

City of San José

San José/Santa Clara Water Pollution  
Control Plant Master Plan

**TASK NO. 4**  
**PROJECT MEMORANDUM NO. 10C**  
**WATER CONSERVATION**

**FINAL DRAFT**  
September 2009



*in association with*



**CITY OF SAN JOSÉ**  
**SAN JOSÉ/SANTA CLARA WATER POLLUTION**  
**CONTROL PLANT MASTER PLAN**

**TASK NO. 4**  
**PROJECT MEMORANDUM NO. 10C**  
**WATER CONSERVATION**

**TABLE OF CONTENTS**

|   | <b><u>Page No.</u></b> |
|---|------------------------|
| 1.0 INTRODUCTION.....                           | 1                      |
| 2.0 INDOOR WATER CONSERVATION .....             | 1                      |
| 3.0 CURRENT WATER CONSERVATION PROGRAM.....     | 7                      |
| 3.1 Water Conservation in Other Countries.....  | 9                      |
| 3.2 Potential Water Conservation Measures ..... | 9                      |
| 4.0 ESTIMATED WATER SAVINGS .....               | 9                      |
| 5.0 SUMMARY .....                               | 11                     |

**REFERENCES**

**LIST OF TABLES**

|          |  |    |
|----------|--|----|
| Table 1  | Populations Served in 2005 by Agency <sup>(1)</sup> .....  | 2  |
| Table 2  | Past, Current, and Projected WPCP Potable Water Demands by Customer Category (acre-feet/year) .....                  | 3  |
| Table 3  | Percent Indoor and Outdoor Use by Customer Category <sup>(1)</sup> .....   | 4  |
| Table 4  | Estimated Past, Current, and Projected WPCP Indoor Potable Water Demands by Customer Category (acre-feet/year) ..... | 4  |
| Table 5  | Estimated Number of SJMWS Accounts.....  | 6  |
| Table 6  | Number of SJWC Accounts .....  | 6  |
| Table 7  | Estimated Number of GOWC Accounts.....   | 7  |
| Table 8  | Estimated Number of Accounts in WPCP Service Area .....  | 7  |
| Table 9  | CUWCC BMPs.....  | 8  |
| Table 10 | Example Water Conservation Programs and Measures in Other Countries..  | 10 |
| Table 11 | Description of Conservation Measures Recommended for Further Evaluation .....  | 12 |
| Table 12 | Estimated Number of Accounts by Customer Category.....   | 15 |
| Table 13 | Estimated Water Savings for Measures Recommended for Further Evaluation .....  | 16 |

**LIST OF FIGURES**

|          |  |   |
|----------|--|---|
| Figure 1 | Percent Contribution of Customer Categories to Indoor Potable Demand Projection for 2010 ..... | 5 |
|----------|--|---|

## **1.0 INTRODUCTION**

The City of San José has a water conservation plan that was evaluated and factored into the flow and load projections being used as part of the master plan evaluation. (See PM 3.8). This project memorandum evaluates possible programs that could provide for further reductions in potable water use and subsequently wastewater generation.

## **2.0 INDOOR WATER CONSERVATION**

Evaluating how water is used amongst various customer categories in the San José/Santa Clara Water Pollution Control Plant (WPCP) service area is an important step in determining the potential for further reductions in the per capita wastewater flow through implementation of additional water conservation measures. The San José water pollution control plant treats wastewater from San José, Santa Clara, West Valley Sanitation District, Cupertino Sanitary District, City of Milpitas, County Sanitation District 2-3, Burbank Sanitary District and the Sunol Sanitary District. Customers within the WPCP service area are served by several water providers, including the City of San José Municipal Water System (SJMWS), the San José Water Company (SJWC), the Great Oaks Water Company (GOWC), the City of Milpitas, the City of Santa Clara, and California Water Service Company – Bear Gulch. This project memorandum focuses primarily on San José, because it is the most significant contributor to the WPCP and because the SJMWS water conservation plan served as the starting point for evaluating additional water saving opportunities.

Table 1 summarizes the populations served by the SJMWS, SJWC, GOWC, and WPCP. Though the population served by the WPCP should ideally be equal to the total population served by SJMWS, SJWC, and GOWC, a discrepancy of 177,990 exists for the population served in 2005 and is attributed to the areas outside of San José that are served by the WPCP.

| <b>Table 1 Populations Served in 2005 by Agency<sup>(1)</sup><br/>San José/Santa Clara Water Pollution Control Plant Master Plan<br/>City of San José</b>   |                                  |
|---|----------------------------------|
| <b>Agency</b>   | <b>Population Served in 2005</b> |
| SJMWS   | 116,210                          |
| SJWC  | 935,300                          |
| GOWC  | 95,000                           |
| Total Population Served by Water Agencies   | 1,146,510                        |
| Total Population Served by WPCP   | 1,324,500                        |
| (1) Populations from the year 2005 were considered because it is the closest year to present with currently available population data for each of the agencies.<br>Sources: City of San José Municipal Water System 2005 Urban Water Management Plan (UWMP)<br>San José Water Company 2005 UWMP<br>Great Oaks Water Company 2005 UWMP |                                  |

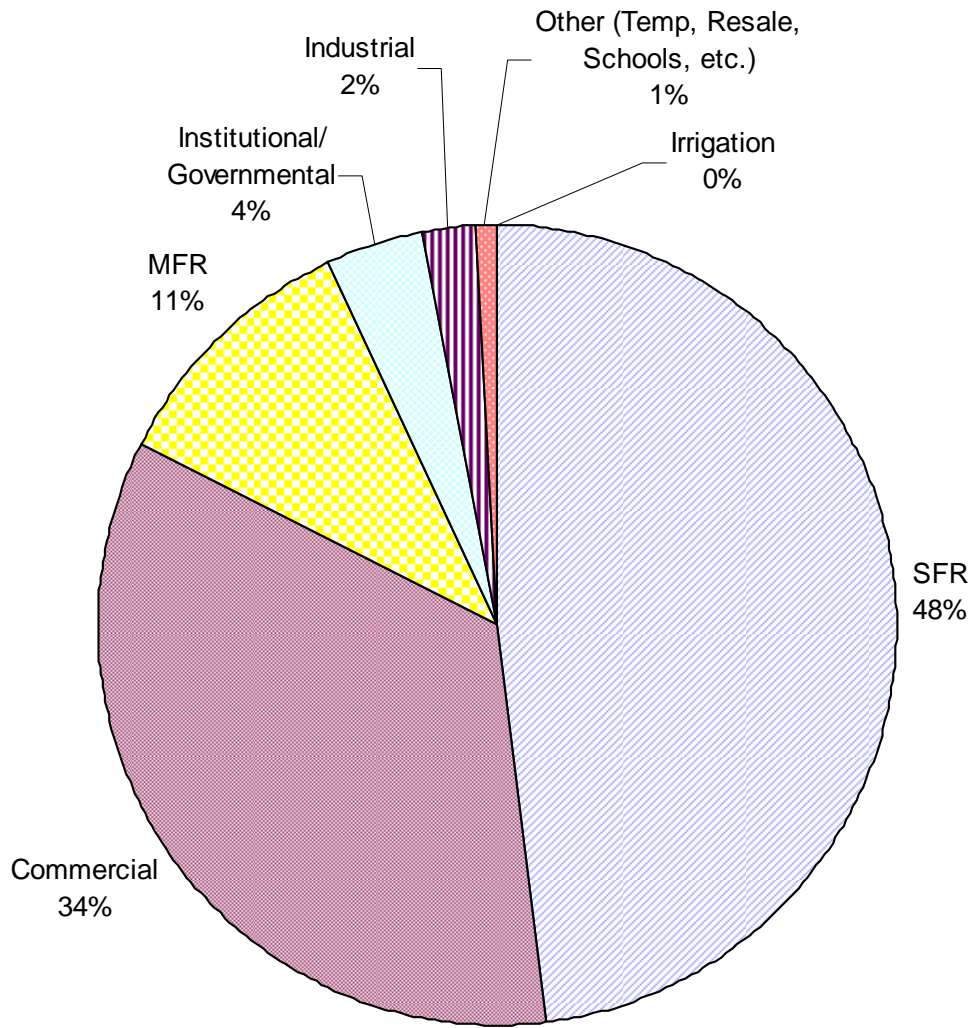
Table 2 includes past, current, and projected total water demands for SJMWS, SJWC, and GOWC by customer category, including both indoor and outdoor water use. Percentages of indoor and outdoor water use by customer category are summarized in Table 3 and are based on input to the SJMWS's Demand Side Management Least Cost Planning Decision Support System (DSS model) for the *Wholesale Customer Water Conservation Potential Technical Report* prepared by URS Corporation and Maddaus Water Management in December 2004 for the San Francisco Public Utilities Commission. The percentages of indoor water use by customer category, as presented in Table 3, were applied to the total water demands, resulting in the estimated indoor water use summarized in Table 4. Figure 1 displays the percent contribution of each customer category to the indoor potable demand projection for 2010.

Most land uses included in Figure 1 contribute to the flow to the WPCP with the exception of consumptive-natured land uses, including irrigation. Industrial uses are significantly consumptive; however, additional potential for reducing cooling tower blowdown may exist. Approximately 59 percent of the water consumed in the WPCP service area is used for residential purposes, and about 34 percent is used for commercial purposes. Targeting indoor conservation measures for residential and commercial land uses is key to reducing flow to the WPCP.

| <b>Table 2 Past, Current, and Projected WPCP Potable Water Demands by Customer Category (acre-feet/year)<br/>San José/Santa Clara Water Pollution Control Plant Master Plan<br/>City of San José</b> |                |                |                |                |                |                |                |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| <b>Customer Type</b>   | <b>2000</b>    | <b>2005</b>    | <b>2010</b>    | <b>2015</b>    | <b>2020</b>    | <b>2025</b>    | <b>2030</b>    |
| Single Family Residential (SFR)  | 80,752         | 82,040         | 89,709         | 97,508         | 105,840        | 113,878        | 120,782        |
| Commercial   | 61,143         | 59,722         | 66,100         | 72,732         | 79,648         | 86,152         | 92,701         |
| Multi-Family Residential (MFR)   | 17,606         | 17,886         | 19,558         | 21,259         | 23,076         | 24,828         | 26,334         |
| Institutional/Governmental   | 9,240          | 9,338          | 10,107         | 10,913         | 11,785         | 12,592         | 13,397         |
| Irrigation   | 4,396          | 4,880          | 6,616          | 7,805          | 8,741          | 9,608          | 10,281         |
| Industrial   | 4,074          | 3,797          | 4,675          | 5,475          | 6,248          | 7,144          | 7,669          |
| Other (Temp, Resale, Schools, etc.)  | 1,722          | 1,634          | 1,853          | 2,069          | 2,286          | 2,509          | 2,703          |
| <b>Total Potable Demand</b>  | <b>178,933</b> | <b>179,297</b> | <b>198,618</b> | <b>217,761</b> | <b>237,624</b> | <b>256,711</b> | <b>273,867</b> |
| Sources: City of San José Municipal Water System 2005 UWMP<br>San José Water Company 2005 UWMP<br>Great Oaks Water Company 2005 UWMP   |                |                |                |                |                |                |                |

| <b>Table 3      Percent Indoor and Outdoor Use by Customer Category<sup>(1)</sup><br/>San José/Santa Clara Water Pollution Control Plant Master Plan<br/>City of San José</b> |                   |                    |
|---|-------------------|--------------------|
| <b>Customer Type</b>  | <b>Indoor (%)</b> | <b>Outdoor (%)</b> |
| Single Family Residential (SFR)   | 81.6              | 18.4               |
| Commercial  | 79.7              | 20.3               |
| Multi-Family Residential (MFR)  | 84.0              | 16.0               |
| Institutional/Governmental  | 54.9              | 45.1               |
| Irrigation  | 0                 | 100                |
| Industrial  | 78.0              | 22.0               |
| Other (Temp, Resale, Schools, etc.)   | 64.7              | 35.3               |
| Note:   |                   |                    |
| (1)      Source: San José Municipal Water System DSS Model (2004)   |                   |                    |

| <b>Table 4      Estimated Past, Current, and Projected WPCP Indoor Potable Water Demands by Customer Category (acre-feet/year)<br/>San José/Santa Clara Water Pollution Control Plant Master Plan<br/>City of San José</b> |                |                |                |                |                |                |                |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| <b>Customer Type</b>   | <b>2000</b>    | <b>2005</b>    | <b>2010</b>    | <b>2015</b>    | <b>2020</b>    | <b>2025</b>    | <b>2030</b>    |
| Single Family Residential (SFR)  | 65,893         | 66,944         | 73,202         | 79,567         | 86,366         | 92,924         | 98,558         |
| Commercial   | 48,731         | 47,598         | 52,682         | 57,967         | 63,479         | 68,663         | 73,883         |
| Multi-Family Residential (MFR)   | 14,789         | 15,025         | 16,429         | 17,858         | 19,384         | 20,856         | 22,120         |
| Institutional/<br>Governmental   | 5,073          | 5,127          | 5,549          | 5,991          | 6,470          | 6,913          | 7,355          |
| Industrial   | 3,178          | 2,962          | 3,647          | 4,271          | 4,873          | 5,572          | 5,982          |
| Other (Temp, Resale,<br>Schools, etc.)   | 1,114          | 1,057          | 1,199          | 1,339          | 1,479          | 1,623          | 1,749          |
| Irrigation   | 0              | 0              | 0              | 0              | 0              | 0              | 0              |
| <b>Total Potable Demand</b>  | <b>138,778</b> | <b>138,713</b> | <b>152,707</b> | <b>166,992</b> | <b>182,051</b> | <b>196,552</b> | <b>209,647</b> |
| Sources: City of San José Municipal Water System 2005 UWMP<br>San José Water Company 2005 UWMP<br>Great Oaks Water Company 2005 UWMP   |                |                |                |                |                |                |                |



**Figure 1** Percent Contribution of Customer Categories to Indoor Potable Demand Projection for 2010

*Note: Demands from the year 2010 were considered because it is the closest year to present and land use changes occurred in the GOWC demand projections in 2010.*

*Sources: City of San José Municipal Water System 2005 UWMP*

*San José Water Company 2005 UWMP*

*Great Oaks Water Company 2005 UWMP*

The number of accounts by customer category is sometimes used to determine potential water savings. Tables 5, 6 and 7 summarize the estimated number of accounts for SJMWS, SJWC and GOWC, respectively, while Table 8 includes the total estimated number of accounts for the WPCP service area.



| <b>Table 5 Estimated Number of SJMWS Accounts<br/>San José/Santa Clara Water Pollution Control Plant Master Plan<br/>City of San José</b>  |                                     |
|--|-------------------------------------|
| <b>Customer Type</b>   | <b>Estimated Number of Accounts</b> |
| SFR  | 12,340                              |
| MFR  | 2,690                               |
| Commercial   | 1,730                               |
| Industrial   | 3,110                               |
| Institutional/Governmental   | 660                                 |
| Irrigation   | 5,570                               |
| Other Temp   | 390                                 |
| <b>Total Potable</b>   | <b>26,490</b>                       |
| Source: SJMWS 2005 UWMP (Number of total accounts provided in UWMP. The assumption was made that the number of accounts for a customer category is proportional to the customer category's percent of overall demand.) |                                     |

| <b>Table 6 Number of SJWC Accounts<br/>San José/Santa Clara Water Pollution Control Plant Master Plan<br/>City of San José</b> |                           |
|--|---------------------------|
| <b>Customer Type</b>   | <b>Number of Accounts</b> |
| Residential  | 193,106                   |
| Business   | 19,626                    |
| Industrial   | 69                        |
| Public Authority   | 1,677                     |
| Resale   | 30                        |
| Other  | 266                       |
| <b>Total</b>   | <b>214,774</b>            |
| Source: SJWC 2005 UWMP   |                           |

| <b>Table 7 Estimated Number of GOWC Accounts<br/>San José/Santa Clara Water Pollution Control Plant Master Plan<br/>City of San José</b>  |                                     |
|---|-------------------------------------|
| <b>Customer Type</b>  | <b>Estimated Number of Accounts</b> |
| Commercial (including domestic)   | 19,220                              |
| Industrial  | 690                                 |
| Public Authorities  | 600                                 |
| Other (Schools)   | 490                                 |
| <b>Total</b>  | <b>21,000</b>                       |
| Source: GOWC 2005 UWMP (Number of total accounts provided in UWMP. The assumption was made that the number of accounts for a customer category is proportional to the customer category's percent of overall demand.) |                                     |

| <b>Table 8 Estimated Number of Accounts in WPCP Service Area<br/>San José/Santa Clara Water Pollution Control Plant Master Plan<br/>City of San José</b> |                                     |
|--|-------------------------------------|
| <b>Customer Type</b>   | <b>Estimated Number of Accounts</b> |
| SFR  | 170,900                             |
| Commercial   | 40,600                              |
| MFR  | 37,300                              |
| Irrigation   | 5,600                               |
| Industrial   | 3,900                               |
| Institutional/Governmental   | 2,900                               |
| Other (Temp, Resale, Schools, etc.)  | 1,200                               |
| <b>Total Potable</b>   | <b>262,400</b>                      |

### **3.0 CURRENT WATER CONSERVATION PROGRAM**

The three local water agencies (SJMWS, SJWC, and GOWC) each have contracts with the Santa Clara Valley Water District (SCVWD) for purchasing surface water and extracting groundwater. As such, SCVWD plays a major role in implementing water conservation programs for each of the three local water agencies. For example, SJMWS focuses primarily on indoor conservation within their service area, while SCVWD administers outdoor conservation activities.

At the time that the three local water agencies developed their 2005 urban water management plans (UWMPs), SJMWS and SJWC were signatories to the California Urban Water Conservation Council's (CUWCC) Memorandum of Understanding Regarding Urban

Water Conservation in California (MOU). Signatories to the MOU voluntarily implement best management practices (BMPs) (Table 9) with a specific coverage target goal as outlined in the MOU, unless the signatory meets exemption conditions.

| <b>Table 9 CUWCC BMPs<br/>San José/Santa Clara Water Pollution Control Plant Master Plan<br/>City of San José</b>             |   |
|---|---|
| <b>Previous BMP Number and Name</b>   | <b>Current BMP category</b>                             |
| 1. Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers                                 | Programmatic: Residential                               |
| 2. Residential Plumbing Retrofit  | Programmatic: Residential                               |
| 3. System Water Audits, Leak Detection and Repair   | Foundational: Utility Operations – Water Loss Control   |
| 4. Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections                                 | Foundational: Utility Operations – Metering             |
| 5. Large Landscape Conservation Programs and Incentives   | Programmatic: Landscape                                 |
| 6. High-Efficiency Clothes Washing Machine Financial Incentive Programs   | Programmatic: Residential                               |
| 7. Public Information Programs  | Foundational: Education – Public Information Programs   |
| 8. School Education Programs  | Foundational: Education – School Education Programs     |
| 9. Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts   | Programmatic: Commercial, Industrial, and Institutional |
| 10. Wholesale Agency Assistance Programs  | Foundational: Utility Operations – Operations           |
| 11. Retail Conservation Pricing   | Foundational: Utility Operations – Pricing              |
| 12. Conservation Coordinator  | Foundational: Utility Operations – Operations           |
| 13. Water Waste Prohibition   | Foundational: Utility Operations – Operations           |
| 14. Residential ULFT Replacement Programs   | Programmatic: Residential                               |
| Source: CUWCC, 2008. Memorandum of Understanding Regarding Urban Water Conservation in California. Amended December 10, 2008. |   |

The 2005 UWMP for SJMWS states that coverage requirements for BMPs 3, 4, 6-8, 11, 12, and 14 were met but that further work was needed to fully implement BMPs 1, 2, 5, 9, and 13.

SJWC's 2005 UWMP states that their agency has implemented all 14 of the CUWCC BMPs but that full implementation of retrofitting existing mixed use meters had not been achieved.

Since the development of the 2005 UWMPs, GOWC has become a signatory to the CUWCC MOU. Thus, SJMWS, SJWC, and GOWC are all CUWCC members and are all currently required to meet coverage requirements for the 14 CUWCC BMPs.

SCVWD, as a wholesaler member of the CUWCC, leads extensive water conservation programs throughout its service area and works with retail water agencies, including SJMWS, SJWC, and GOWC. SCVWD supports its retailers in meeting coverage requirements for all applicable BMPs.

### **3.1 Water Conservation in Other Countries**

The United States uses far more water per capita (about 160 gallons/capita/day [gpcd]) compared with many other countries. For example, Australians consume between 36 to 43 gpcd on average (with the range depending on the region) (Dickinson, 2008). As such, it is important to review and understand the practices implemented in other countries resulting in water use that is significantly lower than that of the U.S.

Table 10 includes some example water conservation programs and measures from water agencies in Australia, Spain, and Israel.

### **3.2 Potential Water Conservation Measures**

Though the City has an aggressive existing conservation program, additional strategies could be implemented to achieve further savings. Based on Table 4 and Figure 1, residential and commercial land uses are the primary customer categories for indoor water demands. Thus, water conservation programs could be prioritized to target residential and commercial users to attain the savings most effectively.

Table 11 includes a list of potential water conservation measures recommended for further evaluation.

## **4.0 ESTIMATED WATER SAVINGS**

Estimated water savings are dependent on the number of accounts for each customer category. Using data from UWMPs, the estimated number of accounts by sector is included in Table 12.

| <b>Table 10 Example Water Conservation Programs and Measures in Other Countries<br/>San José/Santa Clara Water Pollution Control Plant Master Plan<br/>City of San José</b>                 |  |  |   |                          |               |
|---|--|--|---|--------------------------|---------------|
| <b>Programs/Measures</b>  | <b>Sydney<br/>Water,<br/>Australia</b> | <b>Adelaide<br/>Water,<br/>Australia</b> | <b>Melbourne<br/>Water,<br/>Australia</b> | <b>Murcia,<br/>Spain</b> | <b>Israel</b> |
| Efficient clothes water rebates   | ✓                                      | ✓  |   |                          |               |
| Dual flush toilet rebates   | ✓                                      | ✓  |   |                          | ✓             |
| Rain barrels  | ✓                                      | ✓  | ✓   |                          |               |
| Dual plumbing for toilets   |  | ✓  | ✓   |                          |               |
| Commercial and industrial audits  | ✓                                      |  | ✓   |                          |               |
| Showerhead retrofits  |  |  | ✓   |                          |               |
| New development requirements for water efficient fixtures   |  |  | ✓   | ✓                        | ✓             |
| Tax for existing homes lacking water efficient fixtures   |  |  |   | ✓                        |               |
| New development requirements for water efficient fixtures (including notice of "responsible use" at every consumption point)  |  |  |   | ✓                        | ✓             |
| Specific requirements for new gardens   |  |  |   | ✓                        |               |
| Requirement for utilities to undertake leakage reduction programs   |  |  |   | ✓                        |               |
| Water loss management program   |  |  |   |                          | ✓             |
| Low flow household faucets  |  |  |   |                          | ✓             |
| Requirement for xeriscape and drip irrigation   |  |  |   |                          | ✓             |
| Conservation incentive pricing  |  |  |   |                          | ✓             |
| Source: Dickinson, Mary Ann, 2008. "International Water Conservation: Trends and Examples". Presented at Canadian Water and Wastewater Association International Conference, November 2008. |  |  |   |                          |               |

Table 13 includes a summary of estimated water savings for the 19 measures included in Table 11.

## **5.0 SUMMARY**

Potential to reduce flow to the WPCP exists through reducing indoor water use among SJMWS, SJWC, and GOWC customers. Further planning evaluations regarding the cost effectiveness and potential partnerships of implementing the measures included in Table 11 would benefit the WPCP's objective of reducing its flow to the San Francisco Bay.

It is important to note that water savings estimates presented in Table 13 mostly include those related to the residential population and commercial businesses served by the WPCP. However, it is recommended that targeted outreach occurs to retrofit water-using devices in facilities that hold many people, including airports, schools (including colleges), office buildings, hotels/motels, medical facilities, and sports arenas. The large transient population employed in San José (but residing elsewhere) is a user group that should be targeted water potable water use reductions.

| <b>Conservation Measure</b> |   | <b>Customer Category</b> | <b>Measure Description</b>   |
|-----------------------------|---|--------------------------|--|
| 1                           | High Efficiency Toilet Rebates  | CII (GOWC only)          | Offer HET rebates to up to 10 percent of existing accounts over 10 years.  |
| 2                           | New Building Indoor Water Efficiency  | SFR, MFR, CII            | Require developers to install the following devices where applicable: (1) HET; (2) High Efficiency Clothes Washer; (3) Energy Star Dishwasher; (4) High Efficiency Faucets and Showerheads; (5) Efficient Hot Water On-Demand System; (6) Multi-family submetering; (7) 0.5 gal/flush or waterless urinals in new commercial buildings. These requirements are similar but slightly more stringent than both EPA's Water Sense for New Homes and EBMUD's current new connection regulations adopted in 2007. |
| 3                           | Require high-efficiency toilets (HETs) (i.e., 1.28 gal per flush) to be installed at the time of sale of existing buildings | SFR, MFR (SJWC only)     | Retrofit on Resale (ROR) ordinance. Work with the real estate industry to require a certificate of compliance to be submitted to the water utility verifying that a plumber has inspected the SFR or MFR property and efficient fixtures were either present or installed at the time of sale, before close of escrow.   |
| 4                           | Residential Dedicated Irrigation Meters   | SFR, MFR                 | Install submeters for indoor/outdoor use to collect data needed for targeting high water use areas. Target high water use existing single-family residential customers for indoor and outdoor water surveys and incorporate hourly consumption data from Automatic Metering Reading (AMR) system to indicate where and how customers' water is used thereby facilitating water use reduction. This would require Agency to install an AMR system.  |
| 5                           | Garbage Disposal for SFR  | SFR                      | Provide incentive to encourage set number of single family homeowners per year with garbage disposal removal.  |

| <b>Conservation Measure</b> |  | <b>Customer Category</b> | <b>Measure Description</b>   |
|-----------------------------|--|--------------------------|--|
| 6                           | Graywater for New SFR  | SFR                      | Provide an incentive to assist builders of set number of single family homes per year with plumbing for future gray water system installation.   |
| 7                           | Residential Hot Water Distribution   | SFR                      | Provide an incentive to homeowners to replace hot water tanks with on-demand hot water distribution system. SCVWD conducted a pilot study for a similar program, as summarized in <i>Hot Water Recirculation Pilot Study</i> , March 2002.   |
| 8                           | Incentives or requirements for retrofitting sub-metering                       | MFR                      | Rescind any regulations that prohibit sub-metering of multi-family buildings and encourage sub-metering through water audits and direct mail promotions, and/or incentives to building owners.   |
| 9                           | Offer incentives for replacement of clothes washers in coin-operated laundries | CII                      | Offer incentives to apartment and coin-operated laundry managers to retrofit or use Tier 3 high efficiency clothes washers. The rebate would either go to the manager or the washing machine leasing company depending on contractual agreements and ownership, as appropriate. Could be expanded with current PG&E HEW program. |
| 10                          | Hotel retrofit (with financial assistance)                                     | CII                      | Offer participating hotels a free water audit and rebates/incentives for identified water savings. Provide a rebate schedule for certain efficient equipment such as air-cooled ice machines for hotels that participate in an audit. Potentially partner with PG&E to build on current rebate program.                          |
| 11                          | Award program for water savings by businesses                                  | CII                      | Sponsor an annual awards program for businesses that significantly reduce water use. Provide a plaque, presented at a lunch with the mayor.  |
| 12                          | Require 0.5 gal/flush urinals in new buildings                                 | CII                      | Require new buildings be fitted with 0.5 gal/flush urinals.  |



| <b>Conservation Measure</b> |   | <b>Customer Category</b> | <b>Measure Description</b>   |
|-----------------------------|---|--------------------------|--|
| 13                          | Rebate 0.5 gal/flush urinal replacement               |                          | Provide rebates for replacement of 10 percent of existing CII urinals with 0.5 gal/flush models over 10 years. Evaluated in 2005 for SFPUC Regional Water Supply Option Number 4 (RWSO4) study.  |
| 14                          | Rebate waterless urinal replacement                   |                          | Provide rebates for replacement of 10 percent of existing CII urinals with water models over 10 years. Evaluated in 2005 for SFPUC Regional Water Supply Option Number 4 (RWSO4) study.  |
| 15                          | Water Utility / City Department water reduction goals |                          | Provide water use reduction goals for metered City and County accounts and offer audits and employee education.  |
| 16                          | Require Plan Review for New CII                       |                          | Require plan reviews for water conservation for all new business customers. Agency will encourage installation of the most water efficient equipment where feasible.   |
| 17                          | Pre-Rinse Spray Nozzles for CII                       |                          | Provide incentive for replacing inefficient restaurant spray nozzles with 1.6 gpm pre-rinse spray nozzles.   |
| 18                          | Steam Sterilizer Retrofits                            |                          | Provide incentive for hospitals, pharmaceutical manufacturers, and research institutions to replace high water use steam sterilizers with jacket and chamber condensate cooling modification (reducing condensate by about 90 percent) or ejector water modification (reducing ejector water consumption by about 75 percent). |
| 19                          | Commercial Ice Makers                                 |                          | Provide incentive for replacing commercial ice makers with water-cooled equipment with ice makers with air cooled equipment. Potentially partner with PG&E to build on current rebate program.   |

| <b>Table 12      Estimated Number of Accounts by Customer Category<br/>San José/Santa Clara Water Pollution Control Plant Master Plan<br/>City of San José</b> |                |
|--|----------------|
| SFR  | 170,900        |
| Commercial   | 40,600         |
| MFR  | 37,300         |
| Irrigation   | 5,600          |
| Industrial   | 3,900          |
| Institutional/Governmental   | 2,900          |
| Other (Temp, Resale, Schools, etc.)  | 1,200          |
| <b>Total Potable</b>   | <b>262,400</b> |
| Sources: City of San José Municipal Water System 2005 UWMP<br>San José Water Company 2005 UWMP<br>Great Oaks Water Company 2005 UWMP                           |                |

| <b>Table 13 Estimated Water Savings for Measures Recommended for Further Evaluation<br/>San José/Santa Clara Water Pollution Control Plant Master Plan<br/>City of San José</b> |   |                          |   |   |
|---|---|--------------------------|---|---|
| <b>Conservation Measure</b>   |   | <b>Customer Category</b> | <b>Estimated Savings (gal/yr) in 2040</b> | <b>Savings Assumptions</b>  |
| 1.  | High Efficiency Toilet Rebates  | CII (GOWC only)          | 389,349,000                               | Assumes: (1) 10 toilets per CII facility are replaced (2) 3.5 gpf toilets are replaced with 1.28 gpf HETs (3) a 25 year useful life (CUWCC Cost and Savings Study) (4) target 30% of CII accounts per year over 30 year duration (i.e., 1% per year) (5) only targets GOWC, since SJMWS and SJWC have HET programs for residential and CII accounts   |
| 2.  | New Building Indoor Water Efficiency  | SFR, MFR, CII            | 1,600,972,000                             | Assumes: (1) Indoor use is 69% of total residential use (2) Savings of 20% with HETs, 15% for showerheads, 15% for faucets, 33% for dishwashers, 51% for clothes washers. (3) new building growth is proportional to population increase of 37.2% between 2010 and 2030 (i.e., 1.2%/year for 30 years), per San José/Santa Clara WPCP Master Plan Task No. 3 Project Memo No. 6 (4) average useful life is 25 years (5) split of SFR to MFR accounts is consistent between SJMWS and SJWC |
| 3.  | Require high-efficiency toilets (HETs) (i.e., 1.28 gal per flush) to be installed at the time of sale of existing buildings | SFR, MFR (SJWC only)     | 678,314,000                               | Assumes: (1) two toilets per SFR and MFR account is replaced for 50% of the SJWC accounts (i.e., 1.7% per year, homes that are sold) (2) 3.5 gpf toilets are replaced with 1.28 gpf HETs (3) a 25 year useful life (4) only targets SJWC, since SJMWS is already considering this program and GOWC's domestic accounts are clustered with commercial (5) 5.1 flushes/capita/day   |

| <b>Table 13 Estimated Water Savings for Measures Recommended for Further Evaluation<br/>San José/Santa Clara Water Pollution Control Plant Master Plan<br/>City of San José</b> |  |                          |   |  |
|---|--|--------------------------|---|--|
| <b>Conservation Measure</b>   |  | <b>Customer Category</b> | <b>Estimated Savings (gal/yr) in 2040</b> | <b>Savings Assumptions</b>   |
| 4.  | Residential Dedicated Irrigation Meters  | SFR, MFR                 | 60,866,000                                | Assumes: (1) 5% savings on indoor uses (2) 5% of top water users are targeted over 30 years (i.e., 0.16% per year)   |
| 5.  | Garbage Disposal for SFR   | SFR                      | 11,214,000                                | Assumes: (1) 0.96 gal/capita/day savings by removing garbage disposal (per San José/Santa Clara WPCP Master Plan Task No. 4 Project Memo No. 10b) (2) an average of 3.1 people per account (per Census 2005-2007 American Community Survey 3-Year Estimates for the City of San José) (3) 5% of accounts affected over 30 years (i.e., 0.16% per year) |
| 6.  | Graywater for New SFR  | SFR                      | Not quantified                            |  |
| 7.  | Residential Hot Water Distribution   | SFR                      | 155,946,000                               | Assumes: (1) savings of 10 gal/day/account (2) targets 30% of SFR customers over 30 years (i.e., 1% per year) (3) a 25 year useful life  |
| 8.  | Incentives or requirements for retrofitting sub-metering                       | MFR                      | 197,566,000                               | Assumes: (1) savings of 10% per MRF account (~17,000 gal/year/account) (2) targets 30% of MFR customers over 30 years (i.e., 1% per year) (3) a 50 year useful life  |
| 9.  | Offer incentives for replacement of clothes washers in coin-operated laundries | CII                      | 4,826,000                                 | Assumes: (1) 35% savings of laundry water use for MFR accounts (2) targets 15% of MFR accounts over 30 years (i.e., 0.5% per year) (3) a 15 year useful life   |
| 10.   | Hotel retrofit (with financial assistance)                                     | CII                      | Not quantified                            | Potential to save 20% on all hotel/motel end uses  |

| <b>Table 13 Estimated Water Savings for Measures Recommended for Further Evaluation<br/>                     San José/Santa Clara Water Pollution Control Plant Master Plan<br/>                     City of San José</b> |  |                          |   |   |
|---|--|--------------------------|---|---|
| <b>Conservation Measure</b>   |  | <b>Customer Category</b> | <b>Estimated Savings (gal/yr) in 2040</b> | <b>Savings Assumptions</b>  |
| 11.   | Award program for water savings by businesses  | CII                      | 82,229,000                                | Assumes: (1) Target 20 customers per year (2) 25% water savings from estimated average CII account use of 530,510 gal/account/year (3) program duration of 30 years   |
| 12.   | Require 0.5 gal/flush urinals in new buildings | CII                      | 222,285,000                               | Assumes: (1) new building growth is proportional to population increase of 37.2% between 2010 and 2030 (i.e., 1.2%/year for 30 years) (2) 10 urinals per CII account (3) urinals are flushed 10 times per day (4) replacing 1.0 gpf urinals with 0.5 gpf urinals (5) a 25 year useful life (6) program duration of 30 years |
| 13.   | Rebate 0.5 gal/flush urinal replacement        | CII                      | 185,238,000                               | Assumes: (1) 30% of CII accounts are targeted over 30 years (i.e., 1% per year) (2) 10 urinals per CII account (3) replacing 1.0 gpf urinals with 0.5 gpf urinals (4) a 25 year useful life (5) urinals are flushed 10 times per day  |
| 14.   | Rebate waterless urinal replacement            | CII                      | Not quantified                            | Savings would be up to twice that of rebating 0.5 gal/flush urinals. This measure is not included in the savings estimates because of its redundancy with the 0.5 gal/flush rebate measure.   |

| <b>Table 13 Estimated Water Savings for Measures Recommended for Further Evaluation<br/>San José/Santa Clara Water Pollution Control Plant Master Plan<br/>City of San José</b> |   |                          |   |  |
|---|---|--------------------------|---|--|
| <b>Conservation Measure</b>   |   | <b>Customer Category</b> | <b>Estimated Savings (gal/yr) in 2040</b> | <b>Savings Assumptions</b>   |
| 15.   | Water Utility / City Department water reduction goals | CII                      | 140,890,000                               | Assumes: (1) 60% of Institutional/Governmental accounts are targeted over 30 years (i.e., 2% per year) (2) 10% savings on indoor uses  |
| 16.   | Require Plan Review for New CII                       | CII                      | Not quantified                            |  |
| 17.   | Pre-Rinse Spray Nozzles for CII                       | CII                      | 111,143,000                               | Assumes: (1) 30% of CII accounts are targeted for pre-rinse spray nozzle retrofits over 30 years (i.e., 1% per year) (2) water savings of 150 gpd/site (3) 5 year measure life   |
| 18.   | Steam Sterilizer Retrofits                            | CII                      | 69,053,000                                | Assumes: (1) 5 steam sterilizers are replaced each year (2) program duration is 30 years (3) retrofit saves 445,500 gal/year (based on median value of data presented in CUWCC PBMP Year 1 Report) (4) useful life is 20 years             |
| 19.   | Commercial Ice Makers                                 | CII                      | 139,500,000                               | Assumes: (1) 5 commercial ice makers are replaced each year (2) program duration is 30 years (3) retrofit saves 900,000 gal/year/unit (based on calculations from data presented in CUWCC PBMP Year 3.5 Report) (4) useful life is 8 years |
| TOTAL ESTIMATED SAVINGS (gal/yr)  |   |                          | 4,049,391,000                             |  |
| TOTAL ESTIMATED SAVINGS (mgd)   |   |                          | 11.1                                      |  |
| TOTAL ESTIMATED SAVINGS (AFY)   |   |                          | 12,427                                    |  |



1. California Urban Water Conservation Council, 2008. "Memorandum of Understanding Regarding Urban Water Conservation in California." Amended December 10, 2008.
2. California Urban Water Conservation Council, 2008. "A Report on Potential Best Management Practices – Annual Report Year 3.5." June 2008.
3. California Urban Water Conservation Council, 2007. "A Report on Potential Best Management Practices – Annual Report Year 3." January 2007.
4. California Urban Water Conservation Council, 2006. "A Report on Potential Best Management Practices – Annual Report Year 2." January 2006.
5. California Urban Water Conservation Council, 2004. "A Report on Potential Best Management Practices – Annual Report Year 1." August 2004.
6. California Urban Water Conservation Council, 2003. "BMP Costs & Savings Study"
7. City of San José, 2005. "2005 Urban Water Management Plan for City of San José Municipal Water System." Environmental Services Department. December 2005.
8. Dickinson, Mary Ann, 2008. "International Water Conservation: Trends and Examples." Presented at Canadian Water and Wastewater Association International Conference, November 2008.
9. Santa Clara Valley Water District, 2002. "Hot Water Recirculation Pilot Study."
10. URS Corporation and Maddaus Water Management, 2004. "SFPUC Wholesale Customer Water Conservation Potential."
11. Vickers, Amy, 2001. Handbook of Water Use and Conservation. WaterPlow Press.