water Efficiency Program. The clothes washer rebate program is administered by Sacramento Municipal Utility District (www.smud.org). The toilet replacement and clothes washer program is administered by the City and the Regional Water Authority with costs shared by the Sacramento County Regional Sanitation District. The toilet and irrigation rebates are supported with funds through the California Department of Resources Proposition 50 Drought Assistance Grant.

### Current Water-Efficient Device Rebate Levels

- Single-Family High Efficiency Clothes Washer: $200.00
- Single-Family High Efficiency Toilet (1.28 GPF or less): $100.00 (with a Water Wise House Call required in advance)
- Multi-Family High Efficiency Toilet (dual flush or 1.28 GPF or less): $100.00
- Multi-Family High Efficiency Clothes Washer: $100.00
- CII High Efficiency Toilet (dual flush or 1.28 GPF or less): $150.00
- Urinal (ultra-low/zero water upgrade - on 1.0 GPF to ultra-low water): $150.00
- Water Smart Irrigation Controllers upgrade: $500 per controller.
- Pre-rinse Spray Valves upgrade: $30

All of the programs and rebate values are subject to change in the future. The values shown were current at the time the WCP work was conducted. The following Table 4-1 shows the participation levels for various conservation rebate activities for the last 4 years:

*Table 4-1: Historical Conservation Measure Implementation Rates*

| Historical Conservation Measure Implementation Rates for Selected Measures<br>City of Sacramento | | | | |
|---|---|---|---|---|
| **Measure Description** | **FY 08/09** | **FY 09/10** | **FY 10/11** | **FY 11/12** |
| Prohibit Water Waste - Water Waste Service Requests | 1,740 | 3522 | 1,875 | 1,589 |
| Prohibit Water Waster - AMI Leak Investigations | 0 | 0 | 564 | 1,374 |
| Public Education - Plumbing Retrofit Kits | 565 | 567 | 1,349 | 816 |
| Public Education - Outreach Events | 14 | 29 | 14 | 8 |
| Public Education - New Residential Packets | 3,149 | 3888 | 3800 | 2,850 |
| Single Family Surveys / Audits | 220 | 330 | 578 | 767 |
| Multi-Family Surveys / Audits | 24 | 277 | 771 | 86 |
| Residential Clothes Washer Rebates | 0 | 100 | 437 | 250 |
| Institutional Surveys / Audits | 13 | 8 | 6 | 9 |
| Commercial Surveys / Audits | 54 | 24 | 48 | 34 |
| Residential Toilet Rebates | 1050 | 1486 | 695 | 209 |
| Commercial Toilet Rebates | 633 | 229 | 4 | 13 |
| Institutional Toilet Rebates | 0 | 2 | 18 | 40 |
| Commercial Urinal Rebates | 37 | 37 | 0 | 2 |
| Irrigation Surveys | 9 | 5 | 3 | 1 |
| Irrigation Budgets | 122 | 122 | 122 | 164 |

## 4.4 City of Sacramento Water Billing Structure

### Commitment to Conservation and Meeting Conservation Requirements

The City is committed to the effective and efficient use of its water resources. In 2005, the City began one of the most significant capital improvement projects in its history – installing more than 110,000 water meters by 2025 and transitioning all water customers to a metered rate[4] at a cost approaching $350 Million. The City is attempting to complete this metering program as quickly as possible. This approach is putting the City's water utility on the right path towards achieving compliance with regulations and best business practice guidelines. As the City's metering program continues and customers are transitioned to the City's water conservation pricing structure, the direct pricing signal it sends will provide an increasing number of customer incentives to conserve water.

### City of Sacramento Water Fee Structure Overview

The City currently charges both a flat rate structure and a uniform metered charge for its customers. In areas of the City without meter connections, flat rate charges vary by customer classes. Single family and multi-family customer classes pay different flat rates based on number of rooms per unit. Where meters are installed and charged, metered consumption fees consist of two components – a monthly fixed charge based on meter size; and a volumetric uniform commodity rate charged per hundred cubic feet.

Once a meter is installed, the customer continues to be billed on a flat rate for one year before the metered rate is charged. During this year, the customer's water usage is displayed on the bill allowing the customer to become familiar with his or her water usage and make water conservation choices. This 'shadow billing' is a critical communication and public outreach strategy employed by the City to encourage conservation.

The City's current metered rate was restructured in 2009. At that time, approximately 5% of the total accounts in the City of Sacramento were billed on a metered water rate. As of January 2013, 43% of accounts are billed on a metered basis.

As part of its comprehensive evaluation of water rate structures, the DOU retained FCS Group to conduct a water conservation pricing study. The study, which describes alternative conservation pricing structures and identifies the advantages and disadvantages of such structures, was recently completed. A cursory review of the City's residential water usage data was performed as part of the study, and the results indicate that the City has experienced a natural per capita water

[4] Meter installation costs include the relocation of system laterals and associated distribution infrastructure.

demand reduction and reduced revenue annually for customers transitioned from flat to metered service.

As with other Sacramento Valley water agencies, the City's per capita water demand reduction is due to continued efficiencies in plumbing fixtures, appliances and building codes, current economic conditions, the recent drought, environmentally conscious water usage behaviors, and the effect of price elasticity. While the reduced revenue may be attributable to the various factors impacting demand, the study also suggests that the existing volumetric charge is insufficient to recover the full cost of providing water service. Recognizing the loss in revenue when transitioning customers from flat to metered water rates, the City initially addressed this issue as part of its utility financial planning and rate-setting process.

The FCS study recommended the DOU:

- Continue to make its meter transition program a priority and to collect information on metered consumption to better understand behavioral changes.
- Assess existing volumetric charge for metered accounts to evaluate the sufficiency of cost recovery.
- Identify conservation rate pricing objectives that meet short-term and long-term needs and consider implementing a more conservation-oriented rate design, such as increasing block rates for residential customers.
- Maintain open dialogue with internal and external stakeholders to gather perspective on, evaluate, and implement conservation-oriented rates.
- Monitor utility billing information as it relates to fixed and variable revenue and costs.

With the completion of the FCS Group study, the DOU is evaluating the recommendations and working collaboratively with its stakeholders to establish clear revenue program goals. The study also recommends that the DOU re-evaluate the metered rate structure as the City nears 50% residential metering. According to the City's meter transition plan, 62% percent of residential customers will be metered within the next 3-5 years. Modifying the City's existing conservation rate structure or implementing a new structure will require community engagement and outreach, as cost will necessarily shift between customers and customer classes. It is critical to have representative usage data from the various neighborhoods throughout the City in order to develop a fair and equitable rate structure that adequately generates utility revenues.

Therefore, as one of its first actions, the DOU has retained a consultant to assess the existing volumetric charge, engage stakeholders and ultimately provide a water rate structure recommendation for the future that is conservation-oriented, considers revenue sufficiency, equity, transparency, legal compliance, and the feasibility of implementation.

## 4.5 City of Sacramento Water Conservation Potential

Section 2 provided an overview of how the City customers currently use water. From the analysis of water consumption data in Section 2, the following is observed:

- Estimated that the majority of the City's water consumption (more than 50%) is by the single family accounts.
- More than 60% of the water use annually by single family customers is used outdoors, primarily to irrigate landscapes.
- Observed water waste in residential neighborhoods throughout the City is perceived to be high by community leaders and state-wide GPCD metrics for reasonable indoor and outdoor use.
- Requests for investigations through the Water Conservation Office continue to increase.

In addition, because many accounts have been unmetered, and the cost of water is low, the expected efficiency of indoor use most likely lags that of other cities where customers have been paying for water volumetrically.

Based on a review of historical conservation activity in recent years with City staff, it is believed that additional conservation potential exists and that the participation level for a number of these measures could be intensified. It is recommended that the City conduct a water conservation devices saturation survey in the next 2-3 years to determine more accurately the market penetration of some of the new higher efficiency plumbing fixtures and appliances to best determine the conservation potential remaining. The estimates used in the DSS model are described in Appendix B.

Additionally the City could consider new conservation measures not currently being implemented to further address the water conservation potential. This topic is discussed in the next section.

# 5. ALTERNATIVE WATER CONSERVATION MEASURES

The City's goal is to develop a conservation plan that will result in the greatest efficiency of program administration, the lowest cost of implementation, and the greatest water savings. As part of this effort, the DOU and SWCAG held a meeting on March 21, 2012 to review potential conservation measures. A screening process was then undertaken through a series of Working Groups that met in April-May 2012 to gain input on the various potential measures. With the assistance of City staff and an independent facilitator from California Center for Collaborative Policy, there were 36 conservations measures selected for further evaluation by the DOU, SWCAG

Working Group and the Consultant Team, which included taking into account the existing measures currently implemented.

## 5.1 Conservation Analysis Goals and Approach

The overarching goal of the WCP is to evaluate the existing water conservation program to determine if and how much more conservation is warranted from a cost perspective and feasible from a conservation potential perspective. Based on a review of historical efforts and potential for conservation within the City, it is recognized that the City will need to increase conservation efforts that could lead to more participation from the City's residents and businesses.

The key challenges to be addressed are whether the City:

- can accomplish more conservation due to state mandates and voluntary commitments;
- has an incentive to do more if the cost to conserve water is less than the cost to expand the infrastructure to meet future demands; and
- can provide more support for conservation (beyond cost effectiveness) if the community requests it.

The process involved in answering these questions is described in the following sections. Throughout the process, the DOU and SWCAG provided input to assist with the assessment. The Consultant team was tasked with analyzing the City's current conservation program and assisting with answers to the first two questions above. The recommended plan described in Section 8.0 sets up a strategic framework of how much of which conservation measures will address the City's needs. It is envisioned that SWCAG will continue to provide ongoing input to DOU as the program is implemented.

## 5.2 Evaluating Existing and Potential New Conservation Measures

An important first step in updating the City's water conservation program was the review of existing conservation measures and screening any potential new water conservation measures. This step included:

1. Review of the current state codes and local ordinances;
2. Assessment of customer volunteer participation levels from current water conservation measures and the current status on meter conversions and existing rate schedule;
3. identification of potential new measures that may be appropriate for the City's service area; and
4. Screening of these measures to a short-list for detailed evaluation (using benefit-cost analysis).

To complete this process, a list of potential demand management measures for qualitative evaluation (screening) was compiled. The list of 80 existing and potential conservation measures includes gaining participation from all the typical customer categories including:

- All customers
- Residential
- Commercial, Industrial, Institutional
- Dedicated Irrigation
- Distribution System (System)

### Consideration of Local, State and Federal Codes and Regulations related to Water Conservation

All laws, regulations and ordinances that influence future water demands are an important component of analyzing future water savings. The City did include the new Federal and California laws and regulations into the potential measure table used during the screening process. The following is a summary of which requirements were applicable to the water conservation planning effort.

The Cal Green requirements affect all new development in the State of California after January 1, 2011. As this is a new development law and based on discussions with City, MWM assumed actual water savings seen by the City beginning in the year 2012. The new development requirements under Cal Green are listed in Table 5-1.

*Table 5-1: Cal Green Building Code*

| Cal Green Building Code | | | | | | |
|---|---|---|---|---|---|---|
| Building Class | Component | Effective Date[i] | Indoor Fixtures Included | Indoor Requirement | Landscaping & Irrigation Requirements | Are the Requirements Mandatory? |
| Residential | Indoor | 1/1/2011 | Toilets, Showers, Lavatory & Kitchen Faucets, Urinals | Achieve 20% savings overall below baseline | | Yes |
| | Outdoor | 1/1/2011 | | | Provide weather adjusting controllers | Yes |
| Non Residential | Indoor | 1/1/2011 | Submeter leased spaces | Only if building >50,000 sq. ft. & if leased space use >100 gpd | | Yes |
| | | | Toilets, Showers, Lavatory & Kitchen Faucets, Wash Fountains, Metering Faucets, Urinals | Achieve 20% savings overall below baseline | | Yes |
| | Outdoor | 1/1/2011 | | | Provide water budget | > 1,000 sq ft. landscaped area |
| | | | | | Separate meter | As per Local or DWR ordinance |
| | | | | | Prescriptive landscaping requirements | > 1,000 sq ft. landscaped area |
| | | | | | Weather adjusting irrigation controller | Yes |

When measures were selected and later modeled, MWM worked carefully so that applicable laws and regulations were taken into account including any potential overlap with the plumbing code (natural replacement) and rebate programs. For example, SB 407 requires that new High Efficiency Toilets be installed in residential properties beginning in the year 2017 and in commercial properties beginning in 2019. SB 407 program length continues until all the older high flush toilets have been replaced in the service area. Table 6-1 shown in Section 6 includes a list of all the measures analyzed in this project.

### List of 80 Potential Measures

The list of 80 potential conservation measures screened for the City includes the conservation measures considered appropriate for this region. The list includes devices or programs (e.g. such as a new high efficiency toilet that would save water if installed by a water retailer, contractor, or customer) that can be used to achieve water conservation, methods through which the device or

program will be implemented and what distribution method, or mechanism, can be used to activate the device or program. The list of potential measures was drawn from MWM and the City's general experience and includes a review of what other water agencies with conservation programs are currently implementing.

## 5.3 Screening of Conservation Measures

A screening process was undertaken to reduce the number of new measures being considered to a more manageable number and to eliminate those measures that are not as well suited to the City. As a result, MWM modeled a short-list of existing and new measures for further evaluation (water savings analysis and benefit-cost analysis with the DSS Model). This evaluation was specific to the water use characteristics, economies of scale, demographics, and other factors that are unique to the Sacramento area and the City.

A brainstorming session of all the potential measures was reviewed on March 21, 2012 with the SWCAG and DOU Management Team. Each potential measure was screened based on three qualitative criteria (below), scored on a scale of 1 to 5, with 5 being the most acceptable, and 15 being the maximum possible number of points for all criteria. The screening was completed by four working groups from the SWCAG, in a series of four half day meetings facilitated by the California Center for Collaborative Policy:

- Economic Incentives Workgroup (April 24, 2012)
- Outreach, Messaging and Partnering Workgroup (April 27, 2012)
- Outdoor Landscape Workgroup (May 2, 2012)
- SWCAG Technical Advisory Workgroup (May 21, 2012)
- DOU Management Team Workgroups (May through July 16, 2012)

For a full list of all SWCAG and DOU Management Team meetings and agenda items, please see Appendix D.

### Qualitative Criteria

The rating group used the following criteria to evaluate the measures:

- Technology/Market Maturity – Refers to whether the technology needed to implement the conservation measure, such as an irrigation control device, is commercially available and supported by the local service industry. A measure was scored low if the technology was not commercially available or high if the technology was widely available in the service area. A device may be screened out if it is not yet commercially available in the region.

- Service Area Match – Refers to whether the measure or related technology is appropriate for the area's climate, building stock, or lifestyle. For example, promoting River Friendly gardens for multi-family or commercial sites is appropriate where water use analysis indicates significant outdoor irrigation. Thus, a measure scored high in this category if it was well suited for the Sacramento area's characteristics and could save water. Conversely, a measure scored low in this criterion if it was not well suited for the area and not perceived to save water (e.g., incentives for rain barrel watering systems).
  Customer Acceptance/Equity – Refers to whether retail customers within the City's service area would be willing to implement and accept the conservation measures. For example, would retail customers attend homeowner irrigation classes and implement lessons learned from these classes? If not, then the water savings associated with this measure would not be achieved and a measure with this characteristic would score low for this criterion. This criterion also refers to retail customer equitability (i.e., one category of retail customers receives benefits while another pays the costs without receiving benefits). Retail customer acceptance may be based on:
  - Convenience
  - Economics
  - Perceived fairness
  - Aesthetics

Based upon MWM's past experience, it is reasonable to expect a utility to implement between 10-20 conservation measures at any one time and to focus the analysis on those measures most likely to yield meaningful conservation savings. There was one additional meeting by the DOU key staff to compile all the feedback and develop one consolidated list of suggested measures. After completion of the working groups' screening exercise, the DOU convened its Technical Team and MWM to address any remaining questions and review the overall DOU Importance Rating. The list of selected measures recommended for analysis was reviewed by the DOU Director on May 29, 2012. Then a follow-up review meeting of the SWCAG was held on June 6, 2012 to confirm the selection of the final 30 measures recommended for analysis by MWM.

As discussed and documented at the June 6th meeting, measures with a "No" were eliminated from further consideration, while those with a "Yes" passed into the next evaluation phase, cost-effectiveness analysis using the DSS Model. In the end, the process reduced the measures to be evaluated down to 30 measures.

# 6. COMPARISON OF INDIVIDUAL CONSERVATION MEASURES

## 6.1 Conservation Measures Evaluated

The following table presents the measure descriptions that were analyzed for the efforts of the WCP.

Table 6-1: Measure Description and Selection

| DSS Model Measure Number | Focus Area | DOU Lead/ Partner | Conservation Measure | Measure Description | Key Commitments to CUWCC or Other Agencies |
|---|---|---|---|---|---|
| 1 | Water Waste | CO/DS/CE | **Investigate Customer Potential Leaks and Water Waste Ordinance Enforcement** | Continue to enforce water waste ordinance with required customer leak repairs. Effort is based on calls through customer complaints (through City call 3-1-1 system). Additionally, customers are notified through Computerized Maintenance Management System (CMMS) with automated written letters generated to customers with continuous flowing meters as flagged by the AMI Leak Report. Water Conservation Office follows-up with customers with potential leaks, first as a desktop review to see if potential leak is resolved. If continuous flow is still present, CO staff performs a Field Leak Investigation. | Existing CUWCC Foundational BMP 1.1 |
| 2 | Water Loss | O&M | **Water Loss Control Program** | Continue to implement AWWA Manual M36 Methodology. (1) Use System Audit to track annually Infrastructure Leakage Index (ILI) Progress. Goal to lower the (ILI) and non-revenue water every year by pre-determined amount based on cost-effectiveness. (2) Analyze and Address Apparent Losses (i.e. data for billing system errors, and address meter testing and repair/replacement to insure more accurate meter reads and revenue collection). (3) Covers current efforts to address Real Losses (i.e. find and repair leaks in the distribution system to reduce real water loss and take other actions. Specific goals and methods are in progress by DOU - a program to implement best practices is ongoing (i.e., installation of data loggers and proactive leak detection, accelerated meter replacement and will be done over time). Leak repairs would be handled by existing crews. | CUWCC Foundational BMP 1.2 - Assume combine with other Water Loss measures |
| 3 | Metering | O&M | **AMI System with Meter Retrofits and Conservation Benefits** | Continue with approved AMI system installation. The AMI web portal that is being developed by City of Sac indicates to the customer and Utility where and how their water is used thereby facilitating water use reduction and helps customers identify leaks. Require that new customers with AMI capability review hourly consumption data when taking advantage of City incentives (i.e. online bill pay, rebate incentives). | Supporting CUWCC Foundational BMP 1.3. |
| 4 | Pricing | IPM | **Conservation Pricing** | Currently City has volumetric uniform rate for all new customers and one year after customer has a meter retrofit. Future Water Rate Study is planned. Seek a rate structure that would be more equitable among metered users than uniform volumetric rate. Goal is to complete study by 2014 and to implement a new tiered pricing structure designed and in place by 2016. | CUWCC Foundational BMP 1.4. Pending Rate Study conclusions |
| 5 | Education & Conservation General Administration | PI/ CO/RWA | **Public Information, Regional Outreach, Media Campaign** | Public education is necessary to raise awareness of conservation measures available to customers. Coordinate with the RWA Be Water Smart Regional Outreach Programs and use various methods to teach customers about efficiency measures. Include speakers to community groups, educational material, conservation website, radio, TV spots, demonstration gardens, etc. Refine and develop media messages, social marketing plan that will use public input to assist in changing attitudes. This measure also includes the Program Management and Administration needed by the Public Information Officer and Conservation Office staff. | Existing CUWCC Foundational BMP 1.1 & BMP 2 |

*Table 6-1 (Continued)*

| DSS Model Measure Number | Focus Area | DOU Lead/ Partner | Conservation Measure | Measure Description | Key Commitments to CUWCC or Other Agencies |
|---|---|---|---|---|---|
| 6 | Single Family Residential Surveys | CO/RWA | **Single Family Residential Audits (Surveys)** | Continue conventional indoor and outdoor water surveys for existing single-family residential customers. Normally those with high water use are targeted and provided customized water saving information, tips and tools. Outdoor water surveys for existing single family residential customers (4 units or more). Target those with high water use and provide a customized report to owner. | CUWCC BMP 3.1 & 3.2 |
| 7 | Multi-family Residential Surveys | CO/RWA | **Multi-family Residential Audits (Surveys)** | Continue conventional indoor and outdoor water surveys for existing multi-family properties. Normally those with high water use are targeted and provided customized water saving information, tips and tools. Outdoor water surveys for existing multifamily residential customers (less than 4 units). Target those with high water use and provide a customized report to owner. | CUWCC BMP 3.1 & 3.2 |
| 8-Int | SF Residential Incentives - Indoor | CO/ SMUD/ SRCSD | **Residential High Efficiency Washer Rebate Intensive** | Continue to provide a SF rebate for the installation of a high efficiency washer (HEW). Rebate amounts have been $100 (www.sparesacwater.org). Program will be short lived as it is intended to be a market transformation measure and eventually would be stopped as efficient units reach saturation. | CUWCC BMP 3.3. Assume Keeping Existing Partnership with SMUD |
| 9 | Multi-family, Commercial and Institutional - Incentives | CO/ RWA /SMUD /SRCSD | **Commercial High Efficiency Washer Rebate Intensive** | Provide an incentive to MF and CI customers for the installation of a high efficiency washer (HEW).Program will be short lived as it is intended to be a market transformation measure and eventually would be stopped as efficient units reach saturation. | Supports CUWCC BMP 4 |
| 10-Int | Residential Incentives - Indoor | CO/ RWA/ SRCSD | **Residential High Efficiency Toilet (HET) Rebates** | Continue to provide a rebate for the high efficiency toilet (HET). HET's are defined as any toilet flushing at 1.28 gpf or less and include dual flush technology. Rebate amounts have been $100 (www.sparesacwater.org). Move to lower flush volume of 0.8 gpf after new AB 715 law goes into effect in 2014. | CUWCC BMP 3.4. Prop 84 funding for DACs. |
| 11-Int | Commercial and Institutional - Surveys | CO/ RWA /SMUD /SRCSD | **CII Surveys and Top 100 Users Program** | All CII customers would be offered a free water survey that would evaluate ways for the business to save water and money. The CII surveys would be for large accounts (accounts that use more than a significant amount of water per day) such as hotels, restaurants, stores and schools. Will need to prioritize and staff properly. Emphasis will be on supporting the high water users including monitoring the high water users (e.g., Cal State University campus, U.C. Medical Center, etc.). | Supports new CUWCC BMP 4 that requires savings be met. Need supporting surveys. |
| 12-Int | Commercial and Institutional - Incentives | CO/ RWA /SMUD /SRCSD | **CII Rebates to Replace Inefficient Equipment Intensive** | Provide an incentive for a standard list of water efficient equipment or on a case by case basis. Included would be icemakers, water-cooled ice machines, steamers, washers, efficient dishwashers, replace once through cooling, and add conductivity meters on cooling towers. Pattern after Southern Nevada Water Authority, East Bay MUD or Seattle Water Department programs. | Supports CUWCC BMP 4 |
| 13 | Commercial and Institutional - Incentives | CO/RWA/ SRCSD | **Promote Restaurant Spray Nozzles** | Provide lower than a 1.6 gpm spray nozzles for the rinse and clean operation in restaurants and other commercial kitchens. Thousands have been replaced in California going door to door, very cost-effective because saves hot water. Contact the Food Science Technology Center for more information: http://www.fishnick.com/ | New State Title 20 Regs. Very cost effective. Assume included. |
| 14-Int | Commercial and Institutional - Incentives | CO/RWA/ SRCSD | **Commercial High Efficiency Toilet (HET) Rebates** | Continue to provide an incentive for the high efficiency toilet (HET). HET's are defined as any toilet flushing at 1.28 gpf or less and include dual flush technology. Historically, rebate amounts have been $150 (www.sparesacwater.org) | CUWCC BMP 3.4. New State Law AB 715 after 2014. |

*Table 6-1 (Continued)*

| DSS Model Measure Number | Focus Area | DOU Lead/ Partner | Conservation Measure | Measure Description | Key Commitments to CUWCC or Other Agencies |
|---|---|---|---|---|---|
| 15 | Commercial and Institutional - Incentives | CO/RWA/ SRCSD | **High Efficiency Urinal Rebate (<0.25 gallon)** | Continue to provide a rebate for high efficiency or waterless urinals to existing high use CII customers (such as restaurants). (www.sparesacwater.org) | Supports CUWCC BMP 4 |
| 17 | Large Dedicated Irrigation Only - Surveys | CO/RWA/ SSQP | **Irrigation Water Surveys** | All public and private irrigators of landscapes would be eligible for free landscape water surveys upon request. Normally those with high water use would be targeted and provided a customized report. Assume 10 percent of large turf areas are surveyed per year. | CUWCC BMP 5. |
| 18 | Large Dedicated Irrigation Only - Budgets | CO/RWA/ SSQP | **Irrigation Water Budgets** | Irrigators of landscapes with separate irrigation account (meter) use would receive a monthly or bi-monthly irrigation water use budget. | CUWCC BMP 5 and Pending Prop 84 |
| 20 | Residential Incentives - Outdoor | CO/RWA/ SSQP | **Residential Financial Incentives for Irrigation and Landscape Upgrades** | For SF customers with landscape, provide a Smart Landscape Rebate Program with incentives towards the purchase and installation of selected types of irrigation equipment upgrade excluding smart controllers (see below). Planned to include rotation nozzles, drip conversion, water wise plants and mulch. | Pending Prop 84 funding support. |
| 21 | Large Accounts Irrigation - Incentives | CO/RWA/ SSQP | **Financial Incentives for Irrigation and Landscape Upgrades** | For MF, CII, and IRR customers with large landscapes (i.e. greater than 1 acre), continue to provide a Smart Landscape Rebate Program with rebates towards the purchase and installation of selected types of irrigation equipment upgrade excluding smart controllers (see below). Planned to include rotation nozzles, drip conversion, water wise plants and mulch. | CUWCC BMP 5 |
| 24 | Residential Incentives - Outdoor | CO/RWA/ SSQP | **Residential Financial Incentives for Smart Controllers** | Provides for SF customers with an incentive to install smart controllers. Also includes training support. Assume administered together with Smart Landscape Rebates program (above). | Pending Prop 84 funding support. |
| 25 | Commercial Incentives - Outdoor | CO/RWA/ SSQP | **Commercial Financial Incentives for Smart Controllers** | Provides for larger landscape MF, CI and IRR customers with an incentive to install smart controllers. Assume administered together with Smart Landscape Rebates program (above). | Pending Prop 84 funding support. |
| 27 | Residential and Non-Residential Irrigation for New Development | DS/CE | **Enforce new Landscape and Irrigation Requirements and Ordinance** | Enforce City's Water Efficient Landscape Design Standards and Ordinance. Standards specify that development projects subject to design review be landscaped according to River Friendly principals, with appropriate turf ratios, plant selection, efficient irrigation systems and smart irrigation controllers. | Existing. Assume Included. |

**Notes:**

**DOU Lead:** CO = Conservation Office, FO = Field Operations, PI = Public Information, IPM = Integrated Planning & Business Operations, DS = Development Services, CE = Code Enforcement

**Customer Categories:** SF – Single Family, MF – Multi-family, CII – Commercial, Industrial and Institutional, All – All of the Above, System – Utility's Distribution System, IRR - Dedicated Irrigation Meter; DOU - City of Sacramento Dept. of Utilities

**Partnerships:** RWA = Regional Water Authority, SMUD = Sacramento Municipal Utility District, SRCSD = Sacramento Regional Sanitation District, SSQP = Sacramento Stormwater Quality Partnership

## 6.2 Perspectives on Benefits and Costs

The determination of the economic feasibility of water conservation programs involves comparing the costs of the programs to the benefits provided through avoided costs for building additional infrastructure and/or operating expenses, such as chemical and energy that is not required when less volume of water is treated. This analysis was performed using the DSS Model (see Section 3 and Appendix A for further description). The DSS Model calculates savings at the

end-use level; for example, the model determines the amount of water a toilet rebate program saves in daily toilet use for each single family account.

Economic analysis can be performed from several different perspectives, based on which party is affected. For planning water conservation programs for utilities, the perspectives most commonly used for benefit-cost analyses are the "utility" perspective and the "community" perspective, which are defined as follows:

- Utility Perspective - benefit-cost analysis is based on the benefits and costs to the water provider.
- Community Perspective - benefit-cost analysis includes the utility benefit and costs together with account owner/customer benefits and costs. These include customer energy and other capital or operating cost savings (benefits) plus costs of implementing the measure, beyond what the utility pays, such as installation costs.

The utility perspective offers two advantages. First, it considers only the program costs that will be directly borne by the utility. This enables the City to fairly compare potential investments for saving versus supplying more water. Second, revenue shifts are treated as transfer payments, which means program participants will have lower water bills and non-participants will have slightly higher water bills such that City revenue needs continue to be met. Therefore, the analysis is not complicated with uncertainties associated with long-term rate projections and retail rate design assumptions. It should be noted that there is a significant difference between the utility's savings from the avoided cost of producing water and the reduction in retail revenue that results from reduced water sales due to conservation. Effects on budgets due to reduced customer demand impact occurs slowly, typically less than 0.5-2 percent annually, and can be accounted for in water rate planning. As it is the City DOU's role in developing a conservation plan that is paramount in this analysis, the utility perspective was primarily used to evaluate elements of the plan.

Other factors external to the utility, such as environmental benefits, are often difficult to quantify, and are not necessarily under the control of the utility. They are therefore frequently excluded from economic analyses but are required to be noted as per Exhibit 3 of the California Urban Water Conservation Council's Memorandum of Understanding Regarding Urban Water Conservation in California. For the purposes of this analysis, the DSS Model assumes $75 per acre-foot environmental avoided cost per the 2000 Water Forum Agreement.

## 6.3 Present Value Parameters

The time value of money is explicitly considered. The value of all future costs and benefits is discounted to the first year in the DSS Model (the base year, which in this case is 2010), at the real

interest rate of 3.0%. The DSS Model calculates this real interest rate, adjusting the current nominal utility cost of borrowing money (assumed to be approximately 6.1%) by the assumed rate of inflation (3.0%). Cash flows discounted in this manner are herein referred to as "Present Value" sums.

## 6.4 Assumptions about Measure Costs

Costs were determined for each of the measures based on industry knowledge, past experience and data provided by the City. Costs may include incentive costs, usually determined on a per-participant basis; fixed costs, such as marketing; variable costs, such as the costs to staff the measures and to obtain and maintain equipment; and a one-time set-up cost. The set-up cost is for measure design by staff or consultants, any required pilot testing, and preparation of materials that will be used in marketing the measure. The model was run for 30 years, (each year between 2010 and 2040) to encompass the 10-year conservation planning period of 2012 to 2020 provides estimated water savings needed for period of SB X7-7. The long period from 2012 to 2040 provides estimated water savings for the City's Water Master Plan. Costs were spread over the time period depending on the length of the implementation period for the measure and estimated voluntary customer participation levels.

Lost revenue due to reduced water sales is not included as a cost because the conservation measures evaluated herein generally take effect over a span of time that is sufficient to enable timely rate adjustments, if necessary, to meet fixed cost obligations.

## 6.5 Assumptions about Measure Savings

Data necessary to forecast water savings of measures include specific data on water use, demographics, market penetration, and unit water savings. Savings normally develop at a measured and predetermined pace, reaching full maturity after full market penetration is achieved. This may occur three to thirty years after the start of implementation, depending upon the implementation schedule.

## 6.6 Assumptions about Avoided Costs

The main source of water for the City is local surface water pumped and treated from either the Sacramento or American Rivers. For this evaluation the avoided costs were taken from the estimated cost of a future water treatment plant (WTP) expansion cost of $138 million and associated infrastructure, such as new pipelines at $22.7 million (15% of the WTP expansion cost). The size of the WTP expansion was on the order of 60 million gallons per day (MGD) triggered when demands hit 248 MGD. This expansion is computed to be needed based on the demand projections and current water treatment capacity to occur in the year 2030. It is recommended

that these costs are updated whenever appropriate based on when revised cost information is developed for future revisions to the City's Water Master Plan.

## 6.7 Measure Assumptions including Unit Costs, Water Savings, and Market Penetrations

Appendix B includes the assumptions used in the DSS Model to evaluate the water conservation measures selected by the City. Assumptions regarding the following variables were made for each measure:

- Targeted Water User Group; End Use – Water user group (e.g., single-family residential) and end use (e.g., indoor or outdoor water use).
- Utility Unit Cost – Cost of rebates, incentives, and contractors hired (by the utility) to implement measures.
- Retail Customer Unit Cost – Cost for implementing measures that is paid by retail customers (i.e., the remainder of a measure's cost that is not covered by a utility rebate or incentive).
- Utility Administration and Marketing Cost – The cost to the utility for administering the measure, including consultant contract administration, marketing, and participant tracking. The mark-up is sufficient (in total) to cover local agency conservation staff time and general expenses and overhead.

The unit costs vary according to the type of customer account and implementation method being addressed. For example, a measure might cost a different amount for a residential single family account, than a residential multi-family account, and for a rebate versus an ordinance requirement or a direct installation implementation method. Typically, water utilities have found there are increased costs associated with achieving higher market saturation, such as more surveys per year. Appendix B shows the unit costs and other measure assumptions used in the study for each measure analyzed. The model calculates the annual costs based on the number of participants each year. The general formula for calculating annual utility costs is:

*Annual Utility Cost = Annual market penetration rate x total accounts in category x unit cost per account x (1 + administration and marketing markup percentage)*

*Annual Customer Cost = Annual number of participants x unit customer cost*

*Annual Community Cost = Annual utility cost + annual customer cost*

Unit costs and savings are provided on per account basis, and some account types may be multiple "units" as described in the comments with Appendix B on cost assumptions unique to each conservation measure.

## 6.8 Comparison of Individual Measures

Table 6-2 presents how much water the measures would save over 30 years, how much each would cost, and what the cost of saved water would be per unit volume if the measures were implemented on a stand-alone basis (i.e. without interaction or overlap from other measures that might address the same end use(s)). Only the net water savings for overlapping conservation measures was included in each program. Savings from measures which address the same end use(s) are not additive. The model uses impact factors to avoid double counting in estimating the water savings from programs of measures. For example, if two measures are planned to address the same end use and both save 10% of the prior water use then the net effect is not the simple sum (20%). Rather it is the cumulative impact of first measure reducing the use to 90% of what is was without the first measure in place and then reducing the use another 10% to result in the use being 81% of what it was originally. In this example, the net savings is 19%, not 20%. Using impact factors the model computes the reduction as follows 0.9 x 0.9 = 0.81 or 19% water savings.

Since interaction between measures has not been accounted for in Table 6-2, it is not appropriate to include totals at the bottom of the table. However, the table is useful to give a close approximation of the cost effectiveness of each individual measure.

### Cost categories are defined below:

- Utility Costs - those costs that the City as the water utility would incur to operate the Water Conservation Program, including administrative costs.
- Utility Benefits - the avoided cost of deferred capital costs and reduced operating costs
- Customer Costs - those costs customers would incur to implement a measure in the City's Conservation Program and maintain its effectiveness over the life of the measure.
- Customer Benefits - the savings other than from reduced water/sewer utility bills, such as energy savings resulting from reduced use of hot water. Reduced water and sewer bills are not included because they are a transfer payment among water users and any lost revenue would be made up with an overall rate increase. Conservation program participants would see lower water and sewer bills but overall there would be no net customer benefit.
- Community Costs and Benefits - Community Costs and Benefits include Utility Costs plus Customer Costs, and Utility Benefits plus Customer Benefits, respectively.

### The column headings in Table 6-2, as well as those used later in Table 7-4, are defined as follows:

- Present Value (PV) of Utility and Community Costs and Benefits ($) = the present value of the 30-year time stream of annual costs or benefits, discounted to the base year.
- Utility Benefit-Cost ratio = PV of Utility Costs divided by PV of Utility Benefits over 30 years.

- Community Benefit-Cost ratio = PV of Utility Benefits plus PV of customer energy savings) divided by (sum of PV of Utility Costs plus PV of Customer Costs), over 30 years
- Utility Cost of Water Saved per Unit Volume ($/AF) = PV of Utility Costs over 30 years divided by the sum of the water saved over 30 years.. This value is compared to the utility's avoided cost of water as one indicator of the cost effectiveness of conservation efforts. It should be noted that the value somewhat undervalues the cost of savings because program costs are discounted to present value and the water benefit is not.

*Table 6 2: Estimated Conservation Measure Costs and Savings*

| City of Sacramento<br>Conservation Measure Costs and Savings | | | | |
|---|---|---|---|---|
| **Measure Name** | **Water Utility Benefit to Cost Ratio** | **Water Savings in Year 2020 (afy)** | **Average Yearly Water Savings (afy)** | **Cost of Savings per Unit Volume ($/af)** |
| Prohibit Water Waste Leak Investigations | 0.09 | 93 | 80 | $1,704 |
| Water Loss Reduction | 0.42 | 2,642 | 3,572 | $218 |
| Water Loss Reduction Int | 0.51 | 5,210 | 6,930 | $178 |
| AMI Meter Installation & Customer Benefits (to reduce Customer Leaks) | 0.14 | 3,459 | 3,482 | $1,109 |
| Pricing Measure Model | NA | NA | NA | NA |
| Public & School Education Program & General Program Administration | 0.11 | 345 | 333 | $1,426 |
| SF Water Surveys (Audits) | 0.28 | 112 | 102 | $548 |
| SF Water Surveys (Audits) 2012-2014 | 0.24 | - | 12 | $601 |
| SF Water Surveys (Audits) Intensive | 0.35 | 254 | 207 | $449 |
| MF Water Surveys (Audits) | 0.52 | 60 | 64 | $286 |
| Single Family HE Washer Rebate | 0.48 | 59 | 71 | $290 |
| Single Family HE Washer Rebate Intensive | 0.21 | 123 | 159 | $646 |
| MF, CII HE Washer Rebate | 0.30 | 63 | 90 | $461 |
| MF, CII HE Washer Rebate Intensive | 0.14 | 125 | 179 | $959 |
| Residential HE Toilet Rebate | 0.37 | 30 | 25 | $383 |
| Residential HE Toilet Rebate Intensive | 1.58 | 258 | 171 | $87 |
| Commercial Surveys | 0.39 | 59 | 98 | $369 |
| Commercial Surveys Current | 3.35 | 14 | 12 | $45 |
| Commercial Surveys Intensive | 0.34 | 135 | 274 | $420 |
| MF Residential and Institutional Buildings Retrofit | 0.06 | 34 | 66 | $2,322 |
| MF Residential and Institutional Buildings Retrofit Intensive | 0.03 | 67 | 132 | $5,002 |
| COM Rebate to Replace Inefficient Equipment | 0.27 | 52 | 83 | $480 |
| COM Rebate to Replace Inefficient Equipment Intensive | 0.36 | 144 | 232 | $360 |
| CII Promote Pre-rinse Spray Nozzles | 3.27 | 46 | 36 | $42 |
| CII High Efficiency Toilet Rebate | 0.67 | 55 | 39 | $207 |
| CII High Efficiency Toilet Rebate Intensive | 0.50 | 68 | 49 | $276 |
| CII High Efficiency Urinal Rebate (<0.25 gal/flush) | 0.25 | 19 | 12 | $561 |
| Irrigation Water Surveys | 0.15 | 72 | 67 | $1,077 |
| Irrigation Water Budgets | 2.11 | 201 | 178 | $80 |
| Water Budgets with Meter Conversion - Mixed Use to Dedicated Irrigation Meter | 0.12 | 383 | 333 | $1,371 |
| Res Financial Incentives for Irrigation and Landscape Upgrades | 0.15 | 86 | 178 | $1,081 |
| Financial Incentives for Irrigation and Landscape Upgrades | 0.28 | 132 | 275 | $585 |
| Rain Sensors Single Family | 0.57 | 66 | 170 | $284 |
| Rain Sensors Irrigation | 8.75 | 26 | 69 | $18 |
| SF Smart Irrigation Controllers | 0.18 | 75 | 151 | $908 |
| CII Smart Irrigation Controllers | 0.18 | 234 | 506 | $876 |
| Water Group Scheduling | 9.76 | 715 | 608 | $17 |
| Verification of Landscape Plans and Update Model Water Efficient Landscape Ordinance | 1.11 | 143 | 164 | $158 |
| Developer Financed Reduced Footprint New Development | 0.30 | 289 | 537 | $507 |
| Require Multi Family Submetering on New Accounts | 0.12 | 339 | 707 | $1,204 |

*Note: Descriptions for each measure are provided in Table 6-1.*

# 7. RESULTS OF CONSERVATION PROGRAM EVALUATION

Following the analysis of the individual measures, MWM prepared four scenarios of alternative programs by combining individual measures together. Within the program alternatives, there are benefits from:

- Ongoing or new plumbing codes or ordinances - counted as passive savings due to natural replacement of fixtures and appliances where new models have been required to be manufactured to use less water (have higher efficiency). For example, in California only high efficiency toilets are for sale starting in January 1, 2014 per SB 407. Another example is that all new non-residential accounts with over 5,000 square feet landscaping are required to have weather based irrigation controllers per AB 1881 and dedicated irrigation meters
- Continuing with existing conservation measures
- More intensive efforts for existing conservation measures – which involves adding more budget and/or staffing to support getting more customer participation. These are typically twice the budget and twice the participation levels as appropriate to the measure (i.e., potential for market saturation).
- New conservation measures not currently implemented by the City

Table 7-1 provides a summary of which measures are included in each of the four alternative programs. The four packages are designed to illustrate a range of various measure combinations and resulting water savings as described in the following section.

## 7.1 Selection of Measures for Alternative Programs (A to D)

These alternative programs are not intended to be rigid programs but rather to demonstrate the range in savings that could be generated if selected measures were run together. In this step, MWM accounts for the combined savings and benefits from programs or packages of measures that goes beyond the passive savings (i.e. natural replacement due to the plumbing code).

A summary list in Table 7-1clearly presents which measures are in which alternative program. More details on the measures are available in Appendix B. A description of each program evaluated follows.

### Program A – "Existing" 14 Measures

Savings for the "Existing Program" include the measures that have been run during the time period of FY 2008 - FY 2012. For the City, the following measures were included:

### Existing Program Conservation Measures:

*General Measures:*

- Water Waste Prohibition
- Automatic Meter Retrofits
- System Water Loss Reduction
- Public Outreach, School Education and General Administration

*Residential Measures:*

- Single Family Audits (Water Wise House Call Surveys)
- Multi-family Audits (Surveys)
- High Efficiency Washer Rebates
- High Efficiency Toilet Rebates

*Commercial, Institutional and Industrial Measures:*

- CII Audits (Surveys)
- CII Incentives for Inefficient Equipment
- High Efficiency Toilet Rebates
- High Efficiency Urinal Rebates

*Irrigation Only Measures*

- Financial Incentives for Non-Residential Irrigation Accounts
- Irrigation Water Audits

### Program B – "Reach 2020" – 24 Measures

For some existing conservation measures being implemented by the City (Program A), there are lower participation rates historically than might be expected based on experience from agencies elsewhere in the region or state, or estimated when examining remaining conservation potential. Based on initial results of the DSS Model analysis, it was determined that some of these measures have a relatively low cost to implement compared to the water savings, or in other words, cost less than approximately $400-$500/AF. As a result, the City and MWM determined that selecting these measures using more intensive efforts was appropriate, namely in terms of more budget (i.e., higher customer incentives or rebates) and outreach to market availability would be used to target higher participation rates.

The following measures were added or made more intensive from the Program A listed measures shown above:

*Additional General Measures:*

- System Water Loss Reduction (Intensive)

*Additional Residential Measures:*

- Residential High Efficiency Clothes Washers Rebates (Intensive)
- Residential High Efficiency Toilet Rebate (Intensive)
- Residential Smart Weather Based Irrigation Controller Rebates

*Additional Commercial Measures:*

- Commercial Clothes Washers Rebates
- Pre-rinse Spray Valves
- CII Audits (Intensive)
- CII Incentives for Inefficient Equipment (Intensive)
- High Efficiency CII Toilet Rebates (Intensive)
- CII Smart Weather-based Irrigation Controllers

*Additional Landscape Measures*

- Financial Incentives for Residential Irrigation and Landscape Upgrades
- Update Ordinance and Verify Landscape Plans

### Program C – "Meet 2020 with Conservation Pricing" – 25 Measures

Program C is one step more intensive than Program B by including conservation pricing (to come into compliance with CUWCC BMP 1.4). The program goal is to meet the City's target of using no more than 223 GPCD.

### Program D – "All Modeled Measures" – 30 Measures

Program D is one step more intensive than Program C with additional intensive and new measures. The program goal was to increase water savings.

Figure 7-1 and Table 7-2 present projected water demands with and without the plumbing code and the impact of each program's water savings on overall water demand. Figure 7-2 and Table 7-4 depict the projected average daily per capita water use and how it could be affected by each conservation program. The per capita values in the figure are calculated from the total water production and divided by the projected population for each given year.

*Table 7-1: Conservation Programs and Measures*

| Conservation Programs and Measures<br>City of Sacramento<br>Measure Name | Program A | Program B | Program C | Program D |
|---|---|---|---|---|
| Prohibit Water Waste Leak Investigations | ✓ | ✓ | ✓ | ✓ |
| Water Loss Reduction | ✓ | | | |
| Water Loss Reduction Int | | ✓ | ✓ | ✓ |
| AMI Meter Installation & Customer Benefits (to reduce Customer Leaks) | ✓ | ✓ | ✓ | ✓ |
| Pricing Measure Model | | | ✓ | ✓ |
| Public & School Education Program & General Program Administration | ✓ | ✓ | ✓ | ✓ |
| SF Water Surveys (Audits) | ✓ | | | ✓ |
| SF Water Surveys (Audits) 2012-2014 | | ✓ | ✓ | |
| SF Water Surveys (Audits) Intensive | | ✓ | ✓ | |
| MF Water Surveys (Audits) | ✓ | ✓ | ✓ | ✓ |
| Single Family HE Washer Rebate | ✓ | | | |
| Single Family HE Washer Rebate Intensive | | ✓ | ✓ | ✓ |
| MF, CII HE Washer Rebate | | ✓ | ✓ | |
| MF, CII HE Washer Rebate Intensive | | | | ✓ |
| Residential HE Toilet Rebate | ✓ | ✓ | ✓ | |
| Residential HE Toilet Rebate Intensive | | ✓ | ✓ | ✓ |
| Commercial Surveys | ✓ | | | |
| Commercial Surveys Current | | ✓ | ✓ | |
| Commercial Surveys Intensive | | ✓ | ✓ | ✓ |
| MF Residential and Institutional Buildings Retrofit | | | | |
| MF Residential and Institutional Buildings Retrofit Intensive | | | | ✓ |
| COM Rebate to Replace Inefficient Equipment | ✓ | | | |
| COM Rebate to Replace Inefficient Equipment Intensive | | ✓ | ✓ | ✓ |
| CII Promote Pre-rinse Spray Nozzles | | ✓ | ✓ | ✓ |
| CII High Efficiency Toilet Rebate | ✓ | | | |
| CII High Efficiency Toilet Rebate Intensive | | ✓ | ✓ | ✓ |
| CII High Efficiency Urinal Rebate (<0.25 gal/flush) | ✓ | ✓ | ✓ | ✓ |
| Irrigation Water Surveys | ✓ | ✓ | ✓ | ✓ |
| Irrigation Water Budgets | ✓ | ✓ | ✓ | ✓ |
| Water Budgets with Meter Conversion - Mixed Use to Dedicated Irrigation Meter | | | | ✓ |
| Res Financial Incentives for Irrigation and Landscape Upgrades | | ✓ | ✓ | ✓ |
| Financial Incentives for Irrigation and Landscape Upgrades | | ✓ | ✓ | ✓ |
| Rain Sensors Single Family | | | | ✓ |
| Rain Sensors Irrigation | | | | ✓ |
| SF Smart Irrigation Controllers | | ✓ | ✓ | ✓ |
| CII Smart Irrigation Controllers | | ✓ | ✓ | ✓ |
| Water Group Scheduling | | | | ✓ |
| Verification of Landscape Plans and Update Model Water Efficient Landscape Ordinance | | ✓ | ✓ | ✓ |
| Developer Financed Reduced Footprint New Development | | | | ✓ |
| Require Multi Family Submetering on New Accounts | | | | ✓ |

Note: Descriptions for each measure are provided in Table 6-1.

Figure 7-1 shows annual water demand with no conservation, plumbing code only, and the four alternative programs. Table 7-2 shows the savings in five year increments for all four programs.

*Figure 7-1: Water Demand Projections with Conservation Program Savings*

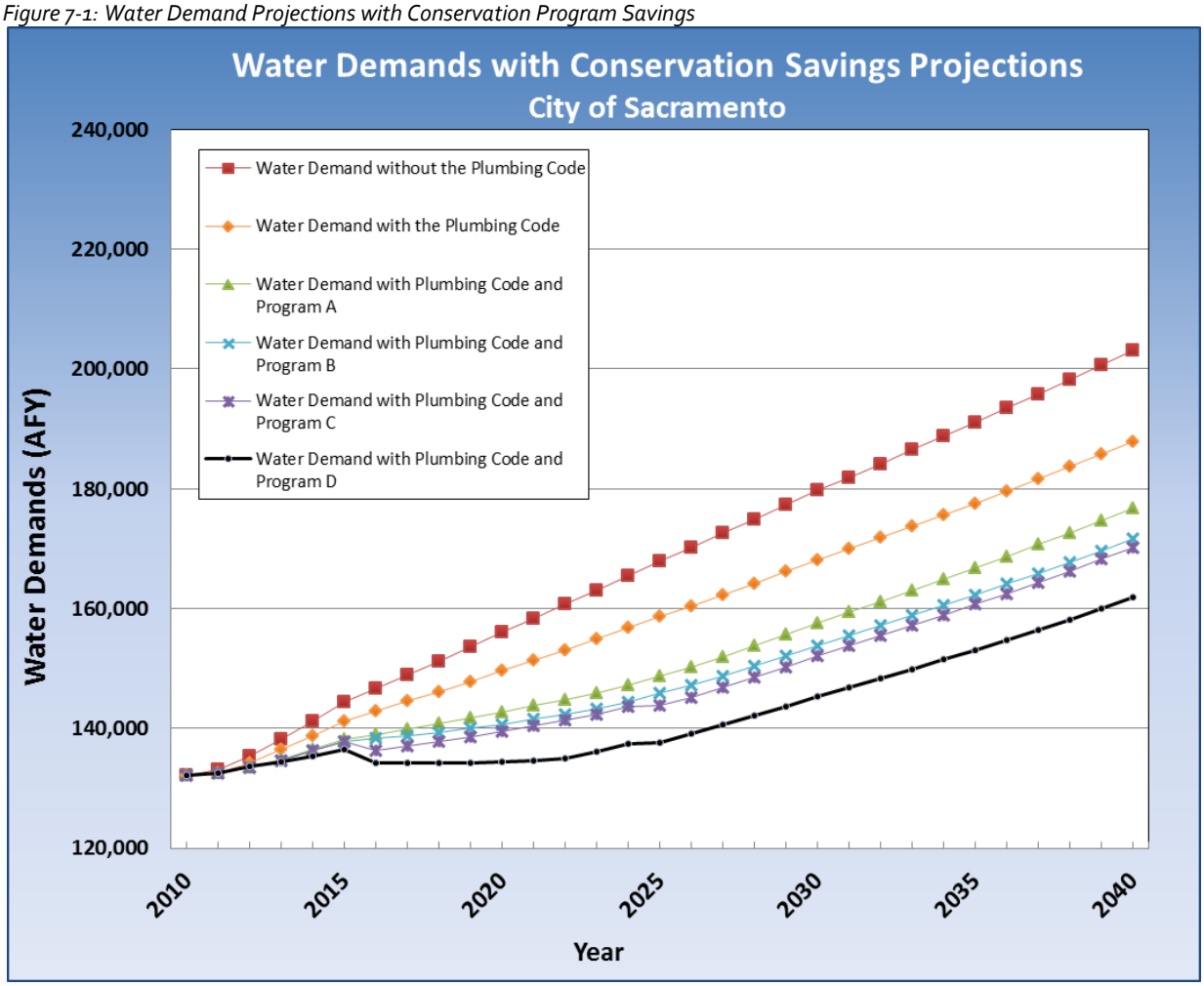



*Table 7-2: Long Term Conservation Program Projected Water Savings*

| Water Demands with Conservation Savings Projections<br>City of Sacramento | | | |
|---|---|---|---|
| **Water Demands (AF/Yr)** | **2015** | **2020** | **2040** |
| Water Demand without the Plumbing Code | 145,408 | 158,020 | 208,439 |
| Water Demand with the Plumbing Code | 142,160 | 151,515 | 192,333 |
| Water Demand with Plumbing Code and Program A | 139,206 | 144,695 | 180,919 |
| Water Demand with Plumbing Code and Program B | 139,252 | 140,871 | 171,726 |
| Water Demand with Plumbing Code and Program C | 139,229 | 138,556 | 167,109 |
| Water Demand with Plumbing Code and Program D | 138,938 | 137,000 | 163,260 |

Figure 7-2 shows estimated annual average per capita daily use without conservation, with the plumbing codes only, and each of the four alternative programs. Table 7-3 shows the estimate per capita savings in five year increments for all four programs. The savings in Table 7-4 are from the conservation programs and do include the plumbing code savings. Additionally, the benefit cost ratios from the utility and community perspectives are presented. These values are based on the full cost of the conservation program including the metering retrofit and water loss control program budgets.

Figure 7-2: Estimated Per Capita Average Daily Water Use

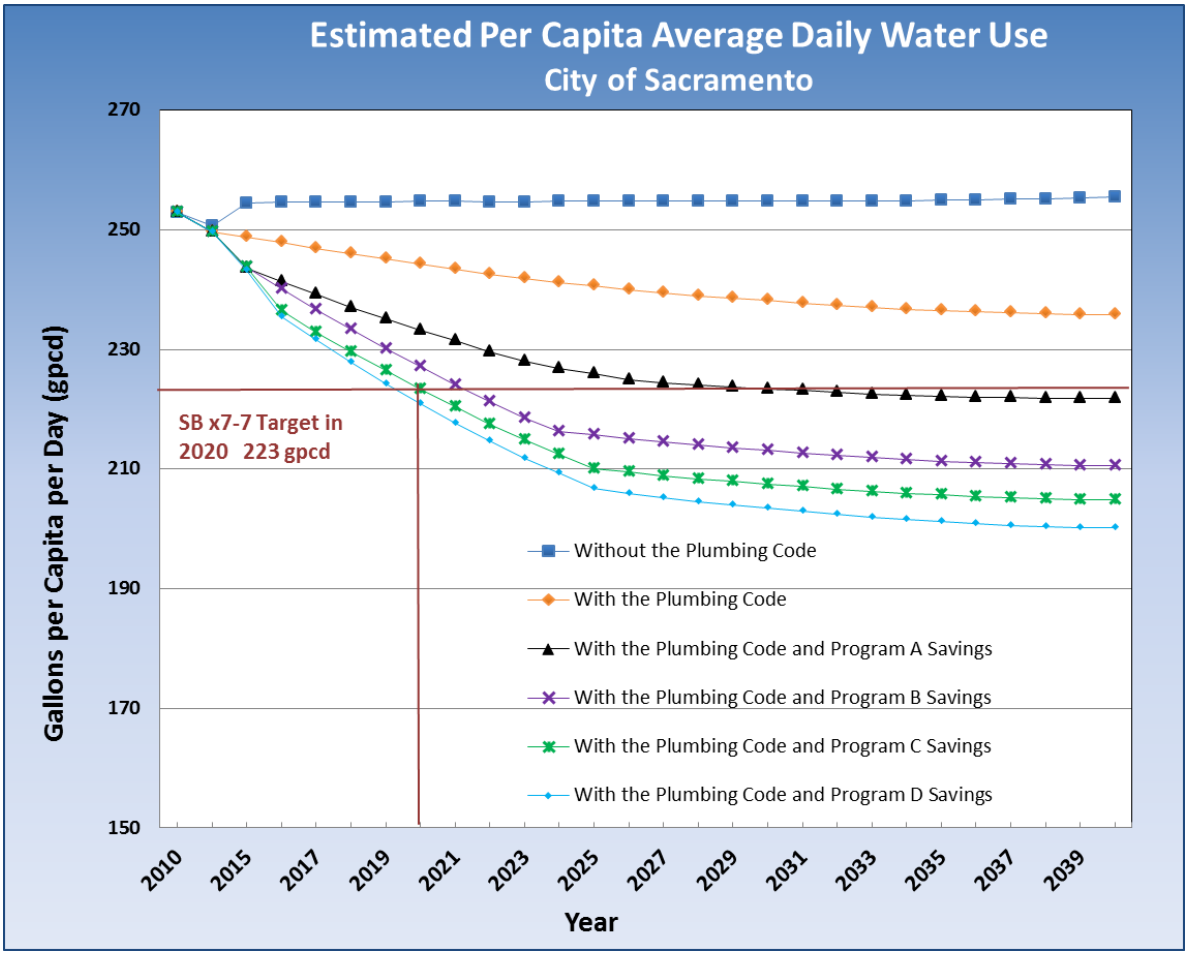


*Table 7-3: Estimated Per Capita Average Daily Water Use*

| Estimated Per Capita Average Daily Water Use<br>City of Sacramento | | | |
|---|---|---|---|
| **Per Capita Average Daily Water Use (gcd)** | **2015** | **2020** | **2040** |
| Without the Plumbing Code | 254 | 255 | 256 |
| With the Plumbing Code | 249 | 244 | 236 |
| With the Plumbing Code and Program A Savings | 244 | 233 | 222 |
| With the Plumbing Code and Program B Savings | 244 | 227 | 211 |
| With the Plumbing Code and Program C Savings | 244 | 223 | 205 |
| With the Plumbing Code and Program D Savings | 243 | 221 | 200 |

Figure 7-3 illustrates how marginal returns change as more money is spent to achieve water savings. As the figure shows the costs increase as the per capita water usage declines from Program A to D which corresponds to increasing budget, staffing and participation in the conservation programs.

*Figure 7-3: Present Value of Utility Costs vs. Per Capita Water Use in 2020*

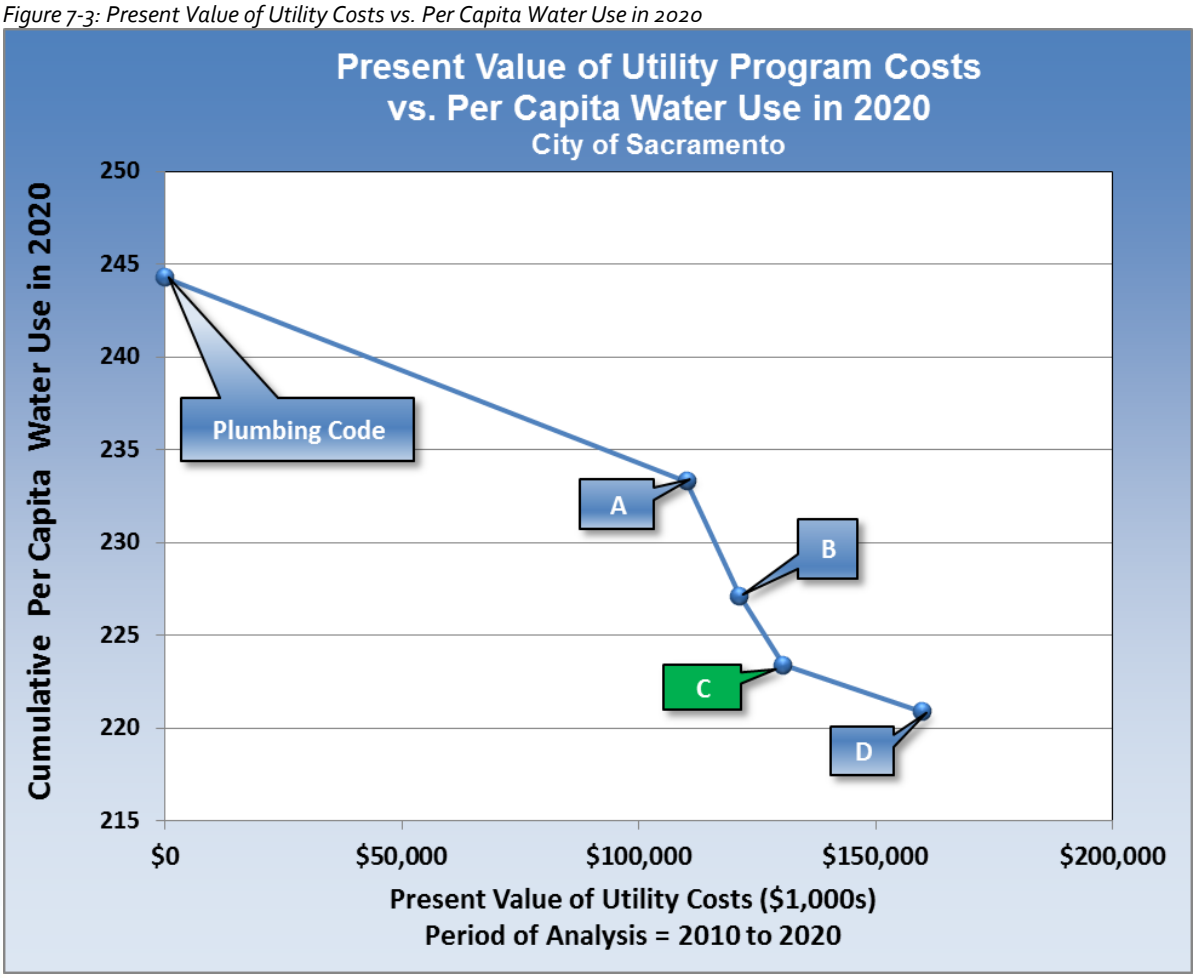


Table 7-4 presents key evaluation statistics compiled from the DSS Model. Assuming all measures are successfully implemented, projected water savings for 2020 and 2040 in AF are shown, as are the costs of achieving this reduction. Water savings for programs in 2020 and 2040 are also shown in Table 7-4.

The costs are expressed two ways:

- Total present value over the analysis period,
- The cost of water saved. Cost of water saved is presented two ways: for the utility and the total community (customer plus utility).

These cost parameters are derived from the estimated annual utility, customer and community costs.

The water savings in Table 7-4 are expressed as a percentage of the projected 2040 demand. One column indicates the percentage of the new water demand in 2020 each program could provide. The new water needed by new customers over the full planning period is the difference between 2012 demand and 2040 demand without the plumbing code. The plumbing code is an additional savings that could be added on top of the per capita water savings shown in Table 7-3. This allows the plumbing code savings percent and water savings in AF/Yr shown in Table 7-4 and to be additive to the conservation program savings in AF/Yr and percentages shown.

*Table 7-4: Comparison of Conservation Program Estimated Costs and Water Savings*

**Comparison of Conservation Program Estimated Costs and Savings**
**City of Sacramento**

| Conservation Program | Water Utility Benefit-Cost Ratio | 2040 Water Savings (AF/Yr) | 2040 Indoor Water Savings (AF/Yr) | 2040 Outdoor Water Savings (AF/Yr) | Total Water Savings as a Percentage of Total Production in 2040 | Present Value of Water Utility Costs | Total Utility Cost for First Five Years (2011 to 2015) | Water Utility Cost of Water Saved ($/AF) |
|---|---|---|---|---|---|---|---|---|
| Program A | 0.20 | 11,414 | 8,594 | 2,820 | 5.9% | $171,725,569 | $81,116,977 | $714 |
| Program B | 0.26 | 20,606 | 15,317 | 5,289 | 10.7% | $210,987,535 | $92,432,233 | $528 |
| Program C | 0.31 | 25,223 | 15,857 | 9,366 | 13.1% | $225,314,317 | $102,553,019 | $462 |
| Program D | 0.27 | 29,073 | 17,326 | 11,747 | 15.1% | $299,069,928 | $124,511,544 | $543 |

Notes:

- Present Value is determined using an interest rate of 3%
- Cost of water saved is present value of water utility cost divided by total 30-year water savings.
- Total water savings in 2040 as a percent of production is relative to no plumbing code production
- Conversion 1 MGD is equal to 1,120 AF/Yr

## 7.2 Ongoing Monitoring Approach

The results in this analysis were prepared by MWM with careful review and agreement by the City related to the assumptions used to address known sources of uncertainty, which includes:

- If and when economic recovery will occur and how water demand would be impacted
- Rate study pending in the next two years
- Partially metered system
- CUWCC BMP database unit water savings are under review
- Future City budget availability given current economic conditions that may require higher budgets and staffing support in subsequent years if underfunded in earlier years and targets are not being met and water demands are increasing faster than projected
- Grant funding is uncertain given state and federal funding availability
- SB X7-7 Water Conservation Act allows for an adjustment in targets and methodology if it is estimated by DWR that the statewide water conservation goal is not projected to be achieved. DWR is required to submit their report to the state legislature by December 31, 2016. This could lead to higher savings goals, in other words, lower per capita usage targets.

Fundamentally, there is an expectation for monitoring the conservation program performance and per capita water usage: it should be periodically updated as per capita water usage is tracked. Ideally these updates would happen annually, most likely with the annual budgeting process. Due to unforeseen impacts on per capita water use it is anticipated that activity levels and budgets for planned programs will need to be adjusted as needed (at minimum on an annual basis) to stay on track. A significant update would need to be undertaken during the preparation of the 2015 UWMP.

# 8. RECOMMENDED PLAN

This section presents an overview of the recommended conservation plan for the City of Sacramento service area. The recommended plan includes several elements:

- How the plan was selected from the alternatives presented in Section 7;
- A more detailed description of the recommended measures including overall benefits, perceived challenges and relative cost effectiveness along with a relative priority ranking for DOU compared to other measures;
- Implementation suggestions; and
- The estimated costs and schedule for implementation.

## 8.1 Selection Criteria and Process

The selection of both the recommended individual measures and overall program was fully vetted through a variety of meetings, including:

- Reviewing the preliminary draft results with the DOU Technical Team meeting held July 16, 2012 to check assumptions related to:
    - Projections for future demand
    - Review decision criteria, which included:
        - Water savings to meet per capita targets
        - Ease of implementation
        - Availability of technology
        - Cost-effectiveness
    - Water savings projected from existing City conservation efforts (Program A), would not be projected to reach the target of 223 GPCD based on the assumed economic recovery prior to 2020
    - Results for the conservation measures selected by the DOU and SWCAG Options for combining measures into programs to meet City goals

- Seeking guidance on the final selected measures and program with the Director of Utilities on July 30, 2012 and his request to add estimates for conservation pricing benefits in terms of costs and water savings. As a result, an additional proposed Program C was added to the options and designated as the recommended program as of August 2013.

- Receiving additional feedback from the Sacramento Water Conservation Advisory Committee (SWCAG) and the City Water Ad Hoc Committee that reviewed the proposed programs at their meeting in August and September 2012. Both groups conceptually supported Program C

as the "Recommended Program." SWCAG members were given additional time to provide written comments for consideration.

- DOU staff collected and reviewed comments and directed MWM to select the suite of Program C conservation measures listed in the four program scenarios presented above in Section 7.0.

- The initial draft (including Water Ad Hoc and SWCAG comments) and with input from DOU Staff, of the Water Conservation Plan was released in September 2012, and another SWCAG meeting to review comments was hosted by DOU on September 19, 2012. Upon review of the SWCAG and Water Ad Hoc comments and additional comments from DOU staff, the Director of Utilities had a DOU technical team develop an Implementation Strategy or Work Plan that would be generally consistent with the DOU anticipated water conservation budget and other budgets such as for system wide water loss reduction, AMI, etc. It was relayed to the SWCAG that there may be some level of resource allocation necessary and not an immediate, full ramp up to level C (See Section 8.3 of this Plan for Implementation Strategy).

- The DOU technical team met in Oct., Nov., 2012, and Jan. 2013 to develop an Implementation Plan.

- A new Water Conservation Program Administrator was hired in February 2013.

- The Plan was reviewed and finalization of the Plan was initiated in March 2013.

- To address SWCAG and new DOU technical team comments, include additional data from 2012 through April 2013 and use additional feedback from the new Program Administrator, adjustments to the DSS Model were made in March-May 2013 and a new Draft Final Water Conservation Plan was released on June 12, 2013.

- The SWCAG met on June 12, 2013 to provide additional comments on the Draft Final Plan in the preceding week.

- DOU addressed the final comments and submitted the Plan for adoption by the City Council (scheduled for October 8, 2013).

Program C, the current recommended program in the Plan, assumes conservation pricing no later than FY 2016 and increases efforts on existing and new water loss control, and conservation measures. Program C is perceived as having the highest probability of meeting the state mandated water use reduction target as described in the City's UWMP. Program C assumes that

conservation pricing is implemented and achievements made in water loss control, along with customer demand reductions due to high levels of conservation program participation. A more aggressive but more costly program for the benefit of the Water Master Plan was also reviewed (Program D).

Table 8-1 below presents the four program scenarios evaluated and the corresponding per capita water use reductions. The City's existing program (Program A) is not projected to meet the SB X7-7 target from a 10 year baseline of 279 GPCD reduced to 223 GPCD using the 2020 Method 1 of 20% reduction by 2020. Only Programs C and D are estimated to meet or exceed this goal of 223 GPCD.

*Table 8-1: Comparison of 2020 Costs and Savings to Meet State's Per Capita Use Targets*

| Comparison of Program Savings and Water Conservation Office Estimated Costs<br>City of Sacramento | | | | | |
|---|---|---|---|---|---|
| Program | 2020 Per Capita | 2040 Per Capita | Meet SB X7-7 Targets? | Annual Conservation Program Only Estimated Cost in 2020* | Estimated Annual Costs in 2020 ($/person)** |
| A (Existing) | 233 | 222 | No | $ 1,520,000 | 2.73 |
| B (2020) | 227 | 211 | No | $ 3,940,000 | 7.11 |
| C (2020+Pricing) | 223 | 205 | Yes | $ 3,940,000 | 7.11 |
| D (All modeled) | 221 | 200 | Yes | $ 8,480,000 | 15.31 |
| Notes: | | | | | |
| * Excludes planned budgets for AMI and meter retrofits and water loss control programs. | | | | | |
| ** Based on estimated population of 553,724 | | | | | |

*Notes:*
** Excludes planned budgets for AMI and meter retrofits and water loss control programs.*
*** Based on estimated population of 553,724*

At the conclusion of the review, a consensus was reached on the best way forward. The implementation approach DOU agreed upon is:

- Implement Program C with a more intensive effort on existing measures and the addition of new measures.
- Leverage existing Regional Water Authority and DOU grants to the maximum extent possible through 2013-14. Add to funding as needed in FY 2016to support more effort and new water loss control and conservation measures needed.
- Pursue conservation pricing to the extent feasible and compliant with Proposition 218 requirements.
- If and when the current uniform volumetric rate is switched to conservation pricing scheme (assume 2016), then rebalance the conservation measures dependent on the progress towards meeting 2020 target of 223 GPCD.

The SWCAG and DOU went on to highlight additional major benefits of Program C:

- Projects meeting all of the City defined goals for water conservation;
- Complies with State SB X7-7 law (and per capita use targets) and the CUWCC MOU targets in 2018;
- Provides more control of City's future water supply availability and assurance of meeting future demands;
- Allows the City to direct necessary investments in rehabilitation of infrastructure and meter retrofits, rather than future expansion of treatment and delivery capacity that is escalating in cost;
- Comparative in costs to the expansion of the existing water treatment plant(s) projected to be needed in 2030;
- Seeks to expand partnerships with the Regional Water Authority, Sacramento Municipal Utility District, Pacific Gas & Electric, Sacramento Regional Sanitation District, Sacramento County Stormwater Quality Partnership;
- Engages high water users through targeting conservation incentives to those most able to save the water; and
- Supports the City's need for new development offsets with new stormwater permit requirements.

## 8.2 Description of Recommended Plan

A comprehensive list of conservation measures was evaluated and included in this Plan. This Plan is flexible and will evolve with changing technology, new or altered standards and codes, varying achievements in water loss control and metering retrofits; participation levels from customers, grant opportunities and it is meant to be adaptable to changing conditions. The recommended plan consists of a suite of key measures summarized in Table 8-2. The detailed descriptions of measures are presented in Table 6-1. Appendix B contains measure descriptions for the measures evaluated for the Plan as described in Section 6.3 above.

*Table 8-2: Elements of Recommended Conservation Program Measures*

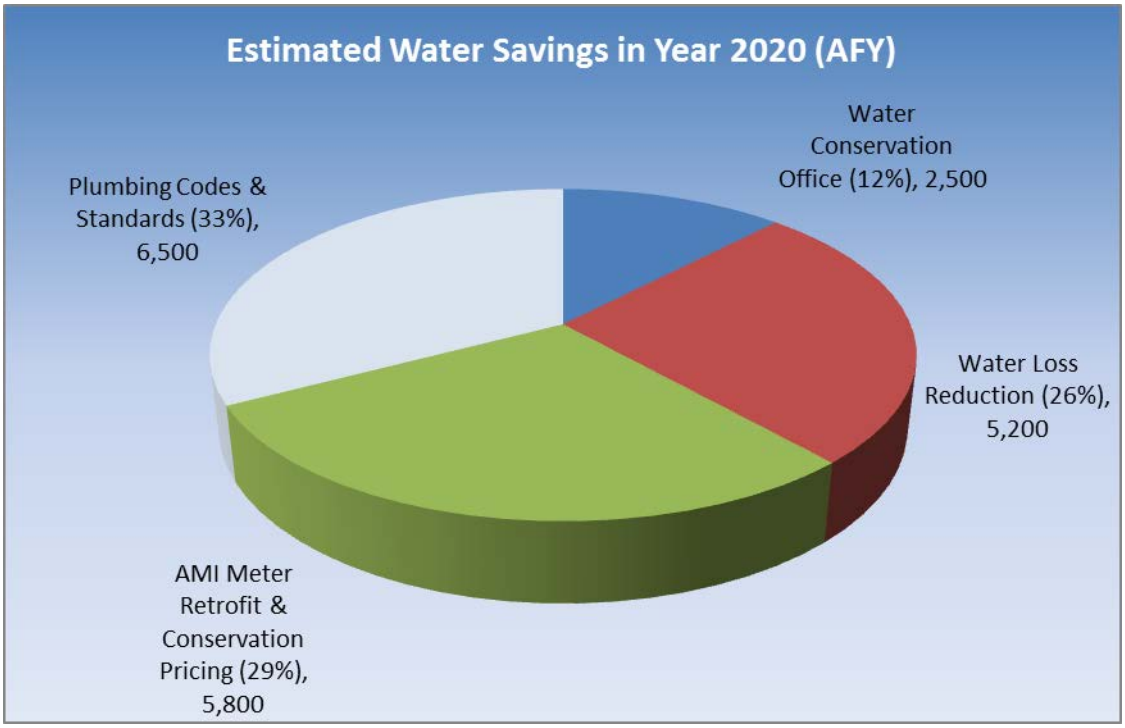
| Elements of Conservation Program C (The Recommended Plan) City of Sacramento | | | |
|---|---|---|---|
| **General Measures** | **Residential Measures (Indoor)** | **Commercial Measures (Indoor)** | **Irrigation Measures (Outdoor)** |
| Public Education | High Efficiency Toilets Rebates* | High Efficiency Toilets Rebates* | Residential Financial Incentives for Irrigation Upgrades* |
| Water Waste | Clothes Washer Rebates* | Inefficient Equipment Replacement Rebates* | Commercial Financial Incentives for Irrigation Upgrades* |
| Automated Meter Infrastructure (AMI) | SF Water Use Efficiency Surveys (Audits) | Water Efficiency Surveys (Audits)* | Irrigation Water Surveys (Audits) |
| Water Loss Reduction | MF Water Use Efficiency Surveys (Audits) | High Efficiency Urinal Rebates | Irrigation Water Budgets |
| Conservation Pricing | | Pre Rinse Spray Nozzles | Verification of Landscape Plans + Ordinance Update |
| *Denotes intensive measures | | Comm. Clothes Washer Rebate | SF and CII Irrigation Smart Controllers |

Water savings anticipated from this Plan derive from the following key elements:

- Water savings from existing plumbing codes and standards in federal or California state law.
- Ongoing meter retrofits and conversion of existing accounts to AMI;
- Expanding the water loss control program;
- Increased intensity in public outreach and education efforts to attract more participants to the program;
- Expansion of existing water conservation programs
- Adding new measures to meet the City's targets, such as residential landscape incentives program, that while not likely to be cost effective, targets the highest sector of use: Residential outdoor irrigation.

Four key quantifiable estimates for water savings are presented in Figure 8-1.

*Figure 8-1: Estimated Water Savings in Year 2020*




The City's service area has a relatively high portion of residential water use and a significant amount of outdoor water use. Consequently, residential meter retrofits, conservation pricing and irrigation related conservation measures are expected to produce the most savings. The City's service area is an employment center for the metropolitan area as the state capital of California and also contains a number of hospitals and universities, and as a result the conservation potential in the commercial sector is also significant. Based on the relatively low avoided cost of new water given the City pumps directly from two rivers within the City, water conservation programs are marginally or sometimes not cost-effective (explained below).

### Overall conclusions are:

- More than half of the conservation potential in 2020 is in reducing outdoor use; the rest is indoor use reduction potential.
- Benefit-cost ratio of the plan without metering or water loss control to meet SB X7-7 targets is generally not cost-effective from the City's perspective purely from water supply perspective. However, the recommended plan suggests first implementing the most cost effective measures.
- Total savings from the Plan Program C would be about 13.1% percent (without the plumbing code) in 2020 (25,223 AF/Yr) as shown on Table 7-4. While the current per

capita usage is lower than in 2008, it is anticipated to rebound some as water demands have recovered from the recent economic recession and past droughts.

- The average cost of water saved for the Plan from the utility standpoint (as shown on Table 7-4) is lower than the 2012 price of treated water at $579 per AF.

*Table 8-3: Basis for Recommended Conservation Plan*

| Conservation Measure | Key Commitments to CUWCC or Other Agencies | Basis for Inclusion in Plan | DOU Priority[1] | Overall Benefits | Perceived Challenges |
|---|---|---|---|---|---|
| Investigate Customer Potential Leaks and Water Waste Ordinance | Existing CUWCC Foundational BMP 1.1 | Water waste ordinance with enforcement is required. Innovative use of AMI system (possible future best practice) to track potential water waste. | High | Maximizes the City's Goals to rid the City of water waste. Most customer-side of the meter leaks are due to leaking indoor toilets or exterior irrigation valves. | Adequate staffing levels. With rapid increase in AMI endpoints, more customers will be identified, letters issued and assume follow-up needed. |
| Water Loss Control Program | CUWCC Foundational BMP 1.2 - Assume combine with other Water Loss measures | Foundational Best Practice & ongoing efforts along with moving to a fully metered system, losses can be more easily quantified and control strategies targeted. | High | Leads to operational cost savings and overall lowers total gpcd to help meet targets. | Still more than 10 years to have a fully metered system and full validation of a water system audit. |
| AMI System with Meter Retrofits and Conservation Benefits | Supporting CUWCC Foundational BMP 1.3. | Planned Program. Going beyond State Law by installing state-of-the-art AMI system | High | Allows for accurate measurement and billing by volume for all customers. | Costly program, especially with challenges of back-yard mains. |
| Meter Conversion - Mixed Use to Dedicated Irrigation Meter | Prohibitively Expensive. Requires Feasibility Study. | Feasibility Study required. Highly NOT cost effective but necessary to do water budgets. | Medium | Ability to manage irrigation sites via water budget an important strategy to address appropriate irrigation. Large customers espeically those with cooling towers may be incentivized to convert to save on sewer bills (sewer system managed by City of Sacramento DOU). | Site conditions vary and generally very costly retrofits for replacement of concrete and/or asphalt to match existing site conditions. |

*Abbreviations: SF = Single family, MF = Multifamily, CII = Commercial, Industrial, Institutional, GOV = Government, IRR = Irrigation, HET = High Efficiency Toilet (1.28 gal/flush or less), ULFT = Ultra Low Flush Toilet (1.6 gal/flush), AMI = Automatic Meter Infrastructure (System)*

*Table 8-3: Basis for Recommended Conservation Plan (Cont'd)*

| Conservation Measure | Key Commitments to CUWCC or Other Agencies | Basis for Inclusion in Plan | DOU Priority[1] | Overall Benefits | Perceived Challenges |
|---|---|---|---|---|---|
| Conservation Pricing | CUWCC Foundational BMP 1.4. Pending Rate Study conclusions | Planned and Foundational Best Practice. Cost effective means for the City to put conservation in individual customers hands to make the changes possible in their own home/business. | High | Allows for the recovery of cost of service with equity among customers where customers that use more pay more. | Water savings due to tiers and the price of water are estimates, and significant rate increases may be needed to implement an effective conservation pricing program. Rate increases must comply with Proposition 218's cost of service limitations, and may be challenged by rate payers. |
| Public Information, Regional Outreach, Media Campaign | Existing CUWCC Foundational BMP 1.1 & BMP 2 | Ongoing and Foundational Best Practice. Also benefits City stormwater permit requirements. | High | Necessary to gain awareness and need for conservation and attract participation in other measures. Connects to many messages being given to promote sustainability by City residents to preserve quality of life and our local environment (e.g., healthy rivers). | Water conservation competes with lot of messages in the community. Takes costly media buys to really push the message to be more visible. |
| Single Family Residential Audits (Surveys): Water Wise House Calls | CUWCC BMP 3.1 & 3.2 | Included due to on-going customer service need to respond to high bill calls, newly metered accounts, etc. Labor intensive measure (equates to low cost effectiveness). | Medium | Best means to get tailored information given to homeowners and multi-family properties, such as changing their irrigation schedules. Also identifies key opportunities on site for incentive programs (can serve as a pre-inspection). | Requires customers to volunteer. Participation levels have historically been about 2% which is standard. Metering gains some attention but not sharp increases in surveys requested. |
| Multi-family Residential Audits (Surveys) | CUWCC BMP 3.1 & 3.2 | Included due to on-going customer service need to respond to high bill calls, newly metered accounts, etc. Labor intensive measure (equates to low cost effectiveness). | Medium | Best means to get tailored information given to homeowners and multi-family properties, such as changing their irrigation schedules. Also identifies key opportunities on site for incentive programs (can serve as a pre-inspection). | Requires customers to volunteer. Participation levels have historically been about 2% which is standard. Metering gains some attention but not sharp increases in surveys requested. |
| Residential High Efficiency Washer Rebate Intensive | CUWCC BMP 3.3. Assume Keeping Existing Partnership with SMUD | Higher cost effectiveness than most other measures. Turn-key measure with support from Sacramento Municipal Utility District implementation. | High | Typically the second largest indoor use. Water, energy (and greenhouse gas) benefits. Long useful life means market not saturated with highest level (Tier 3) machines. | Freeridership (customers would have bought the machine anyway). Mitigate by only rebating the highest level of efficiency with Water Factor of 4.5. |

*Table 8-3: Basis for Recommended Conservation Plan (Cont'd)*

| Conservation Measure | Key Commitments to CUWCC or Other Agencies | Basis for Inclusion in Plan | DOU Priority[1] | Overall Benefits | Perceived Challenges |
|---|---|---|---|---|---|
| CII Rebates to Replace Inefficient Equipment Intensive | Supports CUWCC BMP 4 | More cost effective than other measures. Important to have incentives with survey programs to support customers implementing recommended changes. | High | Menu approach to CII incentives can be tailored to most all business customers. High efficiency equipment is cost prohibitive in some cases. Helpful in tough economic times. | CII facility managers can be challenging to schedule time to conduct audit and may not have budgetary control to make changes. Requires follow-up by City staff to see that incentives are installed in timely manner. |
| Promote Restaurant Spray Nozzles | New State Title 20 Regs. Usually cost effective. Assume included. | Highly cost effective measure. Assume promote as part of the menu of CII incentives. | High | Saves water, energy and wastewater. | Employee training for use of device essential given change in spray pattern. State law now requires more efficient devices, however lower flow rate devices (less than 1.6 gpm) should be promoted. |
| Commercial High Efficiency Toilet (HET) Rebates Intensive | CUWCC BMP 3.4. New State Law AB 715 after 2014. | More cost effective than other measures. Important to have incentives with survey programs. | Medium | Saves water and wastewater. | Market penetration on 1.6 Ultra Low Flush is reaching saturation as National Plumbing Code was in place in 1992. Freeridership (customers would have bought the toilet anyway). Mitigate by design of implementation (not just submit receipt). Freeridership can be an issue, however requiring a survey first curbs this issue. |
| High Efficiency Urinal Rebate (<0.25 gallon) | Supports CUWCC BMP 4 | Useful to have included given HET and other CII incentives and SRCSD partnership. | Medium | Saves water and wastewater. | Market penetration is progressing to more efficient models. Seek guidance from manufacturers as retrofits not suited to all facilities. |
| Irrigation Water Surveys | CUWCC BMP 5. | Useful to support implementation of Irrigation Water Budgets. | Medium | Saves outdoor irrigation, targets over irrigation, and also supports stormwater benefits. | Very labor intensive, many meters are mixed use. |

*Abbreviations: SF = Single family, MF = Multifamily, CII = Commercial, Industrial, Institutional, GOV = Government, IRR = Irrigation, HE = High Efficiency Toilet (1.28 gal/flush or less), ULFT = Ultra Low Flush Toilet (1.6 gal/flush), AMI = Automatic Meter Infrastructure (System)*

*Table 8-3: Basis for Recommended Conservation Plan (Cont'd)*

| Conservation Measure | Key Commitments to CUWCC or Other Agencies | Basis for Inclusion in Plan | DOU Priority[1] | Overall Benefits | Perceived Challenges |
|---|---|---|---|---|---|
| Irrigation Water Budgets | CUWCC BMP 5 and Pending Prop 84 | Necessary to track water budgets and use as communication tool back to customers on their irrigation usage. | High | Same as above. | Large number of sites to develop budgets for. Desktop reviews may not prove to be enough accuracy and requires field verification anyway. |
| Financial Incentives for Irrigation and Landscape Upgrades | CUWCC BMP 5 | Important to have incentives to pay for upgrades recommended from surveys. | Medium | Saves outdoor irrigation, targets over irrigation, enhances public perception with removing water waste in public spaces. And also supports stormwater benefits. | Site upgrades are expensive, so hard to hit price point by offering enough incentives for the projects to move forward. Labor intensive to pre-survey sites, time to make changes and then post survey. |
| Commercial Financial Incentives for Smart Controllers | Pending Prop 84 funding support. | Request was to analyze separately. Companion program to measure for residential landscape incentives. | High | Addresses peak demand for MF and non-residential outdoor irrigation. | Difficult to target high water users until system is fully metered. |

*Abbreviations: SF = Single family, MF = Multifamily, CII = Commercial, Industrial, Institutional, GOV = Government, IRR = Irrigation, HE = High Efficiency Toilet (1.28 gal/flush or less), ULFT = Ultra Low Flush Toilet (1.6 gal/flush), AMI = Automatic Meter Infrastructure (System)*

## 8.3 Implementation Strategy

The overall strategy is to implement each measure on an increasing intensive schedule such that per capita use targets are met by 2020. Starting in 2007 through 2011, water demand was depressed. This trend followed along with dry year conditions from 2007-2009 and the economy downturn starting in 2007 through2011. Water demand has now been observed to start to recover in 2012. With the continuing upward trend of the economic recovery, it is anticipated that water demand will also continue to rebound. Without continued efforts by DOU to address water loss control, metering installation, more aggressive conservation pricing and increasing participation in conservation program activities by customers, the City is at risk for not meeting 2018 CUWCC MOU goals and 2020 SB X7-7 targets. As the City steps up its efforts and monitors performance, it will build on past efforts to have a program leading the efforts within the Sacramento region and seeking to excel beyond efforts by other areas of the state with more

temperate climates. Annually, the DOU team will be preparing a detailed work plan and budget for implementation of each respective upcoming year's activities. It is envisioned that each annual work plan will be discussed with the Sacramento Water Conservation Advisory Group.

MWM recommends City consider the following:

1. Continue working with regional partners (RWA, SMUD and SRCSD) on rebates and other existing conservation programs to minimize administrative costs and prioritize staff time.
2. Look for new or expanded partnerships with RWA and other neighboring utilities as much as possible to leverage more outreach and hands-on training programs to customers.
3. Seek additional new funding sources, such as Proposition 84 and US Bureau of Reclamation funds to support Plan budget needs. The existing budgets may be used as cost share to leverage into funding more activities, especially the least cost effective measures.
4. Strengthen relationships with landscape professional associations, non-profits (e.g., University of California Cooperative Extension (UCCE), Native Plant Society, etc.) to gain more word of mouth exposure to the community that is installing new or re-landscaping their properties to capture the maximum water savings from the point of initial installation of new landscapes and meeting City stormwater permit needs.
5. Market through accredited programs membership lists as a low cost means to spread the word to other professionals in the water industry (e.g., Green Plumbers, WaterSense Partners, Irrigation Association Certified Professionals, etc.)

The City's DOU goal is to prepare a comprehensive water conservation pricing and rate study by 2014, and will work with other City departments to initiate a review of the City's Water Efficient Landscape Ordinance, including enforcement. The City will actively pursue applications for state and federal grants, and partnering opportunities.

Table 8-4 below presents the suggestions for each measure based on current technologies and information. As the program is reviewed each year, this list should also be updated with new technologies or opportunities for saving water as they become available. Elements that are not achieving goals should be terminated in favor of new elements that show more promise.

*Table 8-4: Implementation Suggestions for Recommended Conservation Plan*

| Conservation Measure | Overall Implementation Strategy | Next Steps | Target and Cost Basis Assumptions | Added Budget and/or Staffing Needs | Potential Cost Saving Strategies |
|---|---|---|---|---|---|
| Investigate Customer Potential Leaks and Water Waste Ordinance | Follow-up on all Water Waste Calls to City through 3-1-1 (generating a work order). Use "Leak Reports" from the AMI system to identify potential leaking accounts. Perform desktop review to ensure leak potential remains. Send out field staff based on prioritized list of higher leaking accounts first. | Review annually to refine and streamline approach and staffing needs. | Based on AMI Approved Plan A with assumption of 15% of accounts may have continuous running meter flagged (same percentage as FY11-12). Assume 1 hour per account at $32 per hour. | Retrain Meter Readers to be Water Waste Investigators. Hire summer temporary staff to perform desktop reviews and send seasoned investigators in the field, if warranted. | Maximize desktop checks. When in the field and warranted attempt to convert field investigations into Water Wise House Calls. To the extent feasible, link to HET and Landscape incentive programs. |
| Water Loss Control Program | Update Water System Audit annually. Continue to refine assumptions in the Water System Audit (per CUWCC MOU requirements). Follow AWWA M36 best practices. | Review current strategies with Water Loss Control Expert. | Assumes an average up to $1.45 million per year for spending on water loss control program. | Budget planned for Water Loss Control Study in FY2013. | Address issues with both apparent losses and real losses. Billing system may need closer review, given replacement of new meters on large accounts are helping to address meter accuracy issues and leak detection efforts indicate less issues with real losses than historically estimated. |
| AMI System with Meter Retrofits and Conservation Benefits | Continue with AMI and meter retrofit program. | Stay on track with funding and implementation. | Already approved with DOU AMI Plan "A" | Economize as much as possible. | Continue to seek funding support and cost efficiencies. |
| Meter Conversion - Mixed Use to Dedicated Irrigation Meter | Continue with the mixed use conversions per the replacement schedule of large meters. Consider separate dedicated meters instead of compound meters where practical (sites with large cooling tower and landscape demands). | To be determined based on Feasibility Study findings. Confirm if compound meter is sufficient to track irrigation demand using AMI to enable online water budgets tracking. | Lowest cost is to change along with meter replacement program for large metered accounts. | Depending on if acceleration of the schedule possible get more water budgets done more quickly. Assume done with meter change-outs over time. | Assume combined with other metering and irrigation related measures. |

*1 Priority based on benefits, challenges and relative cost effectiveness. See Appendix B for detailed cost effectiveness evaluation by conservation measure.*
*2 Based on analysis assumptions for market penetration needed to meet Gallons Per Capita Per Day (gpcd) water savings goals and based on cost effectiveness results.*
*DOU Lead: CO = Conservation Office, FO = Field Operations, PI = Public Information, IPM = Integrated Planning & Business Operations, DS = Development Services, CE = Code Enforcement*
*"Customer Categories: SF – Single Family, MF – Multi-family, CII – Commercial, Industrial and Institutional, All – All of the Above,*
*System – City's Distribution System, IRR - Dedicated Irrigation Meter; DOU - City Dept. of Utilities"*

*Partnerships: RWA = Regional Water Authority, SMUD = Sacramento Municipal Utility District, SRCSD = Sacramento Regional County Sanitation District, SSQP = Sacramento Stormwater Quality Partnership*

*Table 8-4: Implementation Suggestions for Recommended Conservation (Cont'd)*

| Conservation Measure | Overall Implementation Strategy | Next Steps | Target and Cost Basis Assumptions | Added Budget and/or Staffing Needs | Potential Cost Saving Strategies |
|---|---|---|---|---|---|
| Conservation Pricing | Assumed switch to tiered pricing in 2016. And more aggressive pricing structure in subsequent 3 year adoption cycles. | Issue RFP for Rate Study in 2013. Research more case studies for volumetric and budget based rate schedules. | Added budget for rate study consultant in 2013-14. | Consider joining together with other utilities that are or recently completed metering in Sacramento region to gain potential cost efficiencies. | Leverage lessons learned by others. |
| Public Information, Regional Outreach, Media Campaign | Update Marketing Plan as needed when new incentive programs are added. Promote new Landscape Calculator being developed by RWA. | Refine the overall marketing budget and strategy for each conservation and determine support by the Public Information team and support by the Water Conservation Office or contractors implementing the measures in the program. | Budget estimate based on 50% of all single family residential accounts per year. Actual participation is difficult to track. See assumptions in Appendix B. Added budget would support needed outreach efforts (i.e., updated web site, hands-on irrigation workshops). Each conservation measure also has marketing support. | Seek to expand on partnership opportunities with RWA and other utilities (i.e., County Stormwater) to broaden River Friendly, Blue Thumb campaigns. | Continue to ramp awareness programs, especially focused on residential customers as more meter retrofits are installed. Heavier promotion on River Friendly themes and new County demonstration gardens. |
| Single Family Residential Audits (Surveys): Water Wise House Calls | Call for voluntary sign-ups through all avenues possible. Public outreach campaigns, events, workshops, web site, voicemail messages, print and radio media, etc. Push for selling the "opportunity for a sprinkler check" to tailor watering schedules and new residential measures. | Train up less expensive staff resources to be Irrigation Association auditors in support of the "Follow-The-Meter" grant or seek to modify grant requirements. | Follow-the-Meter grant has a costly implementation strategy to have IA trained auditors providing on-the-spot surveys. | Continue with Follow-the-Meter grant. Focus on assisting RWA launching the Prop 84 grant for exterior surveys. Consider strategy for leveraging staff to the most appropriate skill set. | Due to low cost effectiveness due to field labor required, City may forgo tying to getting a rebate unless want more support for also meeting Programmatic BMP 3.1 (not current focus of City strategy). |
| Multi-family Residential Audits (Surveys) | Call for voluntary sign-ups through all avenues possible. Host monthly Property Manager online meetings, similar to Irvine Ranch Water District does on a Wednesday morning each month. Push for selling the "opportunity for a sprinkler check" to tailor watering schedules and other incentives. | Use staff resources wisely, for large properties may need to be Irrigation Association auditors. Review site inventory and random sample units to validate. | Includes efficient surveys with random inspections of units, not a complete inventory (unless rebate verification required). | Assumes prioritizing of staff time to larger MF priorities. | Consider strategy for leveraging staff to the most appropriate skill set. Assume for larger properties (more than 6 or 10 units) that any incentives are tied to getting a rebate and also serves as inspection. |
| Residential High Efficiency Washer Rebate Intensive | Continue with SMUD Partnership. | Seek additional support for PG&E rebates increasing on the energy side. Continue to track and promote benefits of the new pending federal regulations. | Consider increasing the rebate on the highest efficiency or Consortium for Energy Efficiency Tier 3 machines. | After supporting more promotion and tracking participation rates, consider the need to increase rebate from $100 up to $150. Priority would be on outdoor measures before adding more funds to indoor measures that have potential for new regulations like washing machines. | Continue with the SMUD administrative support at $6 per application. |

*Table 8-4: Implementation Suggestions for Recommended Conservation (Cont'd)*

| Conservation Measure | Overall Implementation Strategy | Next Steps | Target and Cost Basis Assumptions | Added Budget and/or Staffing Needs | Potential Cost Saving Strategies |
|---|---|---|---|---|---|
| Multi-family and Commercial High Efficiency Washer Rebate | Consider expanding SMUD partnership to multi-family and CI sectors. | Meet with SMUD. | See Appendix B for assumptions. | Assume efficient inspections associated with survey programs. | Explore with the SMUD administrative support at $6 per application. |
| Residential High Efficiency Toilet (HET) Rebates Intensive | Consider revising the program to lower the free ridership and leverage toilet leaks uncovered through the AMI investigations. Several examples: San Antonio Water System (SAWS) Plumbers to People, Denver Water's GreenPlumbers Partnership, or private sector like Niagara Conservation Inc. has turnkey solutions. | Consider shifting incentives to a direct install HET program connected to properties through the AMI program have been determined to have a toilet leak. | Assumed increase in the "intensive" approach in the near term perhaps with a direct install option for implementation. Includes additional funding for administrative and marketing support. Ramp down over time as shift funds to more residential outdoor measures. | Near term will have potential for Prop 84 funding support. Assume sites indentified through the AMI leak investigation program with up to $200 per toilet replacement that includes coverage for plumber costs. City's overall priority is to shift to outdoor measures before adding more funds to indoor measures that have potential for new regulations. | If outsourced turnkey solutions are pursued, then can shift of focus CO staff resources on residential outdoor measures. |
| Residential Financial Incentives for Irrigation and Landscape Upgrades | Offer incentives along with weather based "smart" irrigation controllers (below) in support of River Friendly Landscape Program. In support of the Water Wise House Call program to encourage customers to take action on City's recommendations. Seek regional partnership to expand City of Roseville's program, especially turf replacement region-wide. Set up program as turn key as possible. | Set up program leveraging from recent CALFED grant program. Use lessons learned from others like City of Roseville and include homeowner and property manager training support through RWA to teach customers and/or promote the Green Gardeners. | See Appendix B for assumptions. | New conservation measure, needs added support for funding and staffing. Costly program and price point may not be high enough for customer to participate. Need to support customer training on appropriate set-up and use. | Costly measure but deemed necessarily based on customer requests and SWCAG feedback. Seek grants and cost sharing with stormwater utilities. Turnkey programs are important for more challenging for outdoor landscape programs. |
| Residential Financial Incentives for Smart Controllers | Merge as part of the menu landscape incentives above. Very important technology to help with eliminating dry weather flows to the stormwater system that are very costly to treat. | Leverage from the lessons learned of others. | Assume up to $400 per rebate incentive. | Not a current program. Needs staffing strategy align with Smart Landscape Rebates program. | Combine with Landscape Incentives Program. Push for manufacturer support to customers as much as possible to mitigate repeat calls from customers with support needs. |
| CII Surveys and Top 100 Users Program | Use specialty trained staff or outsource surveys. Include a targeted few large customers per year for surveys. | Determine the ability to use in-house staffing, needed outsourcing or combination to achieve savings goals. | Assumed two staff, one more skilled and one technician to conduct walkthroughs. At level of effort planned, would be about 2 FTEs assigned to the CII survey program. Historic performance is low, assume 80 surveys per year, approximately 2 surveys of all types per week. | Best to have cross training for staff of four that could perform CII surveys or on-call contractor. | Consider having staff perform the more simplistic surveys and higher skilled contractor perform the more complex sites. A regional contractor may provide more cost effective CII surveys. Outsourcing may allow current staff to focus on outdoor measures. |

*Table 8-4: Implementation Suggestions for Recommended Conservation Plan (Cont.)*

| Conservation Measure | Overall Implementation Strategy | Next Steps | Target and Cost Basis Assumptions | Added Budget and/or Staffing Needs | Potential Cost Saving Strategies |
|---|---|---|---|---|---|
| CII Rebates to Replace Inefficient Equipment Intensive | Continue with program similar to current menu of incentives used in the Proposition 50 grant assistance program. | Review examples like Southern Nevada Water Authority's Water Efficient Technologies (WET) Program and East Bay MUD's WaterSmart Customized Rebates | Assumes $2,000 per account added with other menu items below. Determine future funding sources beyond Prop 50. | Requires one more highly skilled and specially trained staff and one technician. Assumes 2 FTEs and four staff would be trained for conducting surveys. | Tie to surveys to perform the pre-inspections. Seek grant opportunities. May be outsourced for more complex sites (larger hospitals, schools, etc.). |
| Promote Restaurant Spray Nozzles | Assume implemented as part of the CII incentives program above. | Combine with survey and incentives strategy. | Large number of sites with broad array of customer types have significant numbers of valves and that many would be given away per CII survey. Assumes less than 1.6 gpm valve that is the current state Title 20 Appliance Efficiency Standard. | Assume embedded in other measures. | Seek to continue to bulk purchase new higher efficiency than 1.6 gpm valves. |
| Commercial High Efficiency Toilet (HET) Rebates Intensive | Consider more marketing especially promotion to GreenPlumbers and streamlined approach to finding sites with high volume of higher flushing toilets. | Decide on marketing strategy and seek to move more grant and cost share funding prior to end of grants. | Assume increase to average total cost of $800 per limited number of toilets to allow for direct install program. Consider lowering incentive and including more sites. | Requires pre and post inspection for targeted large sites. | Target larger sites. Promote private sector vendors performing change-outs. |
| High Efficiency Urinal Rebate (<0.25 gallon) | Run as companion program to HET program and link to CII incentives program. | Same as above. | Assumes average total incentive of $300 per urinal. Target limited number of large sites through survey program. | Same as above. | Seek to streamline as much as possible. Less cost effective than HET program. |
| Irrigation Water Surveys | Target sites with high potential for over irrigation based on review of water budgets and billing data. | Set up priority list and staffing plan. Should be key focus. | Assume serves as field verification for the water budgets developed online. | Seek to have more IA certified auditors on staff or consider outsourcing. | Seek labor efficiencies with one IA auditor and apprenticeship technician performing audits. |
| Irrigation Water Budgets | Continue to perform desktop reviews. Based on physical verification surveys, determine if level of accuracy is sufficient. | Create priority list based on check of billing data and depth of applied water to seek most water savings potential. | Assume continue 120 or more per year. | Cost effective assuming high accuracy that saves on field labor if accuracy high enough. | Cost efficient assuming high accuracy that saves on field labor if accuracy high enough. |
| Financial Incentives for Irrigation and Landscape Upgrades | Target sites that have clearly defined needs based on physical surveys priority list and consider incentives priority list. | Discuss targeting implementation approach. Also discuss regional program and stormwater partnership. | Assume up to $5,000 on average per site constrained by cost effectiveness and combine with Smart Controller Rebate (below). | Price point assumed higher than $5,000 per site but constrained by cost effectiveness. Could use case by case approach based on physical validation for large landscape surveys. | Seek to establish a turn key program and minimize labor effort. Seek grants and outsourcing if possible to be more cost efficient. |

*Table 8-4: Implementation Suggestions for Recommended Conservation Plan (Cont.)*

| Conservation Measure | Overall Implementation Strategy | Next Steps | Target and Cost Basis Assumptions | Added Budget and/or Staffing Needs | Potential Cost Saving Strategies |
|---|---|---|---|---|---|
| Commercial Financial Incentives for Smart Controllers | Merge as part of the menu landscape incentives above. Considered very important technology to help with eliminating dry weather flows to the stormwater system that are very costly to treat. | Same as above. | Assume up to $500 per MF rebate incentive and $1,000 per non-residential property as constrained by cost effectiveness. | Seek to continue support continuation of Prop 50 grant. Assume professionals doing installation and minimal tech support needed. | Combine with Landscape Incentives Program. |

*1 Priority based on benefits, challenges and relative cost effectiveness. See Appendix B for detailed cost effectiveness evaluation by conservation measure.*
*2 Based on analysis assumptions for market penetration needed to meet Gallons Per Capita Per Day (gpcd) water savings goals and based on cost effectiveness results.*
*DOU Lead: CO = Conservation Office, FO = Field Operations, PI = Public Information, IPM = Integrated Planning & Business Operations, DS = Development Services, CE = Code Enforcement*
*"Customer Categories: SF – Single Family, MF – Multi-family, CII – Commercial, Industrial and Institutional, All – All of the Above,*
*System – City's Distribution System, IRR - Dedicated Irrigation Meter; DOU - City Dept. of Utilities"*

*Partnerships: RWA = Regional Water Authority, SMUD = Sacramento Municipal Utility District, SRCSD = Sacramento Regional County Sanitation District, SSQP = Sacramento Stormwater Quality Partnership*

## 8.4 Performance Based Approach and Monitoring Progress

As the City further implements its water conservation programs, progress will be made and the City will evaluate this progress in terms of meeting the 2020 SB x7-7 per capita use targets and striving towards other CUWCC MOU Compliance goals.

Given the requirements for the program are to have reduced water demand based on a gallons per capita per day target, the City is following a "water savings based performance approach." This allows the City flexibility in pursuing measures that are the most effective for achieving its goals. This is a significant change from the "best management practice activities based approach." The BMP activities-based approach had specific numerical targets calculated for how many of what type of activity had to be done (e.g., 15% of all single family residential accounts were to be surveyed). This BMP approach was traditionally followed by all Group 1 Water Utilities, including the City of Sacramento, prior to the 2008 CUWCC MOU update. When the MOU was updated both new "Flexible Track" and "GPCD" compliance options were added. In addition, with the passage of SB X7-7 in November 2009, the City now has ability to adjust its budget, staffing and outreach efforts to those measures that can (a) save the most water, (b) are the most cost effective, and/or (c) can be more easily implemented to obtain higher participation rates. Some measures may perform better than others given the volunteer nature of customer

participation for many of these measures that drives the ability to lower demands (and meet targets).

The overarching feedback received from the SWCAG during the planning process was to increase emphasis for the water conservation program on outdoor conservation measures rather than indoor measures. This is logical for the following reasons:

- Indoor measures have pending increasingly stringent laws and codes that will provide passive water savings (from replacement by higher efficiency fixtures and appliances in the coming three-five years);
- The highest potential for water savings is with implementation of utility operations and outdoor conservation measures (which is an opportunity to save on peak water treatment plant capacity, while reducing peak energy demand and greenhouse gas emissions); and
- The greatest perceived need by City customers, based on interactions with the Public Information Office is for curbing residential outdoor irrigation. This need will in turn likely drive the most customer participation in the water conservation program by implementing outdoor measures.

Based on this feedback, the DOU Management Team made the decision that even though the indoor measures are more cost effective, that the City would also continue to increase support for outdoor measures and public outreach and education. As a result, the Plan reflects the City's intention to make a gradual shift from indoor measures that are being implemented now to emphasize the more costly outdoor measures starting in July 2015 (the start of FY 2016).

An annual work plan and budget will be brought before the Sacramento Water Conservation Advisory Group to reconfirm the goal of meeting this SB X7-7 mandate and CUWCC MOU goals, as well as other City goals for the Water Master Plan. As part of this planning process, an annual evaluation of progress will be important given the water demand for City customers fluctuates year to year based predominately on climate conditions (weather) and other external factors such as economic conditions and, as a result, the annual average per capita use will fluctuate. It will be important to track activities, water demand, climatic variation, economic conditions, and other factors impacting demands on an annual basis to understand the level of progress being made in reducing and/or maintaining overall targets. If tools are not provided by the state or CUWCC, the City will need to develop a detailed methodology to analyze annual per capita water use and explain variations and isolate the demand reductions that can be attributed to the Plan. Periodic adjustments to the level of conservation activities planned and budgeted for the next year are expected to be made by the DOU Technical Team.

## 8.5 Estimated Total Annual Budget and Water Savings

Figure 8-2 and Figure 8-3 presents a summary of all measures and gives an estimated implementation total annual program budget and water savings estimates to guide the City in developing an annual work plan for the implementation of planned actions by the key four elements: water loss control, metering with conservation pricing, water conservation office activities and plumbing codes and standards. The total program budget was developed as part of the DSS Model evaluations for level of desired participation by year by the measures that were quantifiably analyzed. The budgets shown include labor and expenses for conservation measures evaluated. Additional labor expenses, outsourcing or consulting support, may be warranted for accelerating programs or for studies and development of ordinances or other supporting efforts beyond what is necessary to implement the quantifiable measures included in the DSS Model. The budget levels represent the total budgeted need irrespective of funding sources. The City DOU currently has several grants to support near term expenses and will be seeking additional opportunities for State grants or cost sharing partnerships. To the extent feasible, the City will work together with other Regional Water Authority member utilities to find the means for lowering the costs of measure implementation.

The City intends to develop a detailed annual work plan, and use the DSS Model to monitor progress on demand reductions; along with updates to the implementation cost estimates, staffing and associated schedule on an annual basis.

*Figure 8-2. Estimated Annual Budget*

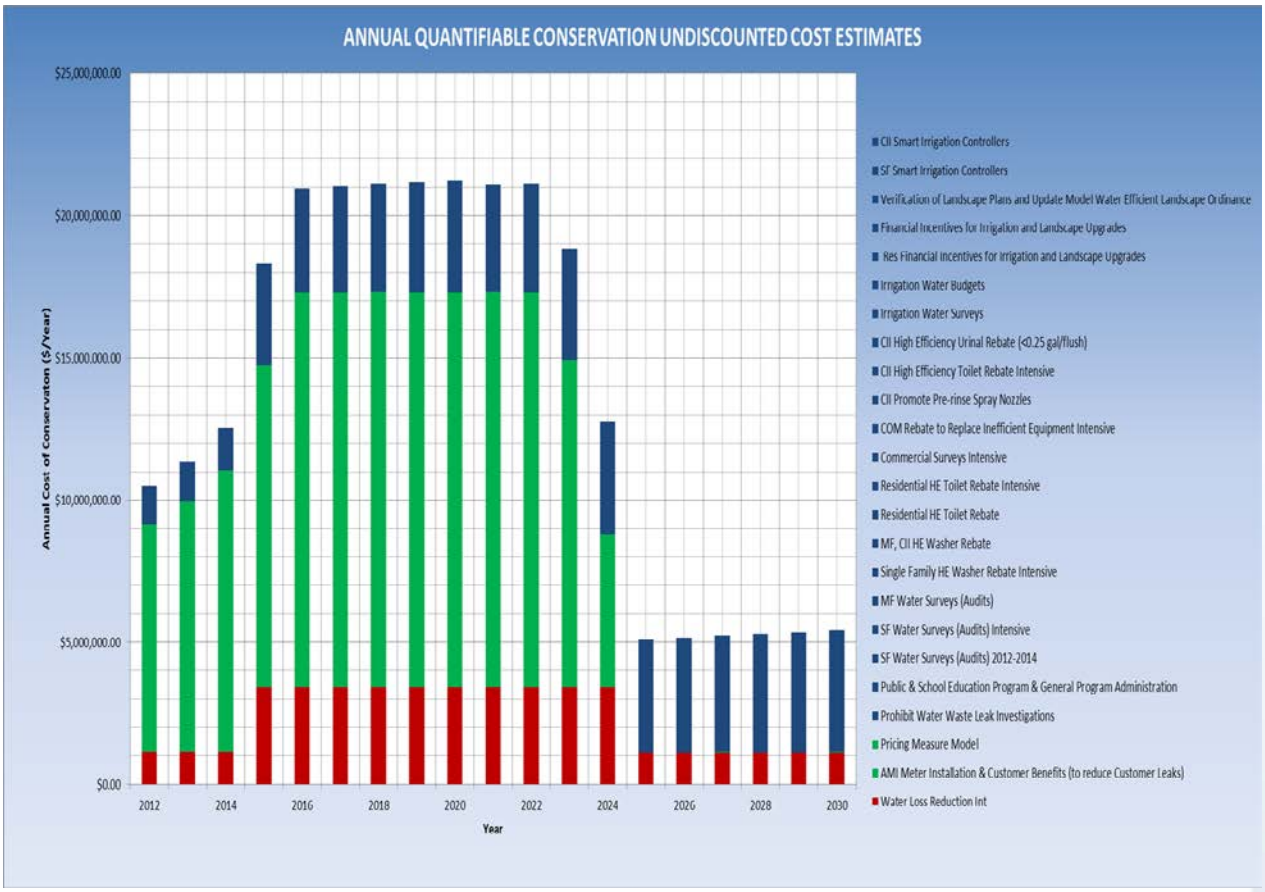
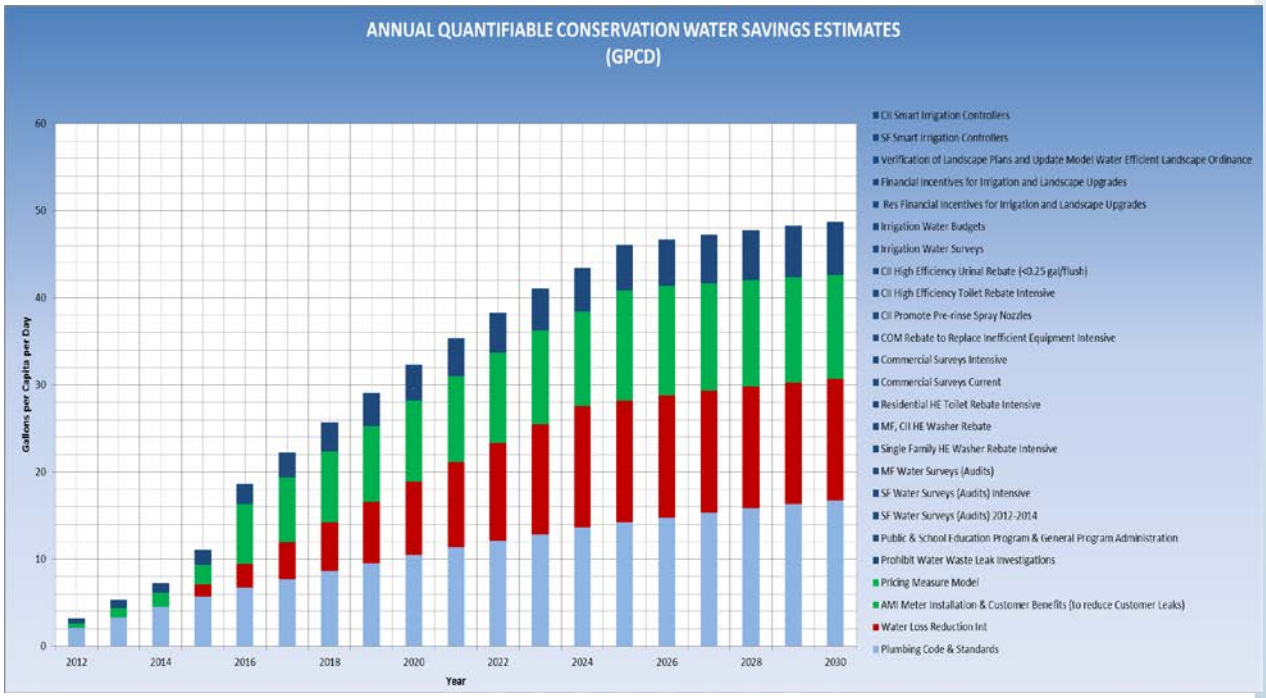



*Figure 8-3. Estimated Annual Water Savings*



## 8.6 Recommended Next Steps

Successful implementation of the Plan following this water savings performance based approach will require a significant increase in level of effort on the part of the City. Many of the existing measures have had lower than targeted participation rates historically due to a low percentage of customers with meters and low cost of water. New and more targeted conservation measures are planned to be employed in order to increase participation levels that are needed to achieve Plan goals and ensure achieving the SB X7-7 mandate.

Recommendations to assist with implementation include the following next steps:

1. Continue to strengthen existing partnerships and forge new relationships and apply for grants where available and cost efficient (i.e., turnkey solutions);
2. Reassess program focus based on progress annually to help decide on priorities for the next plan year using the recommendations from the WCP;
3. Prioritize measures for implementation with those that contribute the most to meeting the per capita use targets given highest priority for implementation (see Figure 8-3);
4. Conduct a market penetration study within the next few years to determine the saturation of the higher efficiency plumbing and appliances focused particularly on the residential single family sector. Accelerate the shift in the WCP emphasis to residential outdoor measures based on study findings, if significant saturation of 60-70% or more is found for residential indoor fixtures and appliances.
5. Continue to manage and measure performance by utilizing the work order system to store, manage and measure participation, cost and other data to gauge successes and failures in performance for meeting desired participation levels and readjust the program as needed;
6. Use the DSS Model to annually update the plan including actual measure participation, projected water savings and expected per capita water use reductions to ensure plan is on track to meet 2020 targets; and
7. Continue engaging the Sacramento Water Conservation Advisory Group to review and provide input on the Plan to meet the City's GPCD target.

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# APPENDIX A – DESCRIPTION OF THE DSS MODEL

The Demand Side Management Least Cost Planning Decision Support System or DSS Model prepares long-range and detailed water demand projections. The purpose of the extra detail is to enable a more accurate assessment of the impact of water efficiency programs on demand.

The DSS Model is an end-use model that breaks down total water production (water demand in the service area) to specific water end uses such as toilets, faucets, or irrigation. The end-use approach allows for detailed criteria to be considered when estimating future demands, such as the effects of natural fixture replacement, plumbing codes, and conservation efforts.

To forecast urban water demands using the DSS Model, customer-billing data is obtained from the water agency being modeled. The billing data is reconciled with available demographic data to characterize the water usage for each customer-billing category in terms of number of users per account and per capita water use. The billing data is further analyzed to approximate the split of indoor and outdoor water usage in each customer-billing category. The indoor/outdoor water usage is further divided into typical end uses for each customer-billing category. Published data on average per-capita indoor water use and average per-capita end use are combined with the number of water users to calibrate the volume of water allocated to specific end uses in each customer-billing category.

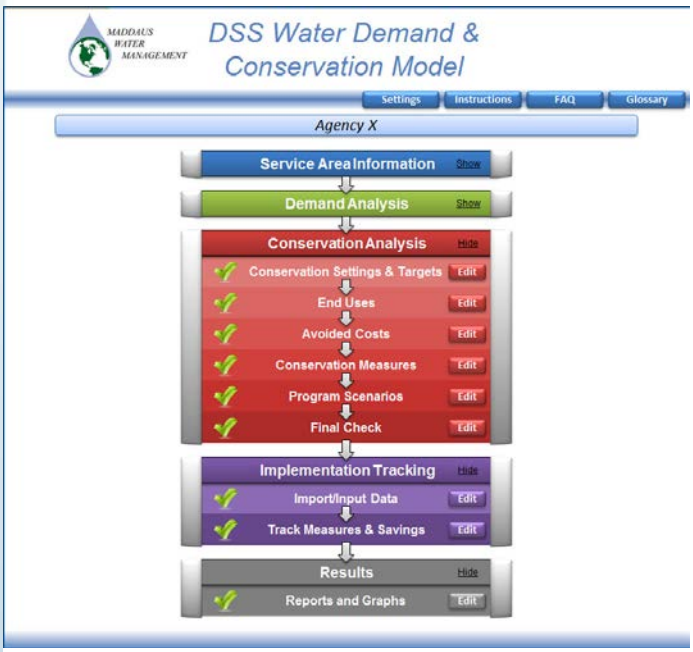


**Figure AP-1: Schematic of DSS Model as applied to an urban water agency or regional area for water conservation**

The DSS Model evaluates conservation measures using benefit cost analysis with the present value of the cost of water saved ($/Acre-Foot) and benefit-to-cost ratio as economic indicators. The analysis is performed from various perspectives including the utility and community (utility plus customer). Benefits are based on savings in water and wastewater facility O&M and savings from deferring or downsizing future capital facilities, such as water treatment plant expansions or new source development or water purchases from wholesalers. Figure 1 presents the six steps, illustrates the process for forecasting conservation water savings, including the impacts of fixture replacement due to plumbing codes and standards already in place.

In the past five years Maddaus Water Management has used its DSS Model to work on multiple regional studies including:

1. 16 counties in the Atlanta, Georgia Metropolitan area
2. 28 agencies in the San Francisco Bay Area
3. 9 agencies in Sonoma County
4. 6 agencies in the Sacramento area

The DSS Model has been used for practical applications of conservation planning in over 215 service areas including extensive efforts nationally in California, Colorado, Utah, Georgia, Florida, Ohio, North Carolina and internationally in Australia, New Zealand and Canada.

# APPENDIX B – Potential Water Conservation Measure for City of Sacramento Showing Selected Measures

| Conservation Measure Assumptions | | | |
|---|---|---|---|
| **DSS Model Measure Number** | **1** | **2** | **2-Int** |
| **Measure Name** | **Prohibit Water Waste Leak Investigations** | **Water Loss Reduction Program** | **Water Loss Reduction Program Intensive** |
| **Measure included in which Program Scenario** | All Programs | Program A,B,C | Program D |
| **Customer Classes** | SF,MF,COM,INST,IRR,OTH | System | System |
| **Applicable End Uses** | Leakage | Non Revenue Water | Non Revenue Water |
| **Market Penetration by End Of Program (%)** | 30% | 100% | 100% |
| **Annual Market Penetration (%)** | 5% of AMI meter end points per year are actually repaired leaks | NA | NA |
| **Water Use Reductions For Targeted End Uses Description** | 5% | See note below | See note below |
| **Evaluation Start Year** | 2012 | 2012 | 2012 |
| **Evaluation End Year** | 2040 | 2040 | 2040 |
| **Program Length, years** | 29 | 29 | 29 |
| **Measure Life, years** | 5 | Permanent | Permanent |
| **Saves Hot Water** | No | No | No |
| **Utility Unit Cost for SF accounts, $/unit** | $32 | See note below | See note below |
| **Utility Unit Cost for MF accounts, $/unit** | $32 | See note below | See note below |
| **Utility Unit Cost for non-Res accounts, $/unit** | $32 | See note below | See note below |
| **Customer Unit Cost. $/SF unit** | $0 | $0 | $0 |
| **Customer Unit Cost. $/MF unit** | $0 | $0 | $0 |
| **Customer Unit Cost. $/CII unit** | $0 | $0 | $0 |
| **Annual Utility Admin & Marketing Cost** | 30% | 15% | 15% |
| Water Savings Documentation & Assumptions | Based on City of Sacramento data that 6% of accounts have a leak of 1,000 gallons per day. Assumed 5% water savings per account to be conservative. | 0.2% of production each year until FY 25/26, then maintenance program until 2040. Program total of 3% of production by FY 25/26. | Continue current program and then increase program in FY 16 to 0.6% of production each year until FY 22/23, then maintenance program until 2040. Program total 5.8% of production by FY 24/25. |
| Cost Documentation & Assumptions | Current calls per year is approximately 2,000 at 45 minutes per call and 45 minutes for drive time and etc. with $21 per hour labor charge. Assumes there will be leak calls 15% of existing total AMI meters which is based on meter installation information provided by Terrance. In addition this measure includes 1,000 AMI leak investigations. | Based on data provided by the City of Sacramento staff - Annual cost of $1.1M plus $350,000 backlog for a total cost of $1.45M 2013 to 2040. | Annual Cost was increased to $3.2M for the years FY 2016 to 2022 to allow for additional crews and equipment to obtain the higher water savings goals. Annual cost of $1.1M for the years 2025 to 2040 to maintain the 5.8% production water savings. |

Notes:

SF = Residential Single Family
MF = Residential Multi Family
GOV = Government
COM= Commercial
OTH = Other
IRR = Dedicated irrigation meters
INST = Institutional/Public, buildings / grounds owned by the Water Utility or City

| Conservation Measures Assumptions | | | |
|---|---|---|---|
| **DSS Model Measure Number** | **3** | **4** | **5** |
| **Measure Name** | **AMI Meter Installation & Customer Benefits (to reduce Customer Leaks)** | **Conservation Pricing** | **Public & School Education Program & General Program Administration** |
| **Measure included in which Program Scenario** | All Programs | Program C, D | All Programs |
| **Customer Classes** | SF,MF | SF | SF |
| **Applicable End Uses** | ALL | ALL | All |
| **Market Penetration by End Of Program (%)** | 100% | 100% | 100% |
| **Annual Market Penetration (%)** | Follows meter installation schedule, and assumes backyard meters are installed in the year FY 18/19 to 23/24 | NA | 50% |
| **Water Use Reductions For Targeted End Uses Description** | 10% | Elasticity's: -0.05 indoor; -0.2 outdoor | 1% |
| **Evaluation Start Year** | 2012 | 2019 | 2012 |
| **Evaluation End Year** | 2024 | 2040 | 2040 |
| **Program Length, years** | 13 | 22 | 29 |
| **Measure Life, years** | Permanent | 9 | 2 |
| **Saves Hot Water** | No | Yes | Yes |
| **Utility Unit Cost for SF accounts, $/unit** | $1,350 | $2 | $11 |
| **Utility Unit Cost for MF accounts, $/unit** | $1,350 | $0 | $0 |
| **Utility Unit Cost for non-Res accounts, $/unit** | $0 | $0 | $0 |
| **Customer Unit Cost. $/SF unit** | $75 | $0 | $0 |
| **Customer Unit Cost. $/MF unit** | $150 | $0 | $0 |
| **Customer Unit Cost. $/CII unit** | $200 | $0 | $0 |
| **Annual Utility Admin & Marketing Cost** | 45% | 25% | 15% |
| Water Savings Documentation & Assumptions | Conservative assumption on water savings based on long term observations from City of Davis and Citrus Heights Water District from Rex Meurer. Discussed with Jim Peifer at length and agreed on a value of 10% for long term savings on July 13, 2012. | Pricing study not yet completed. Assumed elasticity factors based on literature values. | Water savings are conservative as behavior water savings hard to quantify. It is also assumed low savings as to not overlap with other program water savings. |
| Cost Documentation & Assumptions | Front yard meter cost $1,350. Back yard meter cost $6,160 from Christie Lupercio on June 29, 2012. Assumes 34,204 meters are located in the back yard and the remainder of the meters are in the front yard. Admin and Marketing used to make budget match actual provided FY 11 value of $7,795,000. | Cost includes initial rate study and updates to the rate study every 3 years. | Cost assumes labor, salary and benefits for conservation coordinator, education and outreach efforts, and general administration of the overall conservation program. |

| Conservation Measures Assumptions | | | |
|---|---|---|---|
| **DSS Model Measure Number** | **6** | **6-Cur** | **7** |
| **Measure Name** | **SF Water Surveys (Audits)** | **SF Water Surveys Current** | **MF Water Surveys (Audits)** |
| **Measure included in which Program Scenario** | All Programs | All Programs | All Programs |
| **Customer Classes** | SF | SF | MF |
| **Applicable End Uses** | Internal and External | Internal and External | Internal and External |
| **Market Penetration by End Of Program (%)** | 19% | 1% | 38% |
| **Annual Market Penetration (%)** | 0.7% | 0.7% | 1.3% |
| **Water Use Reductions For Targeted End Uses Description** | 5% indoor, 5% outdoor | 5% indoor, 5% outdoor | 5% indoor, 5% outdoor |
| **Evaluation Start Year** | 2012 | 2012 | 2012 |
| **Evaluation End Year** | 2040 | 2014 | 2040 |
| **Program Length, years** | 29 | 3 | 29 |
| **Measure Life, years** | 5 | 6 | 5 |
| **Saves Hot Water** | Yes | Yes | Yes |
| **Utility Unit Cost for SF accounts, $/unit** | $84 | $84 | $0 |
| **Utility Unit Cost for MF accounts, $/unit** | $0 | $0 | $84 |
| **Utility Unit Cost for non-Res accounts, $/unit** | $0 | $0 | $0 |
| **Customer Unit Cost. $/SF unit** | $30 | $30 | $0 |
| **Customer Unit Cost. $/MF unit** | $0 | $0 | $100 |
| **Customer Unit Cost. $/CII unit** | $0 | $0 | $0 |
| **Annual Utility Admin & Marketing Cost** | 30% | 30% | 30% |
| Water Savings Documentation & Assumptions | Savings are conservative as the toilets are covered under the Toilet Program, Washer Program, Irrigation Equipment. Leakage and Behavioral elements can be under this program. | Savings are conservative as the toilets are covered under the Toilet Program, Washer Program, Irrigation Equipment. Leakage and Behavioral elements can be under this program. | Savings are conservative as the toilets are covered under the Toilet Program, Washer Program, Irrigation Equipment. Leakage and Behavioral elements can be under this program. |
| Cost Documentation & Assumptions | Assumes 8 hours to coordinate with homeowner, drive to survey, conduct survey, drive back, do a report with results at $21 per hour | Assumes 8 hours to coordinate with homeowner, drive to survey, conduct survey, drive back, do a report with results at $21 per hour | Assumes 8 hours to coordinate with homeowner, drive to survey, conduct survey, drive back, do a report with results at $21 per hour |

| Conservation Measure Assumptions | | | |
|---|---|---|---|
| **DSS Model Measure Number** | **8** | **8-Int** | **9** |
| **Measure Name** | **Single Family HE Washer Rebate** | **Single Family HE Washer Rebate Intensive** | **MF, CII HE Washer Rebate** |
| **Measure included in which Program Scenario** | Program A | Program B, C, D | Program B, C |
| **Customer Classes** | SF | SF | MF,COM |
| **Applicable End Uses** | Laundry | Laundry | Laundry |
| **Market Penetration by End Of Program (%)** | 6% | 16% | 10% |
| **Annual Market Penetration (%)** | 0.3% | 0.8% | 0.6% |
| **Water Use Reductions For Targeted End Uses Description** | 58% | 58% | 58% |
| **Evaluation Start Year** | 2012 | 2012 | 2015 |
| **Evaluation End Year** | 2030 | 2030 | 2030 |
| **Program Length, years** | 19 | 19 | 16 |
| **Measure Life, years** | Permanent | Permanent | Permanent |
| **Saves Hot Water** | Yes | Yes | Yes |
| **Utility Unit Cost for SF accounts, $/unit** | $100 | $200 | $0 |
| **Utility Unit Cost for MF accounts, $/unit** | $0 | $0 | $500 |
| **Utility Unit Cost for non-Res accounts, $/unit** | $0 | $0 | $500 |
| **Customer Unit Cost. $/SF unit** | $150 | $100 | $0 |
| **Customer Unit Cost. $/MF unit** | $0 | $0 | $1,000 |
| **Customer Unit Cost. $/CII unit** | $0 | $0 | $1,000 |
| **Annual Utility Admin & Marketing Cost** | 15% | 25% | 25% |
| Water Savings Documentation & Assumptions | Based on Energy Star July 2012 website Conventional 9.5 vs. Efficient Washing Machine Water Factors 4.02. Washer size of 3.64 cu ft. Equates to a savings of 58%. | Based on Energy Star July 2012 website Conventional 9.5 vs. Efficient Washing Machine Water Factors 4.02. Washer size of 3.64 cu ft. Equates to a savings of 58%. | Based on Energy Star July 2012 website Conventional 9.5 vs. Efficient Washing Machine Water Factors 4.02. Washer size of 3.64 cu ft. Equates to a savings of 58%. |
| Cost Documentation & Assumptions | The rebate value is $200 per request of City of Sacramento for washer rebates starting in 2013. | The rebate value is $200 per request of City of Sacramento for washer rebates starting in 2013. | Cost assumes up to 5 machines per account at $100 per a unit (or a total of $500 per account). |

| Conservation Measure Assumptions | | | |
|---|---|---|---|
| **DSS Model Measure Number** | **9-Int** | **10** | **10-Int** |
| **Measure Name** | **MF, CII HE Washer Rebate Intensive** | **Residential HE Toilet Rebate** | **Residential HE Toilet Rebate Intensive** |
| **Measure included in which Program Scenario** | Program D | Program A | Program B, C, D |
| **Customer Classes** | MF,COM | SF,MF | SF,MF |
| **Applicable End Uses** | Laundry | Toilets | Toilets |
| **Market Penetration by End Of Program (%)** | 20% | 1% | 5% |
| **Annual Market Penetration (%)** | 1.3% | 0.3% | 0.8% |
| **Water Use Reductions For Targeted End Uses Description** | 58% | 63% | 77% |
| **Evaluation Start Year** | 2015 | 2012 | 2015 |
| **Evaluation End Year** | 2030 | 2014 | 2020 |
| **Program Length, years** | 16 | 3 | 6 |
| **Measure Life, years** | Permanent | Permanent | Permanent |
| **Saves Hot Water** | Yes | No | No |
| **Utility Unit Cost for SF accounts, $/unit** | $0 | $220 | $55 |
| **Utility Unit Cost for MF accounts, $/unit** | $1,000 | $624 | $156 |
| **Utility Unit Cost for non-Res accounts, $/unit** | $1,000 | $0 | $0 |
| **Customer Unit Cost. $/SF unit** | $0 | $110 | $495 |
| **Customer Unit Cost. $/MF unit** | $1,500 | $312 | $1,404 |
| **Customer Unit Cost. $/CII unit** | $1,500 | $0 | $0 |
| **Annual Utility Admin & Marketing Cost** | 30% | 30% | 30% |
| Water Savings Documentation & Assumptions | Based on Energy Star July 2012 website Conventional 9.5 vs. Efficient Washing Machine Water Factors 4.02. Washer size of 3.64 cu ft. Equates to a savings of 58%. | Assume replace 3.5 gpf toilets with a 1.28 gpf toilet as per current RWA / SRCSD rebate guidelines the City participates in as of July 2012. | Assume replace 3.5 gpf toilets with a 1.28 gpf toilet as per current RWA / SRCSD rebate guidelines the City participates in as of July 2012. |
| Cost Documentation & Assumptions | Cost assumes up to 7 machines per account at $150 per a unit (or approx. total of $1,000 per account). The rebate value was increased from $100 to $150 to encourage higher participation rate for the "intensive program". | The rebate value is $100 per request of Tyler Stratton at City of Sacramento for toilet rebates after July 1, 2012. Assume 2.2 toilets per SF account. Assume 5.2 Dwelling Units per MF account. Assumes 1.2 toilets per MF dwelling unit. Or a total of 5.2 dwelling units x 1.2 toilets per dwelling unit = 6.2 toilets per MF account. | The rebate value for the intensive program is $200 per toilet which covers the full cost of the toilet or money towards installation. Assumes 2.2 toilets per SF account. Assumes 5.2 dwelling units per MF account and 1.2 toilets per dwelling unit. |

| Conservation Measure Assumptions | | | |
|---|---|---|---|
| **DSS Model Measure Number** | **11** | **11-Cur** | **11-Int** |
| **Measure Name** | **Commercial Surveys** | **Commercial Surveys Current** | **Commercial Surveys Intensive** |
| **Measure included in which Program Scenario** | Program A | Program A | Program B, C, D |
| **Customer Classes** | COM,INST | COM,INST | COM,INST |
| **Applicable End Uses** | All | All | All |
| **Market Penetration by End Of Program (%)** | 14% | 1% | 42% |
| **Annual Market Penetration (%)** | 0.5% | 0.4% | 1.6% |
| **Water Use Reductions For Targeted End Uses Description** | 5% | 5% | 5% |
| **Evaluation Start Year** | 2012 | 2012 | 2015 |
| **Evaluation End Year** | 2040 | 2014 | 2040 |
| **Program Length, years** | 29 | 3 | 26 |
| **Measure Life, years** | Permanent | Permanent | Permanent |
| **Saves Hot Water** | Yes | Yes | Yes |
| **Utility Unit Cost for SF accounts, $/unit** | $0 | $0 | $0 |
| **Utility Unit Cost for MF accounts, $/unit** | $0 | $0 | $0 |
| **Utility Unit Cost for non-Res accounts, $/unit** | $840 | $168 | $840 |
| **Customer Unit Cost. $/SF unit** | $0 | $0 | $0 |
| **Customer Unit Cost. $/MF unit** | $0 | $0 | $0 |
| **Customer Unit Cost. $/CII unit** | $2,000 | $2,000 | $2,000 |
| **Annual Utility Admin & Marketing Cost** | 30% | 10% | 40% |
| Water Savings Documentation & Assumptions | Savings are conservative as the toilets are covered under the CII Toilet Program, CII Washer Program, CII Ineff Equipment Program, CII Irrigation Equipment and CII Spray Valves. Leakage and Behavioral elements can be under this program. | Savings are conservative as the toilets are covered under the CII Toilet Program, CII Washer Program, CII Ineff Equipment Program, CII Irrigation Equipment and CII Spray Valves. Leakage and Behavioral elements can be under this program. | Savings are conservative as the toilets are covered under the CII Toilet Program, CII Washer Program, CII Ineff Equipment Program, CII Irrigation Equipment and CII Spray Valves. Leakage and Behavioral elements can be under this program. |
| Cost Documentation & Assumptions | Assume higher use site and more time so $2,000 per site. | Current surveys done with City of Sacramento staff. Assume slightly larger accounts or potential outsourcing to contracts to get this many done. | Increase in cost to do the survey up to $840, and increased the number of participants. Assume slightly larger accounts or potential outsourcing to contracts to get this many done. |

| Conservation Measure Assumptions | | | |
|---|---|---|---|
| **DSS Model Measure Number** | **12** | **12-Int** | **13** |
| **Measure Name** | **MF Residential and Institutional Buildings Retrofit** | **MF Residential and Institutional Buildings Retrofit Intensive** | **COM Rebate to Replace Inefficient Equipment** |
| **Measure included in which Program Scenario** | None | Program D | Program A |
| **Customer Classes** | MF,INST | MF,INST | COM |
| **Applicable End Uses** | Indoor Use | Indoor Use | Indoor use |
| **Market Penetration by End Of Program (%)** | 10% | 20% | 15% |
| **Annual Market Penetration (%)** | 0.7% | 1.4% | 0.5% |
| **Water Use Reductions For Targeted End Uses Description** | 10% | 10% | 10% |
| **Evaluation Start Year** | 2017 | 2017 | 2012 |
| **Evaluation End Year** | 2030 | 2030 | 2040 |
| **Program Length, years** | 14 | 14 | 29 |
| **Measure Life, years** | Permanent | Permanent | Permanent |
| **Saves Hot Water** | Yes | Yes | Yes |
| **Utility Unit Cost for SF accounts, $/unit** | $0 | $0 | $0 |
| **Utility Unit Cost for MF accounts, $/unit** | $2,500 | $5,000 | $0 |
| **Utility Unit Cost for non-Res accounts, $/unit** | $2,500 | $5,000 | $1,000 |
| **Customer Unit Cost. $/SF unit** | $0 | $0 | $0 |
| **Customer Unit Cost. $/MF unit** | $0 | $0 | $0 |
| **Customer Unit Cost. $/CII unit** | $5,000 | $5,000 | $5,000 |
| **Annual Utility Admin & Marketing Cost** | 30% | 40% | 25% |
| Water Savings Documentation & Assumptions | Savings based on replacing toilets, urinals, showers, faucets. Assumed conservative value of 10% as toilet may not need to be replaced if already new or not cost effective to replace. Clothes washers are covered in another program. | Savings based on replacing toilets, urinals, showers, faucets. Assumed conservative value of 10% as toilet may not need to be replaced if already new or not cost effective to replace. Clothes washers are covered in another program. | Conservative assumption as an average savings amount program participants. |
| Cost Documentation & Assumptions | Costs estimated based on fixtures to be replaced up to a maximum of $2,500 per account. | Costs estimated based on fixtures to be replaced up to a maximum of $5,000 per account. | Menu items could be up to a cost of $1,500 per customer. Cooling towers would be included and qualify. Approximate that the average account gets $1,000 as not all accounts will have older fixtures that need replacing. |

| Conservation Measure Assumptions | | | |
|---|---|---|---|
| **DSS Model Measure Number** | **13-Int** | **14** | **15** |
| **Measure Name** | **COM Rebate to Replace Inefficient Equipment Intensive** | **CII Promote Pre-rinse Spray Nozzles** | **CII High Efficiency Toilet Rebate** |
| **Measure included in which Program Scenario** | Program B, C, D | Program B,C,D | Program A |
| **Customer Classes** | COM | COM | COM,INST |
| **Applicable End Uses** | Indoor use | 50% of Spray Valve end use | Toilets |
| **Market Penetration by End Of Program (%)** | 42% | 10% | 4% |
| **Annual Market Penetration (%)** | 1.4% | 1.1% | 0.4% |
| **Water Use Reductions For Targeted End Uses Description** | 10% | 56% | 63% |
| **Evaluation Start Year** | 2012 | 2012 | 2012 |
| **Evaluation End Year** | 2040 | 2020 | 2020 |
| **Program Length, years** | 29 | 9 | 9 |
| **Measure Life, years** | Permanent | Permanent | Permanent |
| **Saves Hot Water** | Yes | Yes | No |
| **Utility Unit Cost for SF accounts, $/unit** | $0 | $0 | $0 |
| **Utility Unit Cost for MF accounts, $/unit** | $0 | $0 | $0 |
| **Utility Unit Cost for non-Res accounts, $/unit** | $750 | $50 | $600 |
| **Customer Unit Cost. $/SF unit** | $0 | $0 | $0 |
| **Customer Unit Cost. $/MF unit** | $0 | $0 | $0 |
| **Customer Unit Cost. $/CII unit** | $5,000 | $100 | $1,800 |
| **Annual Utility Admin & Marketing Cost** | 25% | 25% | 25% |
| Water Savings Documentation & Assumptions | Conservative assumption as an average savings amount program participants. | Assume replace a 2.5 gpm to a 1.6 gpm valve or lower. | Assume replace 3.5 gpf toilets with a 1.28 gpf toilet as per current RWA / SRCSD rebate guidelines the City participates in as of July 2012. |
| Cost Documentation & Assumptions | Menu items could be up to a cost of $3,000 per customer. Cooling towers would be included and qualify. Approximate that the average account gets $750 as not all accounts will have older fixtures that need replacing. | Assume only one per account as a trial. Assumes customer replaces two more valves on their own if they like the valve provided by the City. Spray Nozzles currently given away as part of Prop 50 Grant. Spray Nozzles found in grocery stores, restaurants, and a variety of commercial establishments. Sacramento participated in the CUWCC Rinse and Save program valves have been distributed for many years. | Cost per request of Tyler for future CII toilet rebates from Prop 50 Grant after July 1, 2012. Assume 40 employees per account and 10 employees per fixture, so minimum of 4 toilets per account. |

| Conservation Measure Assumptions | | | |
|---|---|---|---|
| **DSS Model Measure Number** | **15-Int** | **16** | **17** |
| **Measure Name** | **CII High Efficiency Toilet Rebate Intensive** | **CII High Efficiency Urinal Rebate (<0.25 gal/flush)** | **Irrigation Water Surveys** |
| **Measure included in which Program Scenario** | Program B, C, D | All Programs | All Programs |
| **Customer Classes** | COM,INST | COM,INST | COM,INST,IRR |
| **Applicable End Uses** | Toilets | Urinals | Irrigation |
| **Market Penetration by End Of Program (%)** | 5% | 11% | 15% |
| **Annual Market Penetration (%)** | 0.6% | 1.2% | 0.5% |
| **Water Use Reductions For Targeted End Uses Description** | 63% | 75% | 15% |
| **Evaluation Start Year** | 2012 | 2012 | 2012 |
| **Evaluation End Year** | 2020 | 2020 | 2040 |
| **Program Length, years** | 9 | 9 | 29 |
| **Measure Life, years** | Permanent | Permanent | 5 |
| **Saves Hot Water** | No | No | No |
| **Utility Unit Cost for SF accounts, $/unit** | $0 | $0 | $0 |
| **Utility Unit Cost for MF accounts, $/unit** | $0 | $0 | $0 |
| **Utility Unit Cost for non-Res accounts, $/unit** | $800 | $300 | $1,500 |
| **Customer Unit Cost. $/SF unit** | $0 | $0 | $0 |
| **Customer Unit Cost. $/MF unit** | $0 | $0 | $0 |
| **Customer Unit Cost. $/CII unit** | $1,600 | $900 | $1,000 |
| **Annual Utility Admin & Marketing Cost** | 25% | 25% | 25% |
| Water Savings Documentation & Assumptions | Assume replace 3.5 gpf toilets with a 1.28 gpf toilet as per current RWA / SRCSD rebate guidelines the City participates in as of July 2012. | Assume replace a 1 gallon urinal with a 0.25 gallon urinal or less. | Assume value based on published reports. |
| Cost Documentation & Assumptions | Increase to $200 per toilet and 4 accounts (Assume 40 employees per account and 10 employees per fixture, so minimum of 4 toilets per account). | City of Sacramento requested rebate value of $150 per urinal. Assumes 2 urinals per account for a total of $300 per account. | Assumed $1,500 value based on discussions with City of Sacramento staff. |

| Conservation Measure Assumptions | | | |
|---|---|---|---|
| **DSS Model Measure Number** | **18** | **19** | **20** |
| **Measure Name** | **Irrigation Water Budgets** | **Water Budgets with Meter Conversion - Mixed Use to Dedicated Irrigation Meter** | **Res Financial Incentives for Irrigation and Landscape Upgrades** |
| **Measure included in which Program Scenario** | All Programs | Program D | Program B, C, D |
| **Customer Classes** | IRR, INST | COM,INST,IRR | SF,MF |
| **Applicable End Uses** | Irrigation | Irrigation | Irrigation |
| **Market Penetration by End Of Program (%)** | 90% | 4% | 5% |
| **Annual Market Penetration (%)** | 3.5% | 0.9% | 0.2% |
| **Water Use Reductions For Targeted End Uses Description** | 10% | 10% | 20% |
| **Evaluation Start Year** | 2015 | 2012 | 2015 |
| **Evaluation End Year** | 2040 | 2016 | 2040 |
| **Program Length, years** | 26 | 5 | 26 |
| **Measure Life, years** | 5 | Permanent | Permanent |
| **Saves Hot Water** | No | No | No |
| **Utility Unit Cost for SF accounts, $/unit** | $0 | $0 | $1,000 |
| **Utility Unit Cost for MF accounts, $/unit** | $0 | $0 | $1,000 |
| **Utility Unit Cost for non-Res accounts, $/unit** | $200 | $5,000 | $0 |
| **Customer Unit Cost. $/SF unit** | $0 | $0 | $1,000 |
| **Customer Unit Cost. $/MF unit** | $0 | $0 | $5,000 |
| **Customer Unit Cost. $/CII unit** | $0 | $0 | $0 |
| **Annual Utility Admin & Marketing Cost** | 30% | 30% | 25% |
| Water Savings Documentation & Assumptions | Assumed value based on professional judgment and published case studies. | Assumed value based on professional judgment and published case studies. | Conservative assumption based on data provided by the City of Roseville from Lisa Brown on savings of 16-20% depending on the year. |
| Cost Documentation & Assumptions | Julie Friedman's cost estimate as reported by Mark Roberson Interim Conservation Plan including: admin costs, 1.3 hours of field labor costs per survey, materials and outside services cost, publicity cost, and follow up and evaluation cost. Total cost was $23K for 116 surveys. | Cost data provided by Oscar at the City of Sacramento on June 29, 2012. "Cost out for changing a mixed meter on park site to a dedicated meter for irrigation only. | Based on estimates from Lisa Brown from City of Roseville on $1 per square foot, and average of 1,000 sq. ft. removed. Customer can elect to use the funds for irrigation system efficiency which was quoted by Tyler Stratton to be $450 per customer. Customer can use funds for a variety of items up to the cap limit of $1,000 per account. |

| Conservation Measure Assumptions | | | |
|---|---|---|---|
| **DSS Model Measure Number** | **21** | **22** | **23** |
| **Measure Name** | **Financial Incentives for Irrigation and Landscape Upgrades** | **Rain Sensors Single Family Accounts** | **Rain Sensors Irrigation Accounts** |
| **Measure included in which Program Scenario** | Program B, C, D | Program D | Program D |
| **Customer Classes** | IRR | SF | IRR |
| **Applicable End Uses** | Irrigation | SF Irrigation | IRR Irrigation |
| **Market Penetration by End Of Program (%)** | 60% | 25% | 50% |
| **Annual Market Penetration (%)** | 2.3% | 1.0% | 0.5% |
| **Water Use Reductions For Targeted End Uses Description** | 15% | 5% | 5% |
| **Evaluation Start Year** | 2015 | 2017 | 2017 |
| **Evaluation End Year** | 2040 | 2040 | 2040 |
| **Program Length, years** | 26 | 24 | 24 |
| **Measure Life, years** | Permanent | Permanent | Permanent |
| **Saves Hot Water** | No | No | No |
| **Utility Unit Cost for SF accounts, $/unit** | $0 | $60 | $0 |
| **Utility Unit Cost for MF accounts, $/unit** | $0 | $60 | $0 |
| **Utility Unit Cost for non-Res accounts, $/unit** | $6,000 | $0 | $60 |
| **Customer Unit Cost. $/SF unit** | $0 | $50 | $0 |
| **Customer Unit Cost. $/MF unit** | $0 | $50 | $0 |
| **Customer Unit Cost. $/CII unit** | $1,500 | $0 | $50 |
| **Annual Utility Admin & Marketing Cost** | 25% | 25% | 25% |
| Water Savings Documentation & Assumptions | Conservative assumption based on data provided by the City of Roseville from Lisa Brown on savings of 16-20% depending on the year. | Water savings percentage is low as there are only rain events avoided in the Spring and Fall in the Sacramento area. | Water savings percentage is low as there are only rain events avoided in the Spring and Fall in the Sacramento area. |
| Cost Documentation & Assumptions | Rebate would be a menu of options that allows an account to buy what is needed up to a maximum value of $6,000 per account. | Based on Wireless Rain Sensor (like Hunter Rain Click). | Based on Wireless Rain Sensor (like Hunter Rain Click). |

| Conservation Measure Assumptions | | | |
|---|---|---|---|
| **DSS Model Measure Number** | **24** | **25** | **26** |
| **Measure Name** | **SF Smart Irrigation Controllers** | **CII Smart Irrigation Controllers** | **Water Group Scheduling** |
| **Measure included in which Program Scenario** | Program B, C, D | Program B, C, D | Program D |
| **Customer Classes** | SF | MF,COM,INST,IRR | SF,MF,COM,INST,IRR,OTH |
| **Applicable End Uses** | Irrigation | Irrigation | Irrigation |
| **Market Penetration by End Of Program (%)** | 10% | 40% | 25% |
| **Annual Market Penetration (%)** | 0.4% | 1.6% | 2.5% |
| **Water Use Reductions For Targeted End Uses Description** | 10% | 10% | 10% |
| **Evaluation Start Year** | 2015 | 2015 | 2016 |
| **Evaluation End Year** | 2040 | 2040 | 2040 |
| **Program Length, years** | 25 | 25 | 25 |
| **Measure Life, years** | Permanent | Permanent | 5 |
| **Saves Hot Water** | No | No | No |
| **Utility Unit Cost for SF accounts, $/unit** | $400 | $0 | $5 |
| **Utility Unit Cost for MF accounts, $/unit** | $0 | $1,000 | $0 |
| **Utility Unit Cost for non-Res accounts, $/unit** | $0 | $1,500 | $0 |
| **Customer Unit Cost. $/SF unit** | $200 | $0 | $0 |
| **Customer Unit Cost. $/MF unit** | $0 | $1,000 | $0 |
| **Customer Unit Cost. $/CII unit** | $0 | $1,500 | $0 |
| **Annual Utility Admin & Marketing Cost** | 25% | 25% | 30% |
| Water Savings Documentation & Assumptions | Assumed value based on professional judgment and published case studies. | Assumed value based on professional judgment and published case studies. | Assumed value based on professional judgment and published case studies. |
| Cost Documentation & Assumptions | The rebate value is $400 per request of Tyler Stratton at City of Sacramento for toilet rebates after July 1, 2012. | The $1,000 is based on request from the City as of May 2013. | Publicity ads for SNWA were mainly targeted at the SF owners. |

| Conservation Measure Assumptions | | | |
|---|---|---|---|
| **DSS Model Measure Number** | **27** | **28** | **29** |
| **Measure Name** | **Verification of Landscape Plans and Update Model Water Efficient Landscape Ordinance** | **Developer Financed Reduced Footprint New Development** | **Require Multi Family Submetering on New Accounts** |
| **Measure included in which Program Scenario** | Program B, C, D | Program D | Program D |
| **Customer Classes** | COM,INST,OTH | SF | MF |
| **Applicable End Uses** | Irrigation | Internal and External | All |
| **Market Penetration by End Of Program (%)** | 70% | 40% | 90% |
| **Annual Market Penetration (%)** | 2.7% | Varies with growth of SF homes | Varies with growth of MF accounts |
| **Water Use Reductions For Targeted End Uses Description** | 15% | 20% | 10% |
| **Evaluation Start Year** | 2015 | 2015 | 2017 |
| **Evaluation End Year** | 2040 | 2040 | 2040 |
| **Program Length, years** | 26 | 26 | 23 |
| **Measure Life, years** | 10 | Permanent | Permanent |
| **Saves Hot Water** | No | Yes | Yes |
| **Utility Unit Cost for SF accounts, $/unit** | $0 | $1,000 | $0 |
| **Utility Unit Cost for MF accounts, $/unit** | $0 | $0 | $2,000 |
| **Utility Unit Cost for non-Res accounts, $/unit** | $312 | $0 | $0 |
| **Customer Unit Cost. $/SF unit** | $0 | $1,500 | $0 |
| **Customer Unit Cost. $/MF unit** | $0 | $0 | $2,000 |
| **Customer Unit Cost. $/CII unit** | $500 | $0 | $0 |
| **Annual Utility Admin & Marketing Cost** | 30% | 25% | 25% |
| Water Savings Documentation & Assumptions | Assumed value based on professional judgment and published case studies. | Assumes the home has best available technology (0.8gpf toilet instead of a 1.28 gpf toilet) due to the offset in fees by developer and installation of the higher water efficiency fixtures. | Assumed value based on professional judgment and published case studies. |
| Cost Documentation & Assumptions | Hourly rate provided by City of Sacramento Landscape Architect II hourly salary budgeted rate of $39 per hour, fully loaded. 8 hours assumes landscape plan review, and also includes unit cost for staff time to update model landscape ordinance. | Eric DeKolk comment - thought that needs connection fee reduction at about $1,000/SF acct. Assumes pays for toilets, showerheads, faucets, and possibly washing machines and controllers. | Value provided by City of Sacramento staff for a cost of a new submeter would be $4,000 minimum. This would be a 50% / %50 cost share with the City and the customer. |

# APPENDIX C – Sacramento Water Conservation Advisory Group Comments On Draft Analysis Results

## Comments received after circulation of the draft WCP to the Sacramento Water Conservation Advisory Group on 6/12/13:

| Name | Section | Table or Figure | Page | Comment | DOU Response |
|---|---|---|---|---|---|
| Nanette Bailey, SRCSD | *6.8* | *6-2* | *74* | *Make changes as noted during 6/12 SWCAG meeting: change COM to CII and remove "prohibit" from first listed measure.* | Corrected. |
| Nanette Bailey, SRCSD | 8.2 | Table 8-3 | 93 | Foot notes: SRCSD - Sacramento Regional County Sanitation District. Missing "County". | Corrected. |
| Nanette Bailey, SRCSD | 8.3 | Table 8-4 | 98 | Foot notes: SRCSD - Sacramento Regional County Sanitation District. Missing "County". | Corrected. |
| Nanette Bailey, SRCSD | 6.1 | Table 6-1 | 62 | Foot notes: SRCSD - Sacramento Regional County Sanitation District. Missing "County". | Corrected. |
| Lysa Voight, SRCSD | 2.2 | | 27 | Last sentence on page 27 states "Given residential customers are partially metered; winter outdoor irrigation may be an issue which is not quantifiable." Suggest restating this as "Since meters are not installed for all residential customers, winter outdoor irrigation may be estimated (or approximated at zero?) but not accurately measured." (Note: outdoor use is estimated | We have rephrased this sentence |
| Lysa Voight, SRCSD | 2.3 | | 35 | Bullet item list, capitalize items in 3rd bullet item for consistency with the rest of the list (Large Landscape Irrigation) | We've changed this section to be consistent |
| Lysa Voight, SRCSD | 3.2 | | 39-40 | Table 3-2 shows the model input for Landscape Irrigation under the parameter "Distribution of Water Use Among Categories" as 5.2% for Landscape Irrigation. This seems contradictory to several other portions of the document including: Figures 2-2 and 2-3 and section 2.3. Is this a particular type of landscape irrigation? If so, indicate what type. | Figure 2.3 is our estimate of how much of our total demand is used for irrigation, whereas the 5.2% figure is the estimate of water use by our large landscape irrigation customers. |
| Lysa Voight, SRCSD | 2.2 | | 26 | In the last sentence used on the paragraph at the top of page 16, what is a "wheeling demand"? | we added a footnote on this page to explain "wheeling demand" |
| Tim Horner | 7 | 7.2 | | Believes there should be a more up front discussion of tiered pricing. | Not sure where he sees that the DOU has committed to 2 tiers. Analysis of options has just begun. |
| Tim Horner | 2 | 2.2- | 30- | add graph showing rainfall on figures 2.2- | |
| David Todd | all | all | all | Be consistent in listing SB X7-7 | Corrected. |
| David Todd | | | 20 | suggest editing description of AB 2572 to also state that the City will also charge a volumetric rate for water. | Added. |
| David Todd | 1.61 | | 21 | Include a description of SB 610 and SB 221 (of 2001) which require a water supply assessment for projects and written verification for subdivisions respectively that demonstrate a confirmed twenty year water supply. | Added. |
| David Todd | 2.2 | | 29 | Asked if percentage listed was total or single-family residential | This is the overall percentage of metered customers within the City. |
| David Todd | 2.2 | | 29 | First two bullet points are identical. | Removed second bullet |
| David Todd | 2.3 | | 34 | This is unclear. Where there really single family customers who used enough water to be ranked among the City's top 100 water users? It might be more useful to analyze the top 20 water users in each category. | This section has been rewritten to make it clear that the top 100 water users are primarily institutional customers, large landscape |
| David Todd | 2.3 | | 35 | Is 'State and Federal buildings' a combined category or are they separate? | they would both fall under our publicly owned category |
| David Todd | 4.3 | | 44 | suggested adding the word "been" | added. |
| David Todd | 4.3 | | 49 | suggest changing "12" to 2012" | This paragraph has been updated with the most recent activity and budgeted funding levels for FY 2014 |
| David Todd | 4.3 | | 50 | suggest capitalizing plant names | Plant names are in lower case since we are not listing their botanical |
| David Todd | 8 | 8.3 | 92 | freeridership spell as two words | CUWCC spells as one word. We will keep "freeridership" as a single word. |

| Name | Section | Table or Figure | Page | Comment | DOU Response |
|---|---|---|---|---|---|
| Mark Roberson | all | | | The plan relies on a base year of 2008 that has a GPCD of 256. Since 2008, GPCD has dropped to as low as 208 (2010), currently it is at 217. The justification for selecting 2008 is that it is where the City feels that the GPCD will be in the next few years; however, there is no analysis that supports this position. It is recommended that the City perform an analysis to support the selection of 2008 as the base year. | The City felt that the best use of its resources was to move forward with the Water Conservation Plan at this point. A thorough analysis would still likely highlight that the variables influencing the City's water use are difficult to determine, and at the end of the day, with close monitoring of its water use target, the City ultimately must focus on staying below both its 2015 and 2020 GPCD targets. |
| Mark Roberson | all | | | The plan relies on a potential 2030 capital expenditure (based on draft master plan), as the current (2010) avoided cost. The potential impact of using this approach is that it may overstate the benefits of conservation and suggest that the City pursue measures that may cost them more to implement than they save in costs. | Using future avoided cost is an accepted method to evaluate water conservation programs. The City will closely monitor its efforts and its costs, actively pursue grant funding and do all it can to implement programs that save the most water per dollar invested. |
| Mark Roberson | all | | | It is recommended that the City prepare a list of all conservation measures considered for the plan, ranked from lowest unit cost/AF of savings to highest unit cost/AF of savings. This list would then be used to formulate which measures to implement each year. For example, using the cost estimates from the Interim Plan, the City would get more benefit from investing in large landscape budgets at $23/AF instead of residential high efficiency clothes washers @ $423/AF. | The City cannot simply implement the water conservation programs that are merely cost effective from a water savings standpoint. Given the low cost of its water, and the water savings target, the City may end up offering programs that are not strictly cost effective. Programs will be evaluated based upon the cost to implement and the total water savings and programs will be implemented that are the most cost effective and have the greatest savings potential. |
| Mark Roberson | Exec Sum | | 3 | Suggest presenting the % of reduction of non-code conservation from future production along with 30 MGD/day reduction. | Each of the components of the 30 MGD/day water use reduction are outlined within the Water Conservation Plan. We have opted to keep the description generic in the Executive Summary. |
| Mark Roberson | | | 3 | The City does not treat wastewater. | Noted. We changed it to "transport" |
| Mark Roberson | | | 4 | Program C bullet needs context. | We believe there is sufficient context within the Executive Summary. |
| Mark Roberson, Water Forum | | ES-2 | 5 | You have where the City is going but not where they are today. Suggest adding for context. | Good point. We have added where the City is today within the first page. |
| Mark Roberson, Water Forum | | | 5 | Suggest that you delete bullet about market study - this expense would be better spent on conservation measures. Code and replacement of fixtures will probably occur before the activity will be cost-effective for the City. | We respectfully disagree. A full evaluation of conservation measures should include a market saturation study. |
| Mark Roberson, Water Forum | | | 5 | Suggest adding bullet that the City will pursue low cost, high saving measures over higher cost ones. | This is elaborated upon within the main body of the document, but the City's emphasis is on achieving water savings, not merely implementing those that are the most cost effective. |
| Mark Roberson, Water Forum | | | 17 | Please clarify the statement about "as the water savings potential wanes as conservation is achieved..." I don't understand what is being stated. | Noted. |
| Mark Roberson, Water Forum | | | 18 | last paragraph. Is the volume of water pumped for park irrigation accounted for in the document and analysis? | Yes. Ground water is included within the City's production number, which is a variable within its GPCD |

| Name | Section | Table or Figure | Page | Comment | DOU Response |
|---|---|---|---|---|---|
| Mark Roberson, Water Forum | | | 24 | Document needs consistency with acronyms. I.e. sometimes MWM, sometimes Maddaus Water.. Sometimes WF, sometimes Sacramento Water Forum. | Corrected. |
| Mark Roberson, Water Forum | | fig 2.1 | 24 | Suggest changing from "Consumption" to Deliveries or Demand. Some of the metered water is consumed through irrigation however most of it moves through to the SRCSD. | Noted. |
| Mark Roberson, Water Forum | | fig 2.1 | 24 | 2012 and 2013 were dry years - that might be why the gpcd is increasing. | We will make it more clear that the GPCD for the last two years has yet to be weather normalized. We will see how the CUWCC's weather normalization tool affects the City's non weatherized GPCD when they |
| Mark Roberson, Water Forum | | | 25 | 2.1 header - suggest changing "consumption" to "Metered Deliveries" - see comment above | Revised |
| Mark Roberson, Water Forum | | | 25 | 2.2 header - suggest that total production by use type (SF, MF etc.)/year be presented instead of use/account. | Revised to better reflect that this is an estimate |
| Mark Roberson, Water Forum | | fig 2-2 to 2-4 | 26 | level of precision on water use by customer class should be to whole numbers. | Revised |
| Mark Roberson, Water Forum | | fig 2-3 | 27 | include the number of metered accounts that the data was based on along with the % of metered SF accounts i.e. 3,200 meters representing 5% (or whatever the number is) of all SF | We will add a sentence that states what percent of our SF accounts were metered in 2008 |
| Mark Roberson, Water Forum | | | 29-33 | Suggest that these bullets be redone as paragraphs that directly support the figures. As it is written the reader must do a lot of work to figure out which bullet applies to which figure. | Most of observations are general. |
| Mark Roberson, Water Forum | | | 29 | last bullet - due to sufficient supply, drought conditions in the Sacramento are not like they are in other areas of the state. The City did support statewide concerns but the City's supply was not reduced. | Noted |
| Mark Roberson, Water Forum | | | 30 | First bullet. Metered data in the City over the past six year has been from a mix of new and old (as far back as 1992). Suggest revising the new home vs. existing home statement. All metered growth data in the City is from a mixture of old and new housing stock being metered. | Noted. |
| Mark Roberson, Water Forum | | | 30 | Second bullet. Check the trend on the MF metering. This may be due to more meters going in on existing multifamily accounts and not because only new accounts are being metered. I'd suggest that more analysis be done on the metering before | Will add detail within observations or table regarding the percentage of metered MF accounts |
| Mark Roberson, Water Forum | | | 30 | third bullet - commercial has a downward trend from 07 to 12 but then begins to go up again. Suggest that if you make the statement that you look at new accounts only to see if the trend is as stated. Could the use/account be due to conservation? | We have removed this bullet. |
| Mark Roberson, Water Forum | | | 30 | last bullet - suggest reviewing how many new landscape accounts have been added over time. Also, use could be down because Prop 218 requires the Parks Dept. (not much money) to pay for water and this may have driven down use. Also, City went to odd/even watering and this may have driven down use. There are many variables that have created the curve. | The vast majority of the City's landscape irrigation accounts have been metered for at least 4 years. |
| Mark Roberson, Water Forum | | fig 2-5 | 30 | This fig implies that from 06 to now that use/account has decreased. Unless the reader knows about the lack of metering and the mix of new and old homes being metered the reader might think that use/account in the City has plummeted. There are too many variables to present the data the way it is shown. Consider that you have very few billed accounts in 06, then you begin having more metered accounts some for new homes some for existing. The few accounts in 06 may have the same use in 12 as they did in 06. Suggest removing the trend line and making the numerous variables very clear on the figure and in the text. | The note that is below figure 2-5 will be moved to be right below this figure. It explains the limitations. We will also add that as of May, 2013, approximately 44% of all single family accounts are metered. |

| Name | Section | Table or Figure | Page | Comment | DOU Response |
|---|---|---|---|---|---|
| Mark Roberson, Water Forum | | figs 2-7 to 2-10 | 30-33 | Suggest showing total metered delivered/year and use/account. This way the reader will see the trend in annual use. Plot the total on one axis and the use/account on another. | Notes have been added within each chart stating the percentage of metered accounts by account type |
| Mark Roberson, Water Forum | | | 33 | last paragraph - suggest deleting all text after second sentence. This part of the text is to provide context on existing conditions. Save the plumbing code narrative for other areas in the text. | noted |
| Mark Roberson, Water Forum | | | 34 | first paragraph - suggest deleting all text after second sentence. This part of the text is to provide context on existing conditions. Save the plumbing code narrative for other areas in the text. | Noted. We added a header, "Age of Building and its Impact on water Consumption" and kept this section within Chapter 2 since it affects historical water demand |
| Mark Roberson, Water Forum | | table 2-1 | 34 | cumulative percentage does not make sense. How can 100% of structures be built 2005 or later? Also, the precision is not warranted - round to whole numbers. | We have corrected this to say "earlier" and not later. |
| Mark Roberson, Water Forum | 2.3 | | 34 | suggest adding "metered" to the header | This additional wording is not necessary. It is understood that in order for the City to do an analysis of its high water users the |
| Mark Roberson, Water Forum | 2.5 | | 36 | suggest deleting "drought" from the header or adding a discussion about it in the text. Currently the discussion is only about climate change | noted. (drought is actually mentioned twice within this section)- header will remain |
| Mark Roberson, Water Forum | | table 3-2 | 39 | the input for the avoided cost $/af parameter is "conversion AF to MG" This should be a $ amount | Completed |
| Mark Roberson, Water Forum | 3.3 | | 41 | suggest adding the model landscape water ordinance to the plumbing code. | Noted. Water Conservation that occurs through the model landscape ordinance is measure #27 in |
| Mark Roberson, Water Forum | | | 45 | Given the City's water supply it would need to be an extremely dry year for the City to feel a curtailment. Suggest adding text that clarifies this | Noted |
| Mark Roberson, Water Forum | | table 4-1 | 54 | seems like there has been more houses built during the recession - I'd check the accuracy of the new-residential packets | Letters go out when an account turns over and not strictly when |
| Mark Roberson, Water Forum | | table 4-1 | 54 | metering should be added to the table | Noted. This table only represents the water conservation activity coordinated by the City's Water Conservation Office over the past three fiscal years. Metering is noted |
| Mark Roberson, Water Forum | | | 69 | There is no cost to the City to procure water | rephrased to "producing" |
| Mark Roberson, Water Forum | 6.4 | | 70 | Suggest making the unit cost of a measure easier to understand. As written, Appendix B is difficult to understand. Consider listing the measure, cost/unit, savings/unit, life of the measure, and decay/yr. | The City will likely need to implement many programs that are not locally cost effective, and will pursue grant funding to keep its costs to a minimum. |
| Mark Roberson, Water Forum | | | 71 | Suggest that the plan be applied to the City only and not the customer | Noted, however the City believes it should highlight all of the benefits of the implemented measure. |
| Mark Roberson, Water Forum | | | 91 | fourth bullet - suggest comparing the $/af to the avoided cost of water not the production cost. | Noted. This number was updated in table 7-3 to $462/AF |
| Chris Brown, CUWCC | 8 | | | Suggest that the City reconsider both group watering scheduling and rain shut off device rebates- both are extremely cheap and save water. | We may evaluate these programs at a later date, however the DOU and the SWCAG spent considerable time narrowing down the list from about 80 to approximately 20 measures. |

## Comments from SWCAG Members following Sept. 19, 2012 Meeting

| Comment Received | Submitted By | Comment | DOU Comment |
|---|---|---|---|
| 9/17/2012 | JP Tindell | I just went through the Exec. Summary and have a couple of immediate comments:<br><br>1. It's still unclear to me exactly how this Plan relates to other Plans of the City. Try to write this part so anyone who's not a govt. employee could follow.<br><br>2. What is the timeframe of this plan? thru 2020 to start with? Would it be worth making a date part of the plan title, like we say 2030 General Plan?<br><br>Am very happy to see emphasis on infrastructure upgrades to include CII (commercial/institutional/industrial) category! We are anxious to support efforts to get additional funding for park irrigation system upgrades. | The timeframe of the plan is intended to be a living Plan. The City will be track and adjusting to meet its SB X7-7 targets |
| 9/18/2012 | General Comments during SWCAG Meeting | Revise the Executive Summary to be:<br><br>• More focused on your key messages<br><br>• More visual<br><br>• Provide quick overview of key facts<br><br>• Briefer (content good but Summary too long)<br><br>Page 18 – Should be 30 million gallons citywide – not per person<br><br>Page 20 - Last sentence of 1st paragraph – substitute :minimum flows allowed" for the term "Hedge Flows" NOTE: Recommendation to minimize "jargon" and acronyms throughout the Plan<br><br>Page 27 - Breakdown single family residential and multi-family residential into indoor and outdoor percentages<br><br>Page 28 - Add pie chart for multi-family residential<br><br>Page 29 - Bullet points are great!<br><br>Page 36 - #2 – delete "and build out"<br><br>Page 38 – Add a heavy line between Distribution of Water Use and Indoor Water Use by Category. Indoor Water Use by Category items – listed as percentages - are confusing. The total adds up to more than 100%. Consider listing as gpcd.<br><br>Page 43 - There appears to be a disconnect between the figure and the table. The table lists the same numbers (except for 2015) for water demand without the plumbing code and water demand | |

| Comment Received | Submitted By | Comment | DOU Comment |
|---|---|---|---|
| | General Comments during SWCAG Meeting (continued) | with the plumbing code.<br><br>Page 47 - Last section; 3rd bullet: URL should be SpareSacWater.org<br><br>Page 58 - Research should be done to confirm the same requirements apply to both single family and multi-family residential<br><br>Page 68 - Re-title row "Water Group Scheduling" to be more explanatory. Make table bigger<br><br>Page 70 - Make clearer why Water Group Scheduling is included in Program D and not Program C. (Answer: not enough AMI connections to implement in the near-term)<br><br>Page 74 - Add information regarding where Sacramento's usage compares to other cities and include an explanation that Sacramento uses more water than coastal communities because it's hotter and gets less fog and rain. Reference pg 35 §2.4 Local Climate Effects on Irrigation. Also add comparison to Executive Summary, citing differences including higher temperatures, lower population density, lower water costs, and greater reliability of water supply. Should also mention cyclical rainfall and drought in the long-term<br><br>Page 82 - Summary of Plan need a razzle-dazzle page of its own<br><br>Page 98 - Remove Org Chart – detracts from Plan<br><br>Appendices - Make tables in Appendices big enough to read | |
| 9/19/2012<br><br>9/19/2012 | Mark Roberson<br><br>Mark | Hand written notes were provided to Jodie Monaghan at the September 19, 2012 meeting. These were notes on consistency, typos, etc. In addition, please remove my name as a technical consultant or as a source for City data and information. All of my previous work was done with data provided by Julie.<br><br>Please consider the following.<br><br>1. A comment was provided for the 8/2012 draft requesting a discussion that supports the use of the 2010 UWMP GPCD of 259. This request was made because the 2010 actual was 208. This is an important issue because the 2010 actual is below the 2020 target and the starting point is used to direct where resources are allocated.<br><br>2. Economy and drought<br><br>The 9/2012 plan has several statements that claim that water use is down because of the economy and drought; however, there is no analysis that support the statements. | • The reduction goal of the 33 gpcd was discussed at the August 1st SWCAG meeting and a more detailed description of the goal is discussed in Section 2.1 and Section 3.3 of Plan. The demand projection is based on average annual demands and is aligned with the approved UWMP demand projection (see Section 3.3, Figure 3-3). Based on past experience and review of data, demands rebound after droughts and economic recessions. The actual current demand in 2010 of 208 gpcd is not representative of "normal" demands and is anticipated to rebound (this has already been documented by other water utilities in the Sacramento region). As discussed in Section 8 of the |

| Comment Received | Submitted By | Comment | DOU Comment |
|---|---|---|---|
| | Roberson (continued) | Drought –<br><br>The City did not suffer water scarcity during the recent drought period. Given the lack of water scarcity to the City, an analysis to determine if there were affects from the drought would be challenging.<br><br>Economy-<br><br>During the time period of the economic downturn the vast majority of the single-family homes were on a flat rate (with or without a meter) so there was no incentive to use less. I note the following on the figures on pages 30- 33.<br><br>All figures<br><br>•Why does the moving average begin in late 2007?<br><br>•Shouldn't the data be the same as the baseline period used for GPCD analysis? I think this was 1996-2007.<br><br>•I'd suggest that for each customer type figure that the % of total metered demand be included. Otherwise to get a sense of how much of total demand is being considered you need to refer to Figure 2.1.<br><br>Single-family – I think this should be based on those that are billed by volume otherwise it is just a review of what flat raters, with no price signal are doing. Also, a few notes on the figure.<br><br>•it should be made clear that this is metered accounts only<br><br>•draw a line when billing began (not counting the few hundred that were billed before 2010)<br><br>•data stops in 10/2010, all other customer types go through 10/2011?<br><br>Multi-family – this is a huge (not a slight as stated in the plan) drop from an average of over 10,000 gal/account prior to 2010 to around 4,000 gal/account after. This is 2.5X reduction in use. Was there any review of administrative changes such as metering, account reclassification? My understanding is that the rental market was fairly consistent during the economic downturn.<br><br>An analysis to determine if there were economic affects could be based on a review of active and inactive accounts or whether there was an increase in delinquency. Just making the statement and not providing any supports seems tenuous.<br><br>3. Selected measures for implementation<br><br>The City's current avoidable cost for water including an | Plan , the recommendation is to track gpcd carefully, ramp up or modify implementation of conservation measures as an adaptive management approach to achieving SB X7-7<br><br>• The historical demands for each costumer category were reviewed and documented in the Plan. Pre-drought and pre-recession averages were documented and reviewed as part of the analysis using data from 2008 (not historic peak demands in 2005-07) as a conservative assumption.<br><br>• Drought messaging was occurring throughout the region. The drought and beginning of the recession were overlapping effects on demand. This is not a drought planning study and as a result, we are not looking at short duration trends, longer range trends are used and recent years were not included.<br><br>• All data shown is based on available metered data from the City's billing system as mentioned in the opening paragraph for Section 2. All the data is presented based on actual metered billing data provided. Moving average is a 12-month duration. Data goes back as long as reliable in the billing system; there was not enough data by customer category in prior years. The percent of total metered demand would be useful metric, however, given the system is still not fully metered, this analysis would be of academic value to analyze further. The general seasonal trends in gpd/acct were reviewed when creating the water balance for the DSS Model. With checks and balances available for reviewing the end use breakdown by customer category (e.g., single |

| Comment Received | Submitted By | Comment | DOU Comment |
|---|---|---|---|
| 9/19/2012 | Mark Roberson (continued) | environmental benefit is about $175/AF for chemicals, energy, and a $75/AF environmental benefit. The Master Plan group states that their current analysis indicates that new infrastructure will not be needed until 2030 or 18 years off. They also note that if the demand for water picks up that this date could be sooner.<br><br>Using the current value of the avoided cost of water ($175) and the toilet rebate measure prepared by MWM (3,713 rebates at a total cost of $260/rebate) an analysis using the CUWCC cost-benefit spreadsheet shows that the City will need to find an additional $604,666 over time to support the proposed measure. This additional amount will be required for each year (fewer years if new infrastructure is needed sooner) that toilets he rebates are provided..<br><br>Given that there is uncertainty on where the actual GPCD value is or when new infrastructure will be required it is suggested that the measures that are selected for implementation be limited to ones that are low cost such as landscape water budgets for large properties and residential outdoor measures. Also, I'd suggest that because there is very little information on the benefit of smart controllers or cash for grass programs that these are limited to pilot programs or the existing grant funded effort.<br><br>4. Comparison of the City of Sacramento to other entities<br><br>I would be very careful comparing the City to other suppliers. Consider;<br><br>•Exporters pay an order of magnitude more for water<br><br>•Exporters suffer scarcity on a frequent basis<br><br>•Based on the UWMP the City's water supply is not impacted by droughts<br><br>•Other utilities currently need additional infrastructure capacity<br><br>•Residential metering in the City is behind almost all other areas<br><br>•Larger agencies may benefit from an economy of scale and the opposite may be true of smaller agencies<br><br>5. Additional scenario (this request was made for the August version of the plan).<br><br>Prepare a Program scenario (E) that meets the 33 GPCD target using the existing program costs ($1.9M, excluding meters and water loss control BMPs) by increasing the participation level of low cost - high savings measures and decreasing the participation level of high cost – low savings measures. | family residential indoor use), it was clear that this data was not fully representative of the overall customer category use. Multifamily data is presumably shifting as more accounts and smaller size accounts are added to the City's billing system. This data is simply a snapshot of the best available information from the billing system, it will undoubtedly continue to shift as more accounts are metered and added to the billing system. As was stated previously, this data was charted and reviewed but not used directly as DSS model inputs due to questions surrounding the data. If you feel stronger caveats need to be added, please offer concrete examples. Much of the additional analysis/information requested was out of scope and not central to the modeling analysis at this time. It is a living plan and model and will be updated and refined as more data becomes available.<br><br>• Net present value is the industry standard and appropriate basis for comparison for avoided cost for future capital and O&M costs combined compared to current and planned investments in conservation programs. Therefore, the appropriate comparison is $ 146 AF for all benefits from measures in Program C (AMI, Water Loss and all other recommended measures) and not $175/AF. The current avoided O&M costs provided by the City does match closely where the modeled value is $545/MG or $177/AF.<br><br>• Residential outdoor measures were some of the highest cost of water saved but were included given the City's goal to address where the highest perceived conservation potential exists for the City. The desktop landscape |

| Comment Received | Submitted By | Comment | DOU Comment |
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| | Mark Roberson (continued) | | water budgets were one of the least expensive measures and included in the program. Grants funds are envisioned to support the program to the extent the City is successful in obtaining the grants.<br><br>• The recommended Program C is an optimized program to meet the 33 gpcd using increased labeled "intensive" measures that seek increase participation in the lower cost, higher water savings measures. Lowering the budget investment to $1.9 million (without water loss/AMI investments) would presumably result in less than 33 gpcd being saved. Further analysis may be performed in the future as additional scenarios are reviewed when each fiscal year an annual work plan is prepared and additional tracking of changes in gpcd becomes available. |
| 9/24/2012 | Mike Huot | Referring to page 83 - Table 8-3. Last row titled Conservation Measure - Meter Conversion - Mixed Use to Dedicated Irrigation Meter. Comment refers to column titled "Overall Benefits" which states that "...customers may be incentivized to convert to save on sewer bills...". SRCSD Comment: Please clarify that the sewer bills refer to the 'sewer collection managed by City of Sacramento DOU' and not our sewer districts. | Edited as requested. |
| 9/24/2012 | Lysa Voigt | **Page 62 - Table 6-1**. Measure Description and Selection. DSS Model Measure Numbers 11 and 12. Currently, SRCSD supports measures 11 and 12, but is not an active participant/partner in the "CII Surveys and Top 100 Users Program" or "CII Rebates to Replace Inefficient Equipment Intensive" measure.<br><br>**Page 99 - Section 8.8**. Below were Lysa Voight's previous comments. These could be mentioned in section 8.8 for further/future evaluation and in consideration of water conservation measure costs.<br><br>Item 1 - Comments to the Water Conservation Model Results and proposed packages of measures<br><br>The model results and proposed measures look to be well thought out. It's obvious that the City has put a lot of effort into this model and development and prioritization of the recommended measures. I appreciate the opportunity to review and comment on the documents you provided and hope that the City shares the completed documents with others who might | |

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| 9/24/2012 | Lysa Voigt (continued) | benefit from the results.<br><br>Since landscape irrigation is such a large component of the urban water use in the City, I recommend that you evaluate environmental benefits in addition to the cost savings for the measures that encourage river friendly landscape practices. These types of practices can reduce landscape irrigation flow and the application of products that might contribute to contaminant loads regulated by TMDLs or to chemicals / constituents that affect the area surface waters. The City is regulated for its urban runoff through an NPDES permit, and a portion of the City's storm water flows into a combined storm water/sewer system. River friendly landscape practices would benefit both of these systems and the environment in addition to conserving water.<br><br>A reduction in landscape irrigation flows for recommendations (measures) such as 6a, 6b, 6e, 21, 29, 30a, 30b, 77 and 79 would likely also result in a cost savings to the City in other areas. For instance, if a significant amount of landscape in the City was converted to river friendly landscape, there could be a corresponding reduction in costs for BMPs and other operational costs associated with the storm water / urban runoff systems and permit compliance resulting in a cost savings in the City's Stormwater Management Program. Similar programs related to the City's NPDES permits should be examined and factored in as savings to offset the costs of the measures. I encourage the City to engage their storm water staff for input regarding potential savings and environmental benefits that would result from measures related to river friendly landscape practices.<br><br>City staff participate in the ongoing Drinking Water Policy Work Group. Efforts of that workgroup resulted in development of a series of technical documents, one of which outlines costs associated with BMPs that might help with this assessment (attached for your use and reference). Sherrill Huun is one contact from the City for additional information on this issue.<br><br>Item 2 – Follow up meeting and additional information request related to SRCSD sewer rates<br><br>There were several questions from the SWCAG meeting held on August 1 during SRCSD's presentation of sewer rates and the Rate and Fee Study. It was suggested that we have a follow-up meeting with a sub-group of SWCAG members. | |
| | Lysa Voigt (continued) | **Table 8-5**. General comment about formatting. The 2nd and 9th columns should be formatted the same as the other columns, which are centered. Suggest formatting all tables the same. It makes it easier to read. | |
| 9-24-12 | Tim Horner | I have a couple of comments about the City of Sacramento Water Conservation plan. These are based on our Sept. 19 meeting of the Water Conservation Group, and my review of the | Water savings were analyzed due to rate structure changes for single family residential customers only |

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| | Tim Horner (continued) | document. 1) My biggest comment goes first: The Maddaus Water Management team has done a great job of predicting how different changes to infrastructure and hardware will produce water savings. This includes water fixture upgrades, more efficient appliances, and physical devices that will conserve water. The part that I see missing is the effect of changes in the rate structure, and how these changes will affect conservation. This is a little harder to predict or model, but it is probably the single largest factor in water conservation for the City of Sacramento. We need to change the behavior of our largest water users, and they are homeowners with excessive irrigation demand. I have identified several sections where a comment about rate structures would add to the conservation plan:<br><br>- Statements about the effect of changes in the rate structure could be added in Section 4.4 (City of Sacramento Water Billing Structure, p. 52-54). This section covers existing billing policy, but I don't think it goes far enough. The heading titled "Water Conservation Pricing Study Next Steps" could address this issue. A more aggressive rate structure will yield more water conservation, and a less aggressive rate structure will yield less conservation. We need to state this directly, and have it on the table as a conservation option. This can be done without full implementation of the metering system, and without any additional infrastructure.<br><br>- This concept (new rate structures) should also be included in section 5 (Alternative water conservation measures). The bullet list in Section 5.2 does not include rate structures, and this may be our best weapon in the conservation fight.<br><br>- I would add statements about rate structure to sections 6.2 and 6.3, pp. 63-64. I think the section on "Perspective on Benefits and Costs" has missed the major point. We can change the behavior of our largest water users with a simple change to the rate structure. The benefits are huge, and the cost is minimal. The same comment applies to section 6.6, p. 65 Assumptions about measure savings. Data necessary to forecast water savings should also depend on the rate structure and its effects.<br><br>- Section 6.6 p. 65 (Assumptions about avoided costs) needs a statement about rate structure. If we can avoid additional infrastructure or hardware by changing rates there will be a huge benefit.<br><br>- Section 6.8 (Comparison of individual measures) does not even mention rate structure as a tool, nor does table 6.2 include rate structure. This is a major omission.<br><br>- Because of these comments about rate structure, I do not agree with the conclusions of Fig. 7.1 (Comparison of different conservation measures). The effects of Program C (including the tiered rate structure) will be highly variable and will depend on | starting in 2016. Water savings are also carefully partitioned to account for some savings associated with the conversion from a flat to a metered rate in the results from the Automatic Meter Infrastructure (AMI) measure. These results are shown in the Conservation Pricing and AMI measures, Table 6-2, page 68. A future rate study is planned to refine this information.<br><br>Information in Section 5 "Benefits and Costs" is related directly to the DSS model methodology and the DOU accounting perspective. This is not the appropriate section to infuse information related to the individual conservation measure benefits, such as rate structures.<br><br>The information related to rate structure "conservation pricing" analysis is handled in Section 6-8 in terms of results. Page 61 presents the description of the conservation measures analyzed including measure 4 for Conservation Pricing. The measure is also selected for inclusion in the Plan. Section 8, Table 8-5 presents the recommended Program C that includes Conservation Pricing.<br><br>Figure 7.1 does illustrate the change in price structure starting in 2016 for Programs C and D that include that measure. The magnitude of the change is largely driven by how conservation pricing was considered. This information will be updated in a future model |

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| | Tim Horner (continued) | the rate structure selected. We could get much more or much less conservation with Program C as the rate structure is changed, and this is not reflected in Fig. 7.1.<br><br>In summary, we need to have variable rate structure (conservation rate structure) on the table as a tool for water conservation. If we don't include this, most of our solutions start to look like hardware upgrades. There is an old saying that "If your only tool is a hammer, everything starts to look like a nail." If we don't include enough about variable rate structure as a tool in this report, our elected officials will be missing a major part of the conservation plan.<br><br>2) on P. 35, section 2.4 Local Climate Effects on Irrigation<br><br>I think we should add a brief statement or two about drought in this section. As a geologist I take a long-term view of the environment, and we shouldn't forget that we have seen major dry periods in our long-term climate record. These droughts have lasted 20-40 years in some cases, and we will be faced with this problem again. When an extended drought hits northern California, the City of Sacramento will need a management plan that accounts for a dramatic drop in surface water use, and careful use of our limited groundwater resource. The bad news is that we allocated much of our water in the post-dam era, from 1950 to present. This was one of the wettest periods on record, and we assumed that the wet years would continue. We are now much more in tune with longer climate records and variations in rainfall, and our original assumptions about water supply were not correct. An "average" water year in this era of climate change may be much drier than we expect, and a dry year (or thirty dry years!) could change some of our basic assumptions about how we allocate water.<br><br>3) Table 3.2, p. 38: The review team commented on this table at our meeting, and my input is similar. The parameter labeled Indoor water use by category should either have a corresponding category of Outdoor water use by category, or it should be explained clearly that the numbers given are the % of total water use for each category. This will prevent the reader from trying to make the totals add up to 100%.<br><br>I appreciate the work of everyone on the committee. My comments about rate structure aren't meant to sway the process, but simply to inform City Council about available options. Our elected officials and City Staff will need to make the tough decisions about which conservation measures to include and which to exclude. The report would be more balanced if there was more reference to tiered rate structures as a conservation tool. | once the rate study is completed.<br><br>Conservation pricing is considered as one of many tools. The DSS model is an end use model and considers customer actions by device change-out without determining the motivation for making the change beyond natural replacement for measures (which is accounted for in the Plumbing code analysis). One key motivating factor is presumed to be future changes in conversion to metered rates and those prices going up over time as the cost of service increases.<br><br>Drought is a very worthwhile topic to discuss and considered within the scope of the UWMP and Water Shortage Contingency Plan. Drought response actions are not the same as the everyday conservation activities that are the subject of this plan which is scoped to address long range changes in demand (tracked as changes in gpcd).<br><br>Made edits as requested. |
| 9-24-12 | Erik DeKok | Overall comment on Executive Summary: needs to be more graphic, visual, most readers of plan won't make it past Executive | |

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| | Erik Dekok (continued) | Summary. Use graphics to explain what 20% by 2020 goal is, and how key elements of plan will get us there. This is where you get the chance to sell the strategy to public and decision-makers.<br><br>Also, consider a separate, stand-alone graphics-rich strategic summary based on the WCP that connects non-engineers with the basic strategies being put forth in a non-technical way.<br><br>Page 1 - The City's Climate Action Plan included a discussion of impacts to water supply under due to climate change. Longer-term impacts of climate change on water supply should be mentioned here.<br><br>Page 4 - Should outline the four programs analyzed first, give context, and then explain why Program C was recommended and the implementation approach.<br><br>Page 4 - It seems like a brief description and summary of the 4 program should be given first, and then the recommended Program C should follow (i.e. switch Table 0-2 and accompanying text with 0-1). Also, it might be helpful to give a few sentences to provide more context about what A, B, C, and D programs mean.<br><br>Page 19 - Most people don't know what "pre-1914" means or why 1914 is important. Suggest you provide a footnote with brief explanation, and/or hyperlink to more background info/resources to help people understand what you're talking about.<br><br>Page 20 - Most people don't know what "Hodge Flow" is. I would suggest a footnote with a brief explanation and/or a hyperlink to further background information.<br><br>Page 55 – "From the analysis of water consumption data, it is clear that the primary focus of the City's efforts should be on reducing overwatering of irrigated landscape." - What specific data points led you to this conclusion? I only saw one pie chart that clearly showed outdoor use vs. indoor in single-family residential.<br><br>Page 57 - It should be noted that effective 7/1/12, CALGreen mandatory measures for Nonresidential buildings apply not only to new construction, but to any addition of 2,000 sq ft or more, or to any alteration valued at $500,000 or more. Previously, CALGreen was only applicable to new construction for Nonresidential.<br><br>For Residential Buidlings, CALGreen is still only applicable to new construction. This could change in 2014 with the next code update cycle.<br><br>See http://www.cityofsacramento.org/dsd/forms/green-building- | |

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| | Erik DeKok (continued) | forms.cfm for the official City checklists based on the most recent CALGreen amendments.<br><br>Page 81 and on WCP in general - How does it compare to costs of building new intake/treatment plants (e.g. North River WTP?)<br><br>Is it more cost-effective to rely on existing infrastructure and/or upgrades to existing WTPs, combined with water conservation, to meet BOTH projected future demand and meet sustainability objectives?<br><br>These questions will be asked, and the answers need to be as clear as possible for decision-makers and the public.<br><br>It should be noted that there are community and environmental benefits that are difficult to quantify and/or were not considered in the scope of the analysis, (e.g. additional water quality benefits from reduced runoff due to reducing outdoor irrigation and overwatering of landscaping across sectors). While it may be difficult to quantify, the benefits of improved habitat and the avoided costs of state or federal regulatory action due to improved water quality could be very signficant.<br><br>Also, longer-term impacts to water supply due to increasing drought conditions and increasing climate change related impacts make water conservation and its gradual increase over time a priority, for the sake of future generations. In other words, water conservation is probably very cost effective from the standpoint of building in the habits and program infrastructure to change behavior and expectations of ratepayers long-term.<br><br>Page 89 - Another potential challenge: enforcement at both plan check and inspection is labor intensive. Currently, Parks Dept landscape architect is only enforcement staff City has, and fees are not adequate to cover costs. Increased permit fees likely needed to support enforcement, which may not be supported by development/building sector. | |
| | Jim Peifer | "The WCP provides easy-to-understand results and quantifies the benefits for meeting the City's future water demands through conservation in lieu of adding more costly infrastructure" - I understand that conservation is more expensive than new water production infrastructure. If this is true, than this statement is incorrect. Or are the programs cost effective when sunk cost (like the meter program) are not analyzed. It would be good to be clear on this.<br><br>Program A's description is still lost. I strongly recommend that it is clearly identified as our existing level of effort. A new reader | |

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| | | would still find this confusing<br><br>Please include graph of water consumed since 1997. I would like to let people know that water demands have been going down over the last decade.<br><br>For figure3-1, please change "Landscape Irrigation" to "Large Landscape Irrigation." | |
| | Peter Brostrom<br><br>Peter Brostrom (continued) | I had commented on the first draft that the City should invest in landscape area calculations and the response was that it was too expensive and difficult with the number of trees in Sacramento.<br><br>I contacted Tom Ash who has helped set up the water budget rate structures for Irvine Ranch WD and just recently for Eastern and Western Municipal Water Districts near Riverside, CA. He said the cost is between $1.10 and $1.50 per connection for the landscape area analysis. His email is below that has a link to the company and a few slides are attached. I have not worked with this company yet and am forwarding the information only to point out that the costs might not be as high as thought.<br><br>Landscape area measurement per connection would allow the city to better define who is using water efficiently and who is using too much. The city's water conservation programs can be targeted at the inefficient users which will increase water savings. | Response from Jim Peifer<br><br>I recommend that more consideration be given to Peter Brostrom's idea. It sounds like his idea may have been rejected, particularly by Terrance, but we never had data to reject it, and he has submitted data that suggest it's not too terribly expensive.<br><br>I understand Peter's comment to be that the City of Sacramento should consider (or perhaps implement) water budgets for properties when billing them. The way to do this is to make the recommendation that water budgets be considered in the development of conservation rates, and make it explicit in the conservation plan that it will be considered. After all, it is really the City Council that should make this determination – based on input from staff and from a public process.<br><br>At 137,000 services, the cost would be $150,000 to $206,000 to develop the landscape analysis. There may be other cost including modifications to the billing system, and perhaps additional staff cost, but this would be explored in the development of a conservation billing rate.<br><br>In the end, water budgets may or may not be adopted, but it should be considered objectively, rather than being screened out prematurely through City staff |

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| | | | biases or prejudices. |
| 9-21-12 | Phil Smith | I finally found my magnifying glass and was able to look at the charts on pages 108-120. I think they should be landscape and enlarged. They also need an explanation of symbols at the bottom of each chart. If I can be of any help with these changes give me a call. I'm only tied up on Thursdays and then only in the morning. Cheer up. You are nearly at the point where the City has the ball.<br><br>Foundational BMPs Spell it out. There's space. I may not have the time to look it up.<br><br>Pages 78-97. These pages are the most important to decision makers. Many executives read this first. After all, if they don't like the recommended plan, why waste time reading all those charts and explanations? Therefore, this part needs to be easy to read and simple to understand.<br><br>I would go through this section and spell out all acronyms.<br><br>I promise, I will stop reading the report looking for things I would do Besides, my garden needs attention for fall cleanup and the planting of winter crops. | Edited tables. |
| | Phil Smith (continued) | I've read every word and scanned the charts more than once trying to look at it from the point of view of busy politicians unfamiliar with all the jargon. Of course, if they are already up to speed on all the acronyms then maybe I'm wrong. I have written many plans for companies and have been astounded how many executives do not have the big picture. They spend their time concentrating on their own priorities and ignore other areas. When you give them an overall business plan, each one has to feel comfortable or they will find fault with it and vote no or for further study.<br><br>I hope that I have been helpful in my critique. With all the energy spent by so many people, I want to see the Mayor and Council enthusiastic about this plan.<br><br>Yes, I work weekends on things like this.<br><br>I spent all day yesterday on the report. Wow!! Will that ever put you to sleep. I think that it would become readable to the average person (not in the water business) if you copied and pasted the acronyms from the bottom of the charts 6-1,8-3 and 8-4 to the bottom of the pages that contain segments of these charts. Yes, You probably will need to move some rows from the bottom of the pages to the top of the next pages. This will probably add 3 more pages to a mind numbing report, but hopefully, will keep the reader moving onward.<br><br>Page 16 spell check says acronyms is spelt wrong. Is the last | |

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| | | entry supposed to be year or just hurray I'm finished?<br><br>There is an entry HOA in the list. I can't find it in the text of the report. Since it is a subject that interests, me can you give me a clue where I can find this item? | |
| | Wally Cole | To my knowledge, tiered pricing and water budget based pricing are not the only types of conservation rate designs. It would be better to not specify the rate design at this time since we won't decide on the structure until after the comprehensive study is done. | |

## Comments received after circulation of an earlier draft of the WCP to the Sacramento Water Conservation Advisory Group in July, 2012

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| 8/1/2012 | Dave Todd | I concur with the recommendation that the Program C Program Scenario should be adopted. I strongly recommend that it should include tiered water rates. Please call me at (916) 651-7027 if you would like additional information. | Supports the Program C including tiered water rates. |
| 8/2/2012 | Tim Horner | First- I need to commend you and the rest of City Staff for pulling together a great team and making this a transparent process. Bill and Lisa Maddaus are skilled professionals, and I don't want my comments to be taken as criticism of them or their work. The model that they propose for achieving the City's Water Conservation goals will move us toward those goals, although I have a few comments.<br><br>My comments are mostly based on the sixth slide of their presentation, a slide that shows a pie chart of water users in Sacramento. A quick look at this chart shows the major water users in Sacramento, and I think we can use this to guide our conservation efforts. Here is my thinking:<br><br>- Single and multi-family dwellings account for about 70% of water use in Sacramento<br><br>- 10% of this group is responsible for a large part of the water waste and excess water use (others at the meeting had numbers to back this up)<br><br>- If we can change the behavior of homeowners, we will get the most effect from the conservation efforts.<br><br>- The largest water use by homeowners is outdoors | Comment relates to how City DOU implements the programs and relays the need to conserve and where the potential is; DOU's recommended program C is in line with the comments. |

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| 8/2/2012 | Tim Horner (continued) | (landscaping). Leaks are another major problem, especially for the high use group.<br><br>With this in mind, our conservation efforts should target private homeowners and their landscaping and irrigation practices. We also need to think about what motivates this group, and how to change their behavior. Here are my suggestions, in order of importance:<br><br>1) Adopt an aggressive, tiered rate structure. When high use customers feel the economic pinch, they will change their behavior. This will not prevent a citizen from watering the lawn more, so it is not a regulation. People who water more will simply pay more. In many cases the tiered structure will get the attention of homeowners who are wasting water, and will change their behavior. If the City wants to soften this blow, they could offer a one or two month grace period for the top 10% of water users before implementing the new rate structure. I know there is already a program in place where people see their bill ahead of time as the new water meters are installed. The City could couple an extra month of flat-rate structure with a required water-wise audit, and help these customers get back to normal water use rates before they pay that new bill.<br><br>2) Adopt stronger enforcement of existing water regulations. When you can stand in line at Starbucks and hear someone talking about the water ticket they got, the City will have won this war. If the public is not aware of enforcement efforts, there is no effective penalty for ignoring the regulations. I understand that City government is reluctant to irritate the voting public, but we have a serious problem here. It will be much more expensive to find new water sources than to change behaviors and conserve water. I would also remind the group that Sacramento uses more water per person per day than most other cities in the nation. Our goal is to change the behavior of the largest water users, and they are homeowners with leaks or landscaping problems. It is O.K. to irritate a few of them if we meet our conservation goals.<br><br>I think several other approaches could continue, but they are not as effective for reasons I note below:<br><br>3) Continue to offer water-wise home audits. This will soften the blow to high rate users as they ease into the new tiered rate structure. This is a great program, but it does not produce much in the way of water conservation for the City. People who apply for a water audit tend to be water-savvy already, and a very low percentage of homeowners have asked for a water audit. I think this | |

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| 8/2/2012 | Tim Horner (continued) | program is important for outreach and communication, but I would rank it as less effective for achieving the goal of 223 GPCD by 2020. The communication and outreach value alone makes it worthwhile to continue this program, because it softens the blow of the tiered rate structure.<br><br>4) Continue to offer incentives and rebates for homeowners- low flow toilets, shower heads, or new outdoor sprinkler heads. Once again, these programs are expensive and under-utilized. It makes sense to continue them so that low-income homeowners are not burdened with the new higher water rates, but this approach will not get us to our 2020 conservation goals. My impression is that gains have been small in this category. Note- It will be important to do some simple modeling (predict demand) and make sure we can fund these programs when the new tiered rate structure kicks in. There may be increased demand for rebates and incentives when people start paying more with the tiered water bills.<br><br>5) Continue to encourage commercial and government conservation measures. This includes pre-rinse nozzles and clothes washer rebates. These programs are effective and necessary, but they affect a very small group of water users. Based on Wednesday's presentation, commercial use is 16% of total water use in Sacramento. An incremental gain here will help, but this won't be the mechanism to reach our goal of 223 GPCD by 2020.<br><br>I hope my comments aren't too blunt- I enjoy working with this group, and recognize that there are other approaches and concerns at the table. My basic strategy for conservation would be to hit your largest water users the hardest, and change their behavior. Let me know if you have any questions, and please feel free to forward this to anyone that is interested. | |
| 8/2/2012 | Lysa Voight | Item 1 - Comments to the Water Conservation Model Results and proposed packages of measures: The model results and proposed measures look to be well thought out. It's obvious that the City has put a lot of effort into this model and development and prioritization of the recommended measures. I appreciate the opportunity to review and comment on the documents you provided and hope that the City shares the completed documents with others who might benefit from the results.<br><br>Since landscape irrigation is such a large component of the urban water use in the City, I recommend that you evaluate environmental benefits in addition to the cost savings for the measures that encourage river friendly | Item 1 - Commenter would like to see a connection made to more landscape management to reduce (contaminated) excess irrigation runoff getting back into the river. City staff needs to connect with others working on this "issue" and what Best Management Practices (BMPs) they are considering and what the City may eventually need to do if significant excess irrigation runoff continues. If they have identified projects and costs, DOU will include in the Water Conservation Plan pertaining to avoided costs. Additional research is |

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| 8/2/2012 | Lysa Voight (continued) | landscape practices. These types of practices can reduce landscape irrigation flow and the application of products that might contribute to contaminant loads regulated by TMDLs or to chemicals / constituents that affect the area surface waters. The City is regulated for its urban runoff through an NPDES permit, and a portion of the City's storm water flows into a combined storm water/sewer system. River friendly landscape practices would benefit both of these systems and the environment in addition to conserving water.<br><br>A reduction in landscape irrigation flows for recommendations (measures) such as 6a, 6b, 6e, 21, 29, 30a, 30b, 77 and 79 would likely also result in a cost savings to the City in other areas. For instance, if a significant amount of landscape in the City was converted to river friendly landscape, there could be a corresponding reduction in costs for BMPs and other operational costs associated with the storm water / urban runoff systems and permit compliance resulting in a cost savings in the City's Stormwater Management Program. Similar programs related to the City's NPDES permits should be examined and factored in as savings to offset the costs of the measures. I encourage the City to engage their storm water staff for input regarding potential savings and environmental benefits that would result from measures related to river friendly landscape practices.<br><br>City staff participates in the ongoing Drinking Water Policy Work Group. Efforts of that workgroup resulted in development of a series of technical documents, one of which outlines costs associated with BMPs that might help with this assessment (attached for your use and reference). Sherrill Huun is one contact from the City for additional information on this issue.<br><br>Item 2 – Follow up meeting and additional information request related to SRCSD sewer rates: There were several questions from the SWCAG meeting held on August 1 during SRCSD's presentation of sewer rates and the Rate and Fee Study. It was suggested that we have a follow-up meeting with a sub-group of SWCAG members. We would be happy to set up this meeting. For this effort, could the City please provide: A time frame for the meeting, a list of attendees, and questions in advance. | needed. Additionally, the City adopted an Outdoor Landscape Ordinance and the State Model Water Efficient Landscape Ordinance in 2009 that encourage river friendly landscape practices; with City Council's direction City staff will review the ordinances to ensure that they do not need further code update.<br><br>Item 2 – Commenter would like to respond to Sacramento Water Conservation Advisory Group (SWCAG) meeting for additional sub-group of SWCAG to follow-up on discussions on SRCSD's presentation of sewer rates and the Rate and Fee Study. City DOU is working with SRCSD to coordinate a meeting of sub-group of SWCAG members to follow-up. |
| 8/3/2012 | Peter Brostrom | As Tim Horner pointed out the SF Res is the city's largest water use and outdoor irrigation accounts for roughly 60 to 75% of that use.<br><br>The California Single Family End use study after looking at water use at 700 homes in 9 water utilities across the | Commenter is advocating developing water budgets for each property. It is very time consuming to do this and can't simply be done using aerial photos in Sacramento due to the many trees. The DOU will be looking into this and include |

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| | | state showed that 18% of the homes accounted for 62% of the excess irrigation (pg. 161) Residential leaks showed a similar trend with 7% leaking more than 100 gpd and accounting for more than 44% of the leaked volume (pg. 147).<br><br>As I commented on at the meeting, my suggestion is that city invests the money to calculate the irrigated landscape area for every connection and develop water budgets for each connection based on the irrigated area and assumptions of indoor use. A tiered rates system should be established that penalizes customers that are significantly over budget. Customers who are at budget should pay a similar amount as the flat rate payers to avoid too much discrepancy between the flat rate bill and a metered bill. I'd don't think anyone but the customer being charged will object to penalizing customers who are significantly over their water budget. | as part of the comprehensive water conservation pricing study to be completed by 2014. |
| 8/7/2012<br><br>8/7/2012 | Mark Roberson<br><br>Mark Roberson (continued) | 1. Without the following information (per measure); unit cost, unit savings, life and decay, and the total potential to implement in the City, it is not possible to give an adequate review of the 36 conservation measures that were modeled to prepare the Program scenarios. The recommendation is to augment the list of 36 measures with the above information.<br><br>2. Provide the definition, amount ($/AF), schedule, and rationale for each of the avoided cost components used in the analysis.<br><br>3. For Program A, provide a list of the inputs (conservation measures being implemented) along with the level of participation, the unit cost and unit savings, and life and decay of each measure.<br><br>4. The 2020 savings goal of 33 GPCD is based on the UWMP's 2010 starting GPCD of 259 and a 2020 GPCD of 223. The City's actual 2010 GPCD was 208. Provide a discussion that supports the use of the UWMP GPCD as the starting point.<br><br>5. Prepare a Program scenario (E) that meets the 33 GPCD target using the existing program costs ($1.9M, excluding meters and water loss control BMPs) by increasing the participation level of low cost - high savings measures and decreasing the participation level of high cost – low savings measures.<br><br>6. The CUWCC MOU requires that if either the GPCD or flex-track option is chosen that the water savings achieved under these tracks must be equal to or greater than the savings achieved under the BMP approach. | Commenter's first four bullet points ask for information that will be in the report and can be referenced. In his fifth bullet point he wants a new program E that consists of a new rendition of the existing measures. This would require a lot of time for City staff to debate what could be done to each measure to ramp up or ramp down savings. City staff and technical consultant did that to a certain extent with the suite of "Intensive" measures. But the rest of the advisory group pressed staff in a different direction moving to Program B, then to Program C by adding mostly new measures and ramping up a few of the existing measures. City DOU might need to add half dozen new measures to ramp down existing measures, while keeping the old ones so the other programs remain intact. Once again this is the type of optimization that could be done in coming years, with a goal of achieving the targets with minimum cost. To do it now would take much more time and money than is planned for this project. His sixth bullet raises another point about MOU compliance. This is a detail DOU staff will need to take care of if and when the Plan is adopted. It's part of the implementation phase. City DOU is planning for GPCD approach reporting. |

| Comment Received | Submitted By | Comment | DOU Comment |
|---|---|---|---|
| | | Because the City has stated that it will switch to the GPCD track it is recommended that an analysis be prepared that compares the savings achieved through the recommended Program with the full implementation of the BMPs. | |

# APPENDIX D – Sacramento Water Ad HOC Committee Comments on Draft Analysis Results

## Water Ad Hoc Committee Comments on Water Conservation Plan Results, August 28, 2012

| Comment Received | Submitted By | Comment | DOU Comment |
|---|---|---|---|
| 8/28/2012 | John Shirey, City Manager | The piechart on page three of the presentation is misleading. Should specify that "Landscape Irrigation" is commercial/city parks. Should look into having "single-family and multi-family" use show indoor and outdoor use. This could possibly be done with a small pie chart within that section or to the side showing the difference between indoor and outdoor use. | The input is helpful and DOU can provide these changes. |
| 8/28/2012 | General<br><br>(Council members,<br><br>City Manager and City DOU Managers) | Referring to slide four – and review of the analysis of four programs of measures; we may want to look into adding Recycling to our analyses; the graph with the Estimated Per Capita Average Daily Water Use could include an additional program that includes Recycling. *Note, the Water Ad Hoc meeting today had a presentation on Recycling from SRCSD, and comments from the Committee and John Shirey are that we will want to address recycling in the long-term.* | The DOU recommends following the process for this ongoing/living Plan, and adding this to the next round of measures that will be evaluated in the future. |
| 8/28/2012 | General | Referring to slide eight. The question was asked why the cities on the slide were chosen for comparison with the City of Sacramento; they are coastal communities and have significantly different (hydrogeologic) and climate/landscape conditions so their water use is not similar to ours. | The reason that the Cities were chosen is that Maddaus Water Management has information on those utilities, and not others and provided similar work so that we could compare. Other Cities information may not be available. It would be preferable, however, for the next presentation to show how we relate to cities in similar climates. We have started review of other Cities and will look into the feasibility of providing that information. |
| 8/28/2012 | John Shirey,<br><br>City Manager | Slide five is too busy. It would be better to include more details on each measure and their inclusion or absence from plans A, B, C, or D. | Input is very helpful and DOU will provide more details on each measure. |
| 8/28/2012 | Councilmember Ashby | It is important to build in a plan to really sell this to each individual. Each community is different and every individual within those communities is different. We need to find a way to reach out to the "average Joe" and tell him why this conservation plan matters to him; what should s/he care about? Many of the details will go over | The message of the plan is that the City needs to reach a 20% per capita reduction goal by 2020 and that these programs can help get us there in a cost effective manner. It is suggested that the presentation to the Council and any presentations to the community be tailored |

| Comment Received | Submitted By | Comment | DOU Comment |
|---|---|---|---|
| | | people's heads, the message needs to tell them what they really need to know. | to reflect the actions needed by various customer bases to achieve their targeted savings (i.e. using a hose nozzle will save 1 gallon of water per minute. So it isn't that they can't wash their cars, just that they use a hose nozzle to achieve their 30 gallon per day saving target). |

# APPENDIX E – Sacramento Water Conservation Advisory Group, Water Ad HOC and Department of Utilities Meeting Summaries

## SWCAG Meeting Summaries

| Meeting Time, Date, and Location | Agenda Items | Meeting Attendees |
|---|---|---|
| November 15th, 2010 – 9:00am to 11:00 am<br>1931 35th Avenue | **Introductions** - Laura Kaplan, Facilitator<br>**Welcome** - Marty Hanneman, Director of Utilities<br>**Member Expectations** - SWCAG Members<br>**SWCAG Charge and Scope** - Laura Kaplan<br>Review DRAFT to finalize purpose, ground rules, participation expectations, and meeting frequency.<br>**Water Conservation Strategic Plan Summary** - City staff<br>Review executive summary of Interim Plan to gain familiarity with existing conservation priorities and objectives.<br>**Wrap Up and Next Steps** - Laura Kaplan | (SWCAG Members) Janet Baker, David Campbell, Erik DeKok, Jeff Goldman, Brian Holloway, Tim Horner, Cory Koehler, Clyde McDonald, Dave Roberts, Dennis Rodgers, JP Tindell, Phil Smith, Dave Todd, Rick Soehren<br>(City Staff) Terrance Davis, Julie Friedman, Jim Peifer<br>(Facilitator) Laura Kaplan |
| February 16th, 2011 – 9:00am to 11:30am<br>2260 Glen Ellen Circle | **Introductions and Agenda Review** - Laura Kaplan, Facilitator<br>**Welcome New SWCAG Members and Review of Ground Rules** - SWCAG Members<br>**Staff Responses to Member Input from Last SWCAG Meeting** - City staff<br>**Water Conservation Strategic Plan Presentation** - City staff<br>Staff overview of key water conservation programs and objectives, discussion of priorities for subsequent in-depth review<br>**15 minute Networking Break**<br>**Water Conservation Strategic Plan Presentation (CONTD)** - City Staff<br>Staff presentation and discussion of demand estimation and targets<br>**Open Announcements and Updates on Relevant Current Events** - SWCAG Members and City Staff<br>**Wrap Up and Next Steps** - Laura Kaplan | (SWCAG Members) Steve Archibald, Janet Baker, Shannon Brown, David Campbell, Erik DeKok, Joe Devlin, Sarah Foley, Tom Gohring, Jeff Goldman, Jim Hicks, Brian Holloway, Tim Horner, Cory Koehler, Clyde McDonald, Mark Roberson, Dave Roberts, Dennis Rodgers, Phil Smith, Rick Soehren, JP Tindell, Dave Todd<br>(City Staff) Terrance Davis, Julie Friedman, Jim Peifer<br>(Facilitator) Laura Kaplan. |
| April 20th, 2011 – 9:00am to 11:30am<br>2812 Meadowview Road | **Introductions and Agenda Review** - Laura Kaplan, Facilitator<br>**Welcome New SWCAG Members and Review of Ground Rules** - SWCAG Members<br>**Staff Responses to Member Input from Last SWCAG Meeting** - City staff<br>**City BMP Presentation** - City staff<br>Staff overview of existing CUWCC BMP implementation status, | (SWCAG Members) Steve Archibald, Janet Baker, Shannon Brown, David Campbell, Erik DeKok, Joe Devlin, Sarah Foley, Tom Gohring, Jeff Goldman, Jim Hicks, Brian Holloway, Tim Horner, Cory Koehler, Clyde McDonald, Terrie Mitchell, Mark Roberson, Dave Roberts, Dennis Rodgers, Phil Smith, Rick Soehren, JP Tindell, Dave Todd, Lysa Voight |

| Meeting Time, Date, and Location | Agenda Items | Meeting Attendees |
|---|---|---|
| | including staffing and funding levels<br>**15 minute Networking Break**<br>**Work Plan Responses and Prioritization Results** - SWCAG Members<br>Review results of member input and discuss components of a Draft Work Plan<br>**Open Announcements and Updates on Relevant Current Events** - SWCAG Members and City Staff<br>**Wrap Up and Next Steps** - Laura Kaplan | (City Staff) Dave Brent, Terrance Davis, Julie Friedman, Hervey Lee, Mike Malone, Jim Peifer, Carol Tao<br>(Facilitator) Laura Kaplan |
| May 18th, 2011 – 9:00am to 11:30am<br>2812 Meadowview Road<br><br>May 18th, 2011 – 9:00am to 11:30am<br>2812 Meadowview Road (continued) | **Introductions and Agenda Review** - Laura Kaplan, Facilitator<br>**Staff Responses to Member Input from Last SWCAG** Meeting - City staff<br>**Online Collaboration Site** - City staff<br>**SWCAG DRAFT Work Plan** - SWCAG Members<br>Review DRAFT Work Plan, inclusive of the member prioritization results from previous meetings.<br>**15 Minute Networking Break**<br>**Water Shortage Contingency Plan** - SWCAG Members and City Staff<br>Presentation and discussion of a planned section of the Urban Water Management Plan.<br>**Conservation Mission, Purpose and Outreach** - SWCAG Members and City Staff<br>Discussion of the rationale and motivations driving City conservation efforts.<br>**Wrap Up and Next Steps** - Laura Kaplan | (SWCAG Members) Steve Archibald, Janet Baker, Shannon Brown, David Campbell, Erik DeKok, Joe Devlin, Sarah Foley, Tom Gohring, Jeff Goldman, Jim Hicks, Brian Holloway, Tim Horner, Cory Koehler, Clyde McDonald, Terrie Mitchell, Mark Roberson, Dave Roberts, Dennis Rodgers, Phil Smith, Rick Soehren, JP Tindell, Dave Todd, Lysa Voight<br>(City Staff) Dave Brent, Terrance Davis, Julie Friedman, Hervey Lee, Mike Malone, Jim Peifer, Carol Tao<br>(Facilitator) Laura Kaplan |
| July 20th, 2011 – 9:00am to 11:30am<br>2812 Meadowview Road | **Introductions and Agenda Review** - Laura Kaplan, Facilitator<br>**Staff Responses to Member Input from Last SWCAG Meeting** - City staff<br>**Automated Meter Infrastructure Timeline** - City staff<br>**Urban Water Management Plan Update** - City Staff<br>Review DRAFT Plan, inclusive of the member feedback to date.<br>**15 Minute Networking Break**<br>**Outdoor Landscape** - SWCAG Members and City Staff<br>Discussion of current performance, recommended focus areas, and future policy and program strategies (as prioritized by SWCAG members).<br>**Announcements, Wrap Up and Next Steps** - Laura Kaplan | (SWCAG Members) Steve Archibald, Janet Baker, Shannon Brown, David Campbell, Erik DeKok, Joe Devlin, Sarah Foley, Tom Gohring, Jeff Goldman, Jim Hicks, Brian Holloway, Tim Horner, Cory Koehler, Clyde MacDonald, Terrie Mitchell, Mark Roberson, Dave Roberts, Dennis Rodgers, Phil Smith, Rick Soehren, JP Tindell, Dave Todd, Lysa Voight<br>(City Staff) Dave Brent, Terrance Davis, Julie Friedman, Hervey Lee, Mike Malone, Elizabeth McAllister, Jim Peifer, Carol Tao<br>(Facilitator) Laura Kaplan |
| | | |

| Meeting Time, Date, and Location | Agenda Items | Meeting Attendees |
|---|---|---|
| September 21st, 2011 – 9:00am to 11:30am<br>1395 35th Avenue<br><br>September 21st, 2011 – 9:00am to 11:30am<br>1395 35th Avenue (continued) | **Introductions and Agenda Review** - Laura Kaplan, Facilitator<br>**Staff Responses to Member Input from Prior SWCAG Meeting** - City staff<br>**Outreach and Education: Overview of Current Strategies and Challenges** - Jessica Hess<br>**15 Minute Networking Break**<br>**Outreach and Education (Continued): Focus on Residential Landscaping Messaging** - Jessica Hess and SWCAG members<br>**Announcement, Wrap Up and Next Steps** - Laura Kaplan | (SWCAG Members) Steve Archibald, Shannon Brown, David Campbell, Erik DeKok, Joe Devlin, Sarah Foley, Tom Gohring, Jeff Goldman, Jim Hicks, Brian Holloway, Tim Horner, Cory Koehler, Clyde McDonald, Terrie Mitchell, Mark Roberson, Dave Roberts, Dennis Rodgers, Phil Smith, Rick Soehren, JP Tindell, Dave Todd, Lysa Voight<br>(City Staff) Terrance Davis, Julie Friedman, Jessica Hess, Hervey Lee, Mike Malone, Jim Peifer, Carol Tao.<br>(Facilitators) Laura Kaplan, Jody Monaghan<br>Additional Attendees: Councilmember Darrell Fong, District 7; Department of Utilities Interim Director, Dave Brent |
| March 21st, 2012 – 9:00am to 11:30am<br>1395 35th Avenue | **Welcome** - Jodie Monaghan, Center for Collaborative Policy (CCP)<br>**Opening Remarks** - Terrance Davis, Field Services Program Manager, Department of Utilities (DOU), Dave Brent, Interim Director, DOU, Councilmember Darrel Fong.<br>**Water Conservation Plan** – Terrance Davis, Julie Friedman, Environmental Services Manager, DOU<br>Introduction to the Decision Support System (DSS) model. Discussion of Plan schedule<br>**Water Conservation Measures** – Julie Friedman<br>Discussion of potential measures, a look at initial list<br>**Next Steps** – Jodie Monaghan | (SWCAG) Shannon Brown, City of Sacramento Parks & Recreation<br>Erik deKok, City of Sacramento Long Range Planning<br>Sarah Foley, Water Form<br>Brian Holloway, Sacramento Association of Realtors<br>Clyde MacDonald, Save the American River Association<br>Phil Smith, Council District 4<br>Mark Roberson, Water Forum<br>Rick Soehren, CA State Department of Water Resources, Retired<br>Dave Todd, CA State, Department of Water Resources<br>Lysa Voight, Sacramento Regional County Sanitation District<br>(City Staff) Dave Brent, Interim Director, Department of Utilities<br>Terrance Davis, Program Manager<br>Brett Ewart, Associate Civil Engineer<br>Julie Friedman, Program Specialist – Environmental Services Manager<br>Jessica Hess, Media and Communications Specialist |

| Meeting Time, Date, and Location | Agenda Items | Meeting Attendees |
|---|---|---|
| March 21st, 2012 – 9:00am to 11:30am<br>1395 35th Avenue (continued) | | Hervey Lee, Water Conservation Intern<br>Jim Peifer, Senior Engineer<br>Tyler Stratton, Program Specialists – Water Conservation Administrator<br>(Facilitator) Jodie Monaghan, Center for Collaborative Policy<br>Additional Attendees: Councilmember Darrell Fong, District 7 |
| April 24th, 2012 | **SWCAG Economic Incentives Workgroup Meeting**<br>**Discussion, rating, and ranking of 80 Water Conservation Measures -** All | Peter Brostrom, CA Department of Water Resources<br>Brett Ewart, City of Sacramento Engineering<br>Sarah Foley/Mark Roberson, Water Forum<br>Brian Holloway, Sacramento Association of realtors<br>Jim Lofgren, Rental Housing Association<br>Jim Peifer, City of Sacramento Engineering<br>Dave Todd, CA Department of Water Resources<br>Tyler Stratton, City of Sacramento Water Conservation |
| April 27th, 2012 | **SWCAG Outreach, Messaging and Partnering Workgroup Meeting**<br>**Discussion, rating, and ranking of 80 Water Conservation Measures** – All | Sarah Foley/Mark Roberson, Water Forum<br>Jessica Hess, City of Sacramento Media and Communications<br>Tim Horner, California State University Sacramento<br>Clyde MacDonald, Save the American River Association<br>Jim Peifer, City of Sacramento Engineering<br>Phil Smith, Citizen Advisory, Council District 4 |
| May 2nd, 2012 | **SWCAG Outdoor Landscape Workgroup Meeting**<br>**Discussion, rating, and ranking of 80 Water Conservation Measures** - All | Shannon Brown, City of Sacramento Parks and Recreation<br>David Campbell, Siegfried Engineering, Inc.<br>Brett Ewart, City of Sacramento Engineering<br>Sarah Foley/Mark Roberson, Water Forum<br>Tim Horner, California State University of Sacramento<br>Tyler Stratton, City of Sacramento Water Conservation |
| May 21st, 2012 | **SWCAG Technical Advisory Workgroup Meeting**<br>Met and answered questions that some had on costs and water savings.<br>Following review and recommendations from all of the workgroups, a list of 30 measures were recommended to be | Terrance Davis, Field Services, DOU<br>Julie Friedman, Field Services, DOU<br>Jim Piefer, Engineering, DOU<br>Mark Roberson, Water Forum<br>Lisa Maddaus, Consultant, Maddaus Water management<br>Bill Maddaus, Consultant, Maddaus Water |

| Meeting Time, Date, and Location | Agenda Items | Meeting Attendees |
|---|---|---|
| | reviewed and discussed with SWCAG at the June 6th meeting. | Management |
| June 6th, 2012 – 9:00am to 11:00am<br><br>1395 35th Avenue | **Welcome, Introductions, Agenda Review** - Jodie Monaghan, Center for Collaborative Policy, Facilitator<br><br>**Opening Remarks** - Terrance Davis, Field Services Program Manager, Department of Utilities, Julie Friedman, Environmental Services Manager, Department of Utilities<br><br>**Update on Water Conservation Plan Activity** – Terrance Davis, Julie Friedman<br><br>**Discussion of Accelerated Schedule** - Terrance Davis, Julie Friedman<br><br>**Overview of Analysis Process and DSS Model** - Bill and Lisa Maddaus, Maddaus Water Management<br><br>**Review Recommended Water Conservation Measures** - All<br><br>**Next Steps** – Julie Friedman<br><br>Schedule, Future Meetings | (SWCAG) Brian Holloway, Sacramento Association of Realtors<br><br>Clyde MacDonald, Save the American River Association<br><br>Dave Todd, CA Department of Water Resources<br><br>Peter Brostrom, CA, Department of Water Resources<br><br>Nanette Bailey, Sacramento Regional County Sanitation District<br><br>(City Staff) Terrance Davis, Program Manager<br><br>Julie Friedman, Program Specialist – Environmental Services Manager<br><br>Jessica Hess, Media and Communications Specialist<br><br>Hervey Lee, Water Conservation Intern<br><br>Tyler Stratton, Program Specialist – Water Conservation Administrator<br><br>(Consultants) Bill Maddaus, Maddaus Water Management<br><br>Lisa Maddaus, Maddaus Water Management<br><br>Jodie Monaghan, Center for Collaborative Policy |

| | | |
|---|---|---|
| Meetings in June, 2012 and also on July 16th, 2012 | **DOU Management Team**<br><br>**Discussion, rating, and ranking of 80 Water Conservation Measures** - All | Dave Brent, Director of Utilities<br><br>Michael Malone, Field Services<br><br>Jamille Moens, Business Services<br><br>Bill Busath, Engineering<br><br>Mark Lorenzi, Plant Services<br><br>Jim Peifer, Engineering<br><br>Terrance Davis, Field Services<br><br>Julie Friedman, Field Services |
| August 1st, 2012 – 9:00am to 11:30am<br><br>1395 35th Avenue | **Welcome, Introductions, Agenda Review** – Jodie Monaghan, Center for Collaborative Policy, Facilitator<br><br>**Opening Remarks** – Terrance Davis, Field Services Program Manager, DOU; Julie Friedman, Environmental Services manager, DOU<br><br>**SRCSD Presentation** – Mike Huot, Senior Engineer, SRCSD<br><br>Rates, Green incentive efforts, rate and fee study<br><br>**Overview of Water Conservation Model Results** – Bill and Lisa Maddaus, Maddaus Water Management<br><br>Inputs and key assumption, proposed packages<br><br>**Discussion of Programs** – All<br><br>Strengths of each group, possible improvements<br><br>**Next Steps** – Julie Friedman<br><br>Comments due date, project schedule, future meetings | (SWCAG) Mike Huot, Bill Maddaus, Lisa Maddaus, Dave Todd, Jodie Mongahan, Tim Horner, Phil Smith, Lysa Voight, Peter Brostrom, Brett Ewert, Mark Roberson<br><br>(City Staff) Dave Brent, Mike Malone, Julie Friedman, Tyler Stratton, Jim Peifer, Terrance Davis, Darrell Fong, Taylor Chang, Jamille Moens, Jessica Hess, Rémy Moens, Hervey Lee |

**City of Sacramento, Department of Utilities**
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MADDAUS WATER MANAGEMENT

City of SACRAMENTO Department of Utilities

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# APPENDIX S

Leak Detection Program Fact Sheet

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# (DRAFT) FACT SHEET: Sacramento Leak Detection Program Department of Utilities Operations & Maintenance Division

## Project Overview

City of Sacramento regional and state-wide stakeholders have identified the importance of expanding the City's Water Loss Control and Leak Detection Program. The 2013 adopted Sacramento Water Conservation Plan and the Department of Utilities (DOU) 5-year Strategic Plan call for intensifying the City's system-wide leak detection program to reduce the volume of real water losses, saving water and energy, and reducing greenhouse gas (GHG) emissions.

To respond, the DOU Operations & Maintenance (O&M) division initiated a pilot in-house acoustic leak survey and repair program in 2012 as part of a strategic water loss reduction program and utilized industry best practices from American Water Works Association (AWWA M36 Manual) and lessons learned from other water agencies.

O&M initially added a leak detection crew with active monitoring and leak repair focused on the older mains in the downtown area. The 2-person crew provided sonic leak detection surveys to pinpoint the location of a leak. In 2014-2015 with the continuing drought conditions, increasing state regulations, O&M determined an additional 2-person crew could successfully support the DOU's water and energy saving efforts.

The sonic leak detection surveys and the current two 2-person crews are proving their effectiveness in reducing the volume of real water losses. Within two years, the two crews have surveyed almost 100,000 services and 1,200 miles of main (about 60 percent of the city), found and repaired 630 leaks, saving over 20 million gallons of water.

*Leakage rates and water savings were estimated using the methodology of AWWA M36 Manual to quantify an estimate of water, energy and GHG savings through the leak repair program.*

## Project Features

### *Goals and Objectives*

The Leak Detection Program was designed to reduce non-revenue water (sometimes referred to as "unaccounted for water") by having crews proactively and systematically check or locate and repair services and mains. The goal is to locate and repair leaks before they become catastrophic, minimizing public hazards and the cost of repairs and service interruptions, and includes informing and educating customers about leak detection and encouraging their repair.

The Program objectives include:

- Reducing non-revenue water: Locate and repair leaks early (before the water surfaces)
- Educate and inform customers on repair when DOU staff finds leaks on private lines
- Minimize service interruptions to customers - crews can make a repair with minimal impact to surrounding property, and schedule a repair when the impact of service interruption will be minimal
- Prevent major public hazards - undetected water leaks can surface at any time, causing a slip hazard for pedestrians. Leaks that surface in the street can pool causing traffic to swerve, increasing the potential for accidents.

- Identify a leak before property damage occurs - ensure mains in residential backyards do not go undetected thus decreasing the potential for property damage
- Minimize repair cost - locating a leak early allows staff to schedule the work and minimize the time and materials used to repair the leak. Excavation is kept to a minimum

### *Key Milestones*

- Planning with stakeholders – Water Loss Committee (2012-2014), Drought Committee (2015)
- Select equipment (2012-2013)
- Provide pilot leak detection program (2012-2013)
- Complete analyses and further planning; add second crew (2014-2015)
- Since 2012: Two 2-person crews have surveyed 60 percent of the City
    - Found, repaired 630 leaks, surveyed 100,000 services and 1200 miles of main
    - Saved over 20 million gallons of water

### *Project Features*

- Permalogers* work best on the City's metallic pipe such as cast iron and steel water mains that carry sound, and allow staff to cover a large area in a short period of time
- Once a leak is detected by permalogers, crews use a correlater* to listen to the section of main where there is a possible leak to help pinpoint the location of the leak
- Amplified sounding devices work best for surveying water services and identifying areas with the highest number of leaks

**A permaloger is a listening device that sits on top of water valves/services and listens continuously for a period of a few hours, and measures and records the sound level. A Correlate is a device used to find the general location of a leak based on readings from the permalogers.*

### *Benefits*

- Increased water and energy savings by reducing volume of real losses
- Increased efficiency with more focused, active leak detection efforts
- Better response time with quicker identification of leaks and shorter run-time of leaks

## At-a-Glance Facts

**Start date:** September 2012
**End date:** Pilot complete by December 2013; Phase 2: From January 2014 through present
**Crew size:** Pilot study provides downtown area survey to quantify leakage volume, reduce leakage volumes to optimized levels and maintain the achieved leakage water and energy savings through leak detection within a 5-6 year cycle; with additional crew the cycle is reduced to 2-3 years
**Budget: Pilot and Phase 2** ($_____)
***Milestones***
**Planning:** 2012-2013; **Procurement:** March 2012 – October 2013
**Phase 1 – Selecting study areas, equipment, crew training, implementing pilot:** January – August 2012
**Phase 2 – Leak Detection 2-crew implementation and analysis, leak detection and repairs, reporting on results (**January 2014 through present and is ongoing)
**Contact:** Craig Robinson, Water Superintendent, crobinson@cityofsacramento.org
"The project can provide a (quote from Craig) ____." –Craig Robinson, Water Superintendent

## Sonic Surveys for Unreported Leaks

Crew provides sonic leak detection surveys to pinpoint the location of a leak. *(Above) crew listens for leaks with a listening device at the curb stop, and will forward for repairs if leak is indicated.*

Loggers are deployed to provide continuous monitoring of leakage. *(Above and below) crew examines the sound signals found between two sensors.*

## Effective Technology – Sonic

- System-wide leak detection program 2012-present
  - Sonar leak detection technology
  - Found and repaired 23 leaks on average per month
  - More than 20 million gallons saved = 130 households

City of SACRAMENTO
Department of Utilities

Crew provides sonic leak detection surveys to pinpoint the location of a leak. *(Above) crew listens for leaks with a listening device at the curb stop, and will forward for repairs if leak is indicated.*

# APPENDIX T

UWMP Adoption Resolution

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UWMP Adoption Resolution will be included with final report

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