City of East Palo Alto

2010 Urban Water Management Plan

Prepared by

Integrated Resource Management, Inc.

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Table of Contents

Table of Contents i
List of Tables iv
List of Figures iv
List of Abbreviations vi

EXECUTIVE SUMMARY 9

1.0 INTRODUCTION 11

1.1 Urban Water Management Act 11
1.1.1 Changes in the Act Since 2005 12
1.2 Regional Coordination 13
1.3 Public Participation 14
1.4 Adoption Of 2010 Urban Water Management Plan 14

2.0 SYSTEM DESCRIPTION 15

2.1 City of East Palo Alto 15
2.1.1 History 15
2.1.2 City of East Palo Alto Water System / American Water Enterprise 16
2.1.3 Location 16
2.1.4 Climate 17
2.1.5 System Description 17
2.1.6 City of East Palo Alto Population 21
2.1.7 Socioeconomic Conditions 21
2.1.8 Land Use and Development 22

3.0 SYSTEM DEMANDS 23

3.1 Past, Current and Projected Water Deliveries by Sector 23
3.1.1 Low Income Water Deliveries 24
3.2 Sales to Other Agencies 24
3.3 Other Water Uses and Losses 25
3.4 Total Water Usage 25
3.5 Water Conservation Bill of 2009 26
3.5.1 Population Estimates 27
3.5.2 Water Supplies 27
3.5.3 Base Daily Per Capita Water use 27
3.5.4 Water Use Target 28
3.5.5 Water Use Reduction Plan 29

4.0 SYSTEM SUPPLIES 30

4.1 San Francisco Public Utilities Commission 30
4.1.1 San Francisco Public Utilities Commission 30
4.1.2 SFPUC Water Supply Improvement Program 31
4.1.3 2009 Water Supply Agreement 32
4.1.4 City of East Palo Alto Individual Supply Guarantees 33
4.1.5 Bay Area Water Supply and Conservation Agency 34
4.2 Local Groundwater 34
4.2.1 Santa Clara Valley Basin 35
Santa Clara Watershed 37
4.2.2 Santa Clara Valley Groundwater Basin, San Mateo Subbasin 38
4.2.3 Baylands 39
4.2.4 San Francisquito Watershed 39

4.2.5 Gloria Bay Well *43*
4.3 Local Surface Water 44
4.4 Recycled Water Opportunities 45
4.4.1 Wastewater Resources *47*
East Palo Alto Sanitation District 47
Palo Alto Sanitary District Recycled Water Project 47
West Bay Sanitation District 47
The South Bayside System Authority Recycled Water Project 48
4.4.2 Future Recycled Water Uses *50*
Satellite Wastewater Treatment Plants 51
4.4.3 Encouraging Recycled Water Use *51*
4.5 Interconnection(s) 52
4.6 Transfer or Exchange Opportunities 53
4.7 Desalination Opportunities 53

5.0 WATER SUPPLY RELIABILITY 55

5.1 SFPUC 2018 Interim Supply Limitation 55
5.1.1 Interim Supply Allocations *55*
5.1.2 Environmental Enhancement Surcharge *55*
5.2 Tier 1 and Tier 2 Water Allocations 56
5.2.1 Tier One Drought Allocations *56*
5.2.2 Tier Two Drought Allocations *56*
5.3 Reliability of the Regional Water System 57
5.3.1 Water Supply – All Year Types *57*
5.3.2 Water Supply – Dry-Year Types *58*
5.3.3 Projected SFPUC System Supply Reliability *58*
5.3.4 Impact of Recent SFPUC Actions on Dry Year Reliability of SFPUC Supplies *58*
Reduction in Demand 58
Increase in Rationing 59
Supplemental Supply 59
5.3.5 Meeting the Level of Service Goal for Delivery Reliability *60*
5.4 BAWSCA Long Term Reliable Water Supply Strategy 60
5.5 East Palo Alto Supply Reliability 60
5.6 Supply and Demand Comparison 61
5.7 Threats to Water Supply 63
5.7.1 Drought *64*
5.7.2 Legal *64*
Allocation 64
Adjudication 64
5.7.3 Water Quality *64*
SFPUC Water Quality 64
Groundwater Quality 65
5.7.4 Environmental *65*
Endangered Species 65
Hetch Hetchy Restoration 65
SFPUC Fishery Flows 66

6.0 DEMAND MANAGEMENT 67

6.1 Regional Water Conservation Coordination 67
6.2 California Urban Water Conservation Council 67
6.3 BAWSCA Water Conservation Implementation Plan 68
6.4 Legal Authority to Implement Demand Management Measures 68
6.5 City of East Palo Alto Water Conservation Measures 68
6.5.1 DMM A - Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers *69*
6.5.2 DMM B - Residential Plumbing Retrofit *69*

6.5.3 DMM C - System Water Audits, Leak Detection and Repair *70*
6.5.4 DMM D - Metering With Commodity Rates for All New Connections and Retrofit of Existing Connections *71*
6.5.5 DMM E - Large Landscape Conservation Programs and Incentives *71*
6.5.6 DMM F - High-Efficiency Washing Machine Rebate Programs *72*
6.5.7 DMM G - Public Information Programs *73*
6.5.8 DMM H - School Education Programs *74*
6.5.9 DMM I - Conservation Programs for Commercial, Industrial and Institutional Accounts *74*
6.5.10 DMM J - Wholesale Agency Assistance Programs *75*
6.5.11 DMM K - Conservation Pricing *75*
6.5.12 DMM L - Conservation Coordinator *75*
6.5.13 DMM M - Water Waste Prohibition *75*
6.5.14 DMM N - Residential ULFT Replacement Programs *76*
6.5.15 Non implemented DMM's *77*
6.6 Evaluation of DMM Measures 77

7.0 WATER SHORTAGE CONTINGENCY PLAN 78

7.1 Stages of Action 78
7.2 Preparation for Catastrophic Water Supply Interruption 78
7.2.1 SFPUC Emergency Preparedness Plans *79*
7.2.2 SFPUC Emergency Drinking Water Planning *79*
7.2.3 SFPUC Power Outage Preparedness and Response *79*
7.2.4 SFPUC Capital Projects for Seismic Reliability and Overall System Reliability *80*
7.2.5 San Mateo Operational Area Emergency Operations Plan *80*
7.2.6 Risk Based Vulnerability Assessment *81*
7.3 Prohibitions, Penalties and Consumption Reduction Methods 81
7.4 Revenue and Expenditure Impacts 83
7.5 Use Monitoring Procedure 83

8.0 CLIMATE CHANGE 84

RESOURCES 86

List of Tables

Table 1-1 Coordination with Appropriate Agencies and Organizations....13
Table 2-1 Climate....17
Table 2-2 Population – Current and Projected....21
Table 3-1 Past and Current Water Deliveries....23
Table 3-2 Projected Water Deliveries....23
Table 3-3 Projected Water Deliveries (cont.)....23
Table 3-4 Projected Water Deliveries (cont.)....24
Table 3-5 Low Income Water Demands....24
Table 3-6 Sales to Other Agencies....25
Table 3-7 Unaccounted-For Water System Loss....25
Table 3-8 Total Water Use....25
Table 3-9 Base Period Ranges....27
Table 3-10 10 Year Base Daily Per Capita Water Use....28
Table 3-11 5 Year Base Daily Per Capita Water Use....28
Table 4-1 Current and Planned Water Supplies....30
Table 4-2 East Palo Alto Historical Purchases....33
Table 4-3 Groundwater Production....43
Table 4-4 Potential Groundwater Pumping....44
Table 4-5 Wastewater Collection and Treatment....50
Table 4-6 Potential Future Recycled Water Uses....50
Table 4-7 Methods to Encourage Recycled Water Use....52
Table 4-9 Transfer and Exchange Opportunities....53
Table 5-1 Water Deliveries in SFPUC Service Area....56
Table 5-2 Past Water Deliveries in SFPUC Service Area....59
Table 5-3 SFPUC Supply Reliability....61
Table 5-4 Supply and Demand Comparison Normal Water Year....61
Table 5-5 Supply and Demand Comparison During Single Dry Years....62
Table 5-6 Supply and Demand Comparison During Multiple Dry Years (First Year)....62
Table 5-7 Supply and Demand Comparison During Multiple Dry Years (Second Year)....62
Table 5-8 Supply and Demand Comparison During Multiple Dry Years (Third Year)....63
Table 5-9 Factors Resulting in Inconsistency of Supply....63
Table 6-1 Minimum Charges....75
Table 7-1 Mandatory Prohibitions....82
Table 7-2 Penalties and Charges for Excessive Use....82

List of Figures

Figure 2-1 East Palo Alto Historical Boundaries....16
Figure 2-2 Location of East Palo Alto....17
Figure 2-3 City of East Palo Alto Distribution System – Map....19
Figure 2-4 City of East Palo Alto Distribution System – Graph....20
Figure 4-1 San Francisco Public Utilities Commission Regional Water System....31
Figure 4-2 SFPUC Water System Improvement Program....32
Figure 4-3 San Francisco Bay Hydrologic Region Map....36
Figure 4-4 Santa Clara Watershed....37
Figure 4-5 San Francisquito Creek Watershed and Alluvial Fan....40
Figure 4-6 San Francisquito Creek Study Area....41
Figure 4-7 San Francisquito Basin Hydrological Cross Section....42
Figure 4-8 Well Location....44
Figure 4-9 City of East Palo Alto Wastewater Districts Boundaries....46
Figure 4-10 EPASD and SBSA Recycled Water Lines....49
Figure 6-1 Water Consumption per Connection (AFY)....77

APPENDICES

APPENDIX A Urban Water Management Planning Act and SBX7-7
APPENDIX B Resolution to Adopt the Urban Water Management Plan
APPENDIX C Public Notices
APPENDIX D City of East Palo Alto Municipal Code Chapters 17.04 and 13.24.330-450 Water Conservation Measures
APPENDIX E City of East Palo Alto Municipal Code Chapter 13.24 Water System Conservation Plan (Water Shortage Plan)
APPENDIX F Water Shortage Allocation Plan
APPENDIX G Letter from SFPUC to BAWSCA Regarding Regional Water System Supply Reliability, March 31, 2011
APPENDIX H Tier 2 Drought Implementation Plan (DRIP 2)
APPENDIX I DWR Checklist
APPENDIX J Resolution to Adopt the Amended Urban Water Management Plan

List of Abbreviations

ABAG	Association of Bay Area Governments
AF	Acre-Foot or -Feet (i.e., 1 acre x 1 foot deep)
AFY	Acre-Feet per Year
AWWARF	American Water Works Association Research Foundation
BAWSCA	Bay Area Water Supply and Conservation Agency
BDPL	Bay Division Pipeline (SFPUC)
BMP	Best Management Practice
CEQA	California Environmental Quality Act
CM	Conservation Measure (used by DSS model)
CUWCC	California Urban Water Conservation Council
DMM	Demand Management Measure (used by CUWCC)
DSS	Decision Support System
DWR	California Department of Water Resources
EOP	San Mateo Operational Area Emergency Operations Plan
EPA	City of East Palo Alto
EPASD	East Palo Alto Sanitary District
EOC	San Mateo County Emergency Operations Center
ERRP	Emergency Response and Recovery Plan
ET	Evapotranspiration
°F	Degrees Fahrenheit
FY	Fiscal Year
GPCD	Gallons Per Capita Per Day
gpm	Gallons Per Minute
ISA	Interim Supply Allocation
ISG	Individual Supply Guarantee
ISL	Interim Supply Limitation
IWSAP	Interim Water Shortage Allocation Plan
MBR	Membrane Biological Reactors
mgd	Million Gallons Per Day
mg/L	Milligrams Per Liter
MLSS	Mixed Liquor Suspended Solids
MOU	Memorandum of Understanding
PEIR	Program Environmental Impact Report
psi	Pounds Per Square Inch
RAW-W	Risk Assessment Methodology for Drinking Water Systems
RBD	Ravenswood Business Development
RWQCP	Regional Water Quality Control Plant
RWS	San Francisco Regional Water System
SB	Senate Bill
SBSA	South Bayside System Authority
SBSARTP	Regional Treatment Plant
SCVWD	Santa Clara Valley Water District

SFPUC	San Francisco Public Utilities Commission
SOP	Standard Operating Procedures
SMCL	Secondary Maximum Contaminate Level
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
WSA	Water Supply Agreement, July 2009
WBSD	West Bay Sanitary District
WCIP	Water Conservation Implementation Plan
WSAP	Water Shortage Allocation Plan
WSIP	Water System Improvement Program

Contact Sheet

Date plan submitted to the Department of Water Resources: **July 21, 2011**

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Executive Summary

The City of East Palo Alto 2010 Urban Water Management Plan has been prepared under contract by Integrated Resource Management, Inc in response to the California Urban Water Management Planning Act. The Act requires all publicly and privately owned urban water suppliers that either have 3,000 or more customers or provide over 3,000 acre-feet (acre-foot = amount of water required to cover one acre one foot deep) of water annually to prepare an updated Urban Water Management Plan (UWMP) by the end of the calendar years that end in five or zero. The Act requires that UWMPs describe the suppliers' service area, water use by customer class, water supply and demand, water service reliability and shortage response options, water transfer and exchange opportunities, water recycling efforts, and conservation measures. A municipal urban water supplier's UWMP is to be adopted by City Council resolution and submitted to the California Department of Water Resources (DWR) within thirty (30) days of adoption. A UWMP can be a condition of eligibility for state grant funds and other drought assistance allocations. The city invited the involvement of local agencies, community organizations and the general public in the development of this plan through mailed notifications, newspaper advertisements, draft availability and a public hearing which was held on June 21, 2011, and was officially adopted on June 21, 2011.

The service area of the City of East Palo Alto's municipal water system covers roughly 2.5 square miles, incorporating most of the city and portions of the City of Menlo Park east of Highway 101. Small sections of the city outside the municipal water system are served by two private mutual water companies: the Palo Alto Park Mutual Water Company and the O'Connor Tract Water Cooperative. Many factors influence the amount of water used by residents of an urban society, including the city's location and water utility, as well as its history, population, socioeconomic conditions, land use, climate and watershed features at both the local and regional levels.

The City of East Palo Alto's managed water service area receives all of its potable water from the San Francisco Public Utilities Commission (SFPUC). However, some groundwater is utilized for street cleaning and construction dust-control. Other water sources, particularly local groundwater, recycled water and desalinated San Francisco Bay water, have the potential to be used in the future to increase the availability of potable water supplies in the future.

The City of East Palo Alto projects a shortfall between its future water supply portfolio and demand predictions for the next 25 years without the acquisition of new supply sources, as the following normal year supply-demand comparison chart demonstrates:

Current Supplies / *Potential Additional Supplies (AFY)*	**2015**	**2020**	**2025**	**2030**	**2035**
Supply totals	2,199	2,199	2,199	2,199	2,199
Demand totals	2,658	2,780	2,960	3,161	3,400
Surplus or (Shortfall)	(459)	(581)	(761)	(962)	(1,201)
Potential New Supply Sources					
Gloria Bay Well	*420*	*420*	*420*	*420*	*420*
New Groundwater Wells	*1,210*	*1,210*	*1,210*	*1,210*	*1,210*
Recycled Water		*125*	*150*	*150*	*150*
Transfers/Exchanges					
TOTAL Potential Additional Supplies	***1,630***	***1,755***	***1,780***	***1,780***	***1,780***
Surplus or (Shortfall)	***1,171***	***1,174***	***1,019***	***818***	***579***

**AFY = Acre-Feet per Year (Acre-Foot = amount of water required to cover one acre one foot deep)*

The City has developed its retail water use target as required by the SBX7-7. The City's per capita water use is currently 79 gallons per day based on the water usage and population estimates over the last 10 years. The report uses Method 3 for determining the water use target for the City. Based on Method 3, the City is required to reduce its water use to 124 gallons per capita per day. The City already meets this requirement and is not required do implement a water use reduction plan. The City should continually monitor the per capita use and maintain the 79 gallons per day use as this will be reviewed in the 2015 Urban Water Management Plan.

The City of East Palo Alto implements several of the required demand management measures (conservation measures) through its association with BAWSCA. The City is has one of the lowest per capita water use among BAWSCA member agencies. The City of East Palo Alto is committed to working with BAWSCA and other local agencies in implementing water conservation programs at the local and regional level. Doing so will make it possible for the city to manage demand of water, especially during times of water scarcity.

Water supply reliability is a measure of the City of East Palo Alto's ability to provide an adequate water supply during times of shortage. Reliability focuses mostly on drought, though it must take into consideration other potential threats to the water supply. To counter these threats, the city has planned a number of projects and programs which will address the most serious threats to maintaining a consistent supply.

The City of East Palo Alto's water shortage contingency plan is housed within its Municipal Code (Chapter 13.24, Article VI, entitled "Conservation Plan"—see Appendix E). The plan outlines three phases of action due to shortages of 20, 40 and 60 percent of the city's water supply. Chapter 7.0 outlines this plan and its integration with the SFPUC's Interim Water Shortage Allocation Plan.

Currently, the use of recycled water within the City of East Palo Alto is very limited. All wastewater from the City is conveyed outside the city limits and treated by the wastewater treatment facilities serving the Cities of Palo Alto and Redwood City. These two facilities receive all of the wastewater produced by East Palo Alto. The facilities provide full treatment capacity to prepare recycled water, which is then reused in Redwood City and in northern Santa Clara County, but there is no infrastructure in place to transfer recycled wastewater back into East Palo Alto.

The most significant risk reduction measure identified was redundancy design in the system through construction of interconnections with Palo Alto Park Mutual Water Company and the O'Connor Tract Water Cooperative. Another level of reliability can be achieved by including and/or increasing redundancy in the system which will assist the City of East Palo Alto's quick recovery from the loss of a single asset by redirecting distribution lines.

Therefore, for the utility to meet the demands for future growth, East Palo Alto must look for new water sources, specifically groundwater, to supplement its SFPUC deliveries. Additionally, because East Palo Alto is 100% dependent on the SFPUC system and having no water storage facilities, they are prone to being immediately without water during an emergency with the SFPUC system. The new groundwater source would be equipped with backup generators to supplement SFPUC deliveries and be utilized for emergency situations.

1.0 Introduction

The City of East Palo Alto (East Palo Alto) is pleased to present to the general public its 2010 Urban Water Management Plan (UWMP). The East Palo Alto water system is a public-private partnership between the City of East Palo Alto and American Water Enterprise. American Water Enterprise has been contracted to run the city water system and help plan for the East Palo Alto's future water resource development. This UWMP is part of that overall planning initiative, and was developed jointly by both East Palo Alto and American Water Enterprise and prepared by Integrated Resource Management, Inc. (IRM).

An UWMP, as defined by the California Legislature in the California Urban Water Management Planning Act of 1983, informs residents, neighboring agencies and local community groups on how an urban water agency will provide a safe, secure water supply in the short and long term. The following plan attempts to look 25 years into the future to project what East Palo Alto's water supply will look like through 2035. Included in that long-term projection are predictions concerning future water demand, contingency planning in case of short- or long-term droughts and other catastrophes, and potential strategies to enhance and diversify East Palo Alto's water portfolio with recycled water, desalination and water marketing options.

Overall, this plan was developed to be used as a tool to recognize, protect and enhance the value of East Palo Alto's water resources. The City of East Palo Alto 2010 Urban Water Management Plan is a living document and will be regularly and routinely updated to reflect the city's current water situation.

Currently, the San Francisco Public Utilities Commission (SFPUC) is the city's sole domestic water supply source for the City managed water system. However, East Palo Alto is in the process of augmenting this source by rehabilitating the Gloria Bay groundwater well and studying the potential for development of additional groundwater supplies through installation of new well(s). The city may also create new storage capacity by installing reservoir(s) with a combined capacity of 4.2 million gallons which will increase the city's water supply reliability. Finally, the city has implemented various water conservation measures such as temporary reductions in commercial and residential use and/or rate increases during critical shortage periods, while encouraging voluntary reduction in water use during times of steady supply

1.1 Urban Water Management Act

The City of East Palo Alto's 2010 Urban Water Management Plan has been prepared under contract by Integrated Resource Management, Inc, in response to the California Urban Water Management Planning Act (Water Code Division 6, Part 2.6, Sections 10610-10656—included as Appendix A). The Act requires all publicly and privately owned urban water suppliers that either have 3,000 or more customers or provide over 3,000 acre-feet (acre-foot = amount of water required to cover one acre one foot deep) of water annually to prepare an updated UWMP by the end of the calendar years that end in five or zero. A water supplier can also periodically review and adopt changes or amendments to its UWMP in intervening years. SBX7-7 grants an extension for submission of UWMPs due in 2010 to July 1, 2011.

The Act requires that UWMPs describe the suppliers' service area, water use by customer class, water supply and demand, water service reliability and shortage response options, water transfer and exchange opportunities, water recycling efforts and conservation measures. The state also expects the 2010 plans to reflect changes to the UWMP Act since the last round of UWMP updates in 2005 (see below).

Overall, the UWMP requirements for 2010 reflect a heightened interest in water conservation. Additionally, recent litigation has added significant weight to documents like UWMPs which provide legal and authoritative assessments of water supply and environmental impacts. Urban planning managers are expected to use UWMPs to determine future development goals as well as vulnerabilities in security infrastructure.

This 2010 UWMP was prepared in compliance with the requirements of current Urban Water Management Act and under the guidance provided by the California Department of Water Resources (DWR).

A municipal urban water supplier's UWMP is to be enacted by City Council resolution and submitted to the DWR within thirty (30) days of adoption. The DWR reviews the UWMP for completion.

The City of East Palo Alto prepared a UWMP in 2005, and was adopted January 3, 2006.

1.1.1 Changes in the Act Since 2005

Since 2005, several amendments have been added to the Act. Some of the amendments provided for eligibility for state water management grants or loans, reporting on lower income and affordable household water projections, reporting on the feasibility of serving recycled water demands as well as Senate Bill 7 (also known as SBX7-7 or the Water Conservation Bill of 2009). The following is a summary of the significant changes in the Act that have occurred from 2005 to the present:

- Every urban water supplier preparing a plan must give at least 60 days advance notice to any city and county prior to the public hearing on the UWMP within which the supplier provides water supplies to allow opportunity for consultation on the proposed plan (Water Code § 10621(b)).

- Deems water suppliers that are members of the California Urban Water Conservation Council (CUWCC) and comply with the MOU dated December 10, 2008, as it may be amended, to be in compliance with the requirement to describe the supplier's water demand management measures in its urban water management plan (Water Code § 10631(j)).

- Requires plan by retail water suppliers to include water use projections for single family and multifamily residential housing needed for lower income and affordable households to assist the water supplier in complying with the existing requirement under Section 65589.7 of the Government Code that suppliers grant a priority for the provision of service to housing units affordable to lower income households (Water Code § 10631.1).

- Conditions eligibility for a water management grant or loan made after January 1, 2009 to an urban water supplier and awarded or administered by DWR, the State Water Resources Control Board, or the California Bay-Delta Authority or its successor agency on the implementation of water demand management measures, including consideration of the extent of compliance with the conservation measures described in the CUWCC's Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) (Water Code § 10631.5(a)).

- Requires DWR, in consultation with other agencies and public input, to develop eligibility requirements for meeting compliance with DMM implementation. (Water Code § 10631.5(b)).

- Exempts projects funded by the American Recovery and Reinvestment Act of 2009 from the conditions placed on state funding for water management to urban water suppliers (Water Code § 10631.5(a)(2)).

- Repeals existing grant funding conditions of state water management grants or loans on July 1, 2016 if the UWMP is not extended or altered prior to this date (Water Code § 10631.5(f)).

- Required DWR, in consultation with the CUWCC, to convene a technical panel, no later than January 1, 2009, to provide information and recommendations to the Department and the Legislature on new demand management measures, technologies, and approaches. The panel and DWR were to report to the Legislature on their findings no later than January 1, 2010 and each five years thereafter (Water Code § 10631.7).

- Clarifies that “indirect potable reuse” of recycled water should be described and quantified in the plan, including a determination with regard to the technical and economic feasibility of serving those uses (Water Code § 10633(d)).

- Requires DWR to recognize exemplary efforts by water suppliers by obligating DWR to identify and report to the technical panel, described above, any “exemplary elements” of individual water suppliers’ plans, meaning any water demand management measures adopted and implemented by specific urban water suppliers that achieve water savings significantly above the levels required to meet the conditions to state grant or loan funding (Water Code § 10644(c)).

- SBX 7-7 requires each urban retail water supplier to develop urban water use targets to help meet the 20 percent goal by 2020, and an interim urban water reduction target by 2015. The bill specifically includes reporting requirements in the upcoming UWMPs. Specifically, urban retail water suppliers must include in their 2010 UWMPs the following information from its target setting process: (1) baseline daily per capita water use; (2) urban water use target; (3) interim water use target; and (4) compliance daily per capita water use, including technical bases and supporting data for those determinations. An urban retail water supplier may update its 2020 urban water use target in its 2015 UWMP (Water Code § 10608.20). SBX7-7 grants an extension for submission of UWMPs due in 2010 to July 1, 2011.

1.2 Regional Coordination

The City of East Palo Alto welcomed local and regional involvement in the development of this plan.

The City of East Palo Alto coordinated with its water supplier, SFPUC, in preparation of the UWMP. East Palo Alto is a member of the Bay Area Water Supply and Conservation Agency (BAWSCA), which was created in May 2003 to represent the regional interests of 26 cities and water districts, and 2 private utilities, in Alameda, Santa Clara and San Mateo counties that purchase water on a wholesale basis from the RWS. East Palo Alto participates in regional water conservation programs through BAWSCA and in efforts to work with San Francisco to ensure that the regional water system is reliable. The 25 other BAWSCA members were notified of the City’s intention to update its UWMP.

East Palo Alto conveys its wastewater to East Palo Alto Sanitary District (EPASD) and West Bay Sanitary District (WBSD), Special Districts responsible for maintaining the sanitary sewers in the City of East Palo Alto among other areas in San Mateo County. EPASD and WBSD were notified of the City’s intention to prepare the UWMP and provided information regarding water recycling that was incorporated into the Plan. The City may explore potential future water recycling and reclamation projects.

In addition to the above agencies, on March 15, 2011, the City also notified the Counties of San Mateo and Santa Clara of EPA’s intention to update and adopt the UWMP.

Table 1-1 lists those agencies and organizations that were involved and/or actively participated in the development of the plan:

Table 1-1 Coordination with Appropriate Agencies and Organizations

	Contacted for Assistance	Participated in Plan Development	Attended Public Meetings	Requested/ Received Copy of Draft	Commented on Draft

City of East Palo Alto	√	√	√	√	√
SFPUC	√	√		√	
BAWSCA	√	√		√	
City of Menlo Park	√	√			
City of Redwood	√				
East Palo Alto Sanitary District	√	√			
West Bay Sanitary District					

1.3 Public Participation

City of East Palo Alto sought a wide range of involvement in the development of this plan, including direct public involvement. Public participation in the development of the UWMP was encouraged.

The city, through its contracted consultant, ran a 5½"x5" advertisement in the March 26, 2011 and April 5, 2011 editions of the *Palo Alto Daily News*—the most popular area paper—announcing the initiation of plan preparation (see Appendix C for proof of publication).

Drafts of the plan were made available for public inspection at the City of East Palo Alto's City Hall and Central Public Library and at the American Water Enterprise offices two weeks before the public hearing which began during the City Council Meeting on June 21, 2011 (see Appendix C for sample letter of public hearing notice). Additionally, the plan was available on the City's website during the public review period. Those who contacted the City or IRM were supplied with digital copies via email. All local cities, counties, water and planning agencies and community organizations were notified by mail of the availability of the plan for public inspection and the time and location of the public hearing.

1.4 Adoption Of 2010 Urban Water Management Plan

The City of East Palo Alto 2010 Urban Water Management Plan was officially adopted by resolution of the East Palo Alto City Council during the City Council Meeting held on June 21, 2011 (see Appendix B for copy of signed adoption resolution).

The adopted UWMP will be available within 30 days of adoption for review by the public during business hours at the City of East Palo Alto City Hall.

The UWMP will be sent to the Department of Water Resources and the California State Library within 30 days and the County of San Mateo within 60 days of adoption.

2.0 System Description

The service area of the City of East Palo Alto's municipal water system covers roughly 2.5 square miles, incorporating most of the city and portions of the City of Menlo Park east of Highway 101. Small sections of the city outside the municipal water system are served by two private mutual water companies: the Palo Alto Park Mutual Water Company and the O'Connor Tract Water Cooperative (see figure 2-3). The EPA water system also supplies approximately 200 City of Menlo Park customers. Menlo Park is in the process of connecting these customers to its system.

Many factors influence the amount of water used by residents of an urban society. This chapter provides an overview for important characteristics of the City of East Palo Alto's service area, including the city's location and water utility, as well as its history, population, socioeconomic conditions, land use, climate and watershed features at both the local and regional levels.

2.1 City of East Palo Alto

2.1.1 History

Founded in 1849, East Palo Alto was part of unincorporated San Mateo County for most of its history and did not have an official boundary until its incorporation in 1983 (after failed attempts in 1966, '78, and '81 to annex all or portions of East Palo Alto into Menlo Park and Palo Alto).

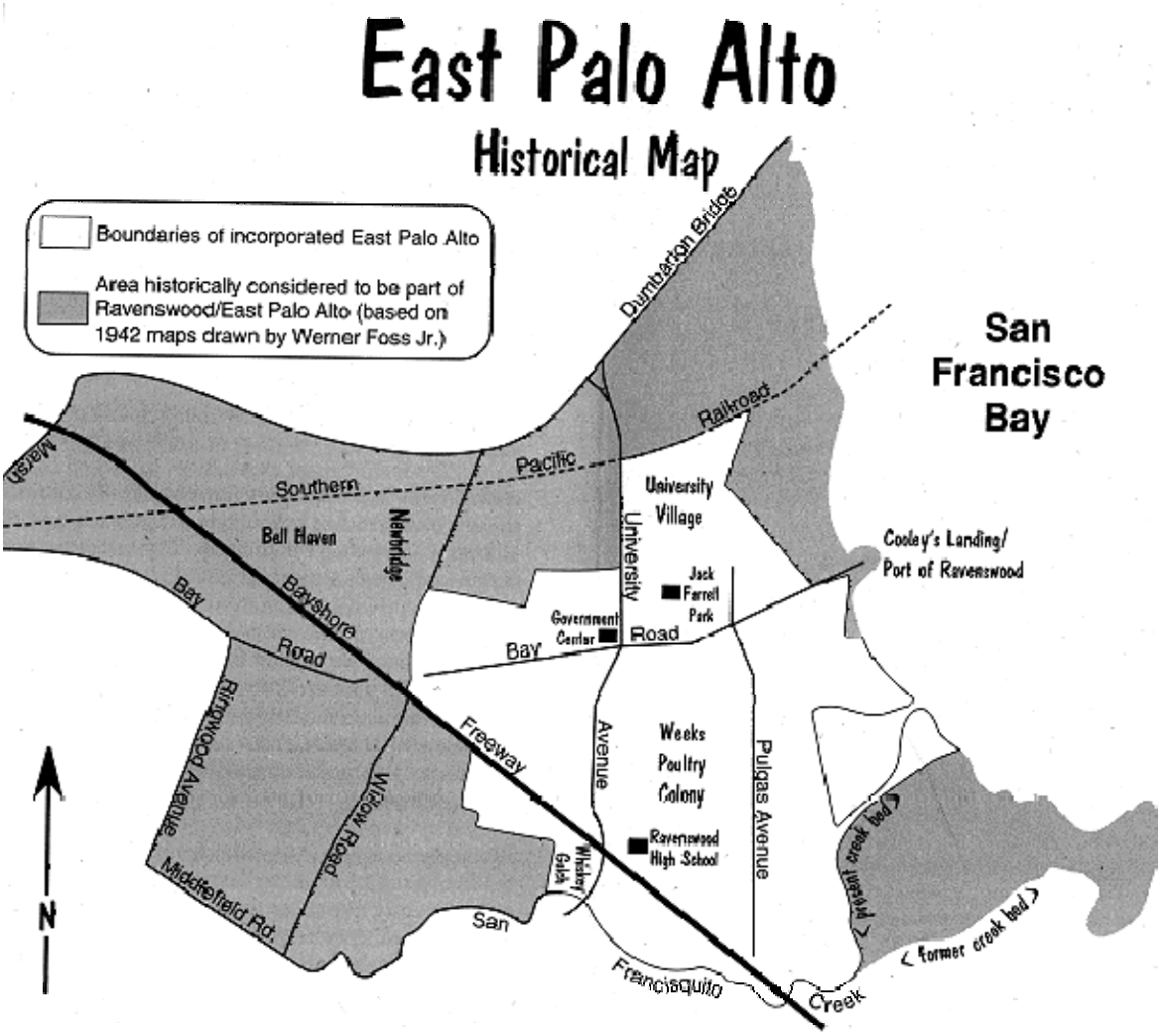
Founded in 1849 and incorporated in 1983, the area now known as the City of East Palo Alto has a rich and complicated history reaching back the Spanish conquests. The peaceful hunter and gatherer tribes of the Ohlone or Costanoan Indians inhabited the banks of the San Francisquito Creek and adjacent meadows from as far back as 5,000 years ago until the late 1700s when European-borne disease, land expropriation and bloodshed decimated their numbers. During Spain's rule the area was incorporated within the Rancho de las Pulgas, and subsequent legal maneuvers resulted in its possession by the Luis Antonio Arguello family, who sold off much of the land to pay legal bills.

Following the Peace Treaty with Mexico which made California part of the United States and during the Gold Rush that began in 1849, Isaiah Woods decided to build a town and wharf on the site now known as East Palo Alto, which he named Ravenswood, which served as a busy port midway between San Jose (then the state capital) and San Francisco. Unfortunately, shifts in rail line plans and moving the state capital to Sacramento led to the swift decline and eventual desertion of the promising port city. Subsequent attempts to revive industry in the area, including the establishment of the Cooley Landing shipping wharf, a brick factory, and the Runnymede utopian agricultural colony (a.k.a. Weeks Poultry Colony), carried the area's fortunes both high and low into the Twentieth Century. Feuding between naming the area Ravenswood or Runnymede led to the compromise choice of East Palo Alto in 1925.

As family farms gave way to housing tracts and the new Dumbarton toll bridge brought in traffic and businesses, significant sections of the area historically known as East Palo Alto were lopped off by local municipalities from the late 1940s to the early 1960s, including the major annexation of the Belle Haven and Newbridge industrial parks by Menlo Park—a loss of one-fourth of the population and the property value historically considered part of East Palo Alto (see Figure **2-1**).

For most of its history, East Palo Alto was part of unincorporated San Mateo County, and it did not have an official boundary until it incorporated in 1983. As a result, distinct districts have grown to have their own identity, including many of those mentioned above as well as University Village, Palo Alto Gardens, Woodland Place, Palo Alto Park and Bayshore Park. The city is often mistakenly thought to be part of Palo Alto, although the two have always been separate entities and reside in different counties (Palo Alto is part of Santa Clara County).

Figure 2-1 East Palo Alto Historical Boundaries



Source: Romic Environmental Technologies Corp., 1993.

2.1.2 City of East Palo Alto Water System / American Water Enterprise

The City of East Palo Alto's public water system is run through the city's Department of Public Works under contract by American Water Enterprises. A major portion of the city's water system was formerly operated by the County of San Mateo under the name East Palo Alto County Waterworks District. The City of East Palo Alto assumed operation of the water distribution system from San Mateo County in 2001. Currently, American Water Enterprise manages the distribution, operation, and maintenance of the municipal water system on behalf of, and under contract with, the City of East Palo Alto.

2.1.3 Location

The City of East Palo Alto is located in the southeast corner of San Mateo County along the southwestern shore of San Francisco Bay's South Bay (see Figure 2-2). The city, including areas both to the west and east of Highway 101, is bound on the north by the City of Menlo Park, on the west by the City of Palo Alto, on the east by the San Francisco Bay, and on the south by sloughs leading to San Francisquito Creek and the Bay. The water system covers a 2.5-square-mile area.

Figure 2-2 Location of East Palo Alto

Source: East Palo Alto, California Profile, 2005. WebPages: http://www.idcide.com.

2.1.4 Climate

The San Francisco Bay region has a Mediterranean climate, characterized by dry, warm summers and mild winters. The area receives most of its rainfall between November and April and its warmest temperatures in May through September. The average annual rainfall for the City of East Palo Alto is approximately 15 inches. Daily summer temperatures vary from 48 to 78°F, while winter temperatures rarely descend below freezing.

Table 2-1 gives data on the climate of the region as it impinges on its water supplies, including average rainfall, average temperature, and average rate of evapotranspiration (ET—i.e., the rate that water either evaporates or is expired by vegetation into the atmosphere).

Table 2-1 Climate

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Rainfall (inches)	3.22	2.90	2.22	1.02	0.38	0.08	0.02	0.05	0.17	0.72	1.74	2.72	**15.24**
Average Temperature (°F)	47.9	51.3	53.7	56.5	60.7	65.0	65.0	66.7	65.4	60.5	53.6	48.0	**58.00**
Average ET (inches per month)	1.48	1.88	3.35	4.74	5.36	6.25	6.74	5.99	4.52	3.43	1.82	1.48	**47.04**

Sources: Monthly Average ETo Report (No. 171, Union City, San Francisco Bay Region), CIMIS, Department of Water Resources, Office of Water Use Efficiency, Accessed March 4, 2011; Western Regional Climate Center. Palo Alto, California (Station 046646) http://www.wrcc.dri.edu.

2.1.5 System Description

The city provides water to domestic, commercial and industrial customers, as well as to the city's fire protection system through hydrants located in public rights-of-way.

The City managed water system draws all of its current domestic water supply through three turnouts off the SFPUC Bay Division Pipelines (BDPLs) 1 and 2 (see Figure 2-3).

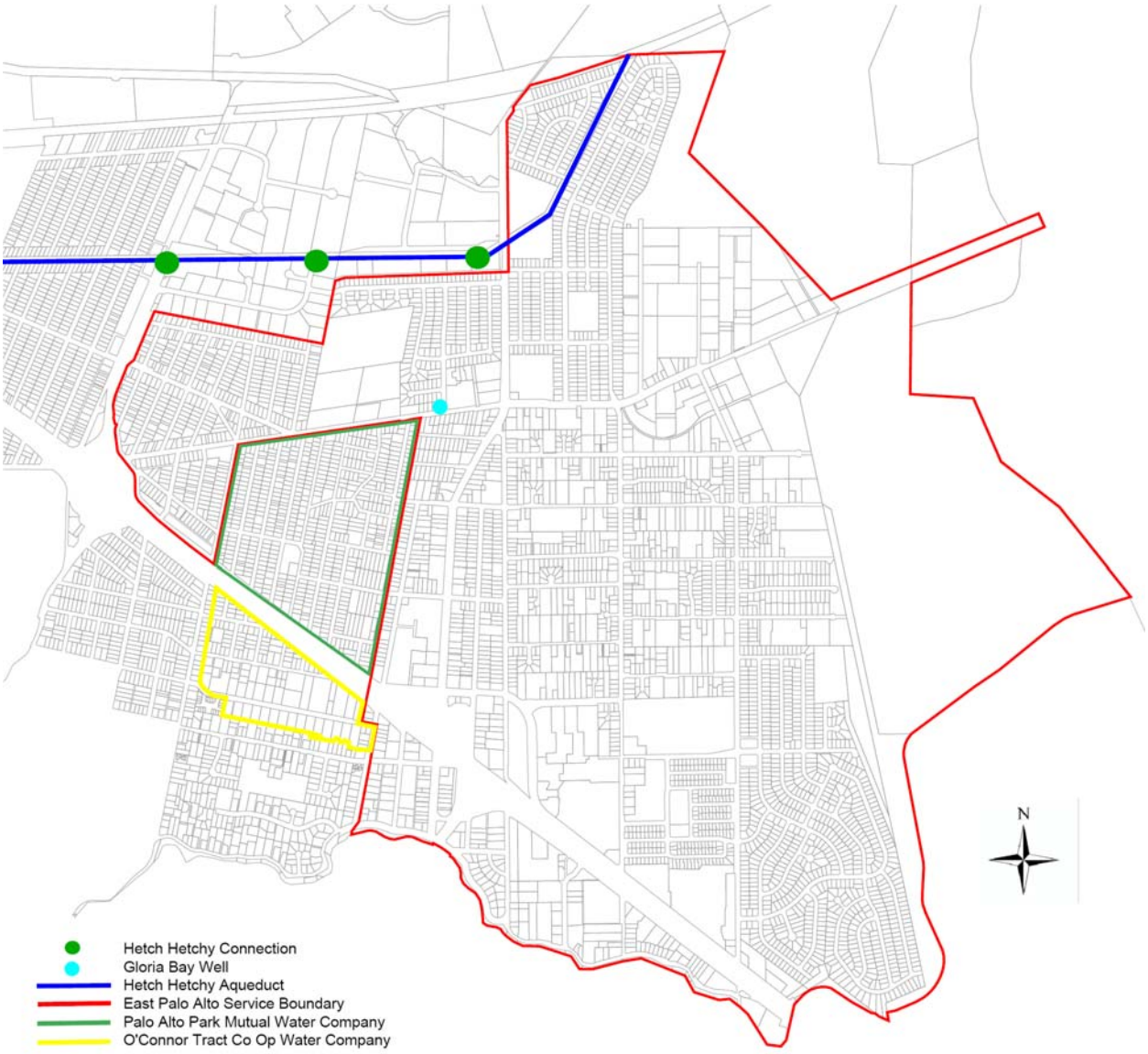
There are three turnouts with the SFPUC for supply as well as two emergency interties that serve only the two mutual water companies. Treated water is supplied from the Hetch Hetchy Aqueduct at pressures ranging from 105 to 140 pounds per square inch (psi). The turnouts are located on the aqueduct near Willow Road, O'Brien Drive, and University Avenue. Pressure-regulating valves at each turnout reduce the pressure in the distribution system. The pressure-regulating valves are set at the following pressures: 70 psi at Willow Road, 75 psi at O'Brien Drive, and 75 psi at University Avenue. From the turnouts the water flows by gravity through the city's pressurized distribution network. The system has nearly 300 fire hydrants. The existing distribution system is a network of 1½-inch to 12-inch diameter pipes.

The City of East Palo Alto owns and operates one groundwater well located at the intersection of Gloria Way and Bay Road, thus named the Gloria Bay Well. The groundwater well is currently used for non-potable purposes (e.g. street cleaning and construction).

There is currently no storage within the City of East Palo Alto's managed water system. The City managed water system relies solely on water from the SFPUC system for the storage necessary for equalization, fire flows, and emergency use.

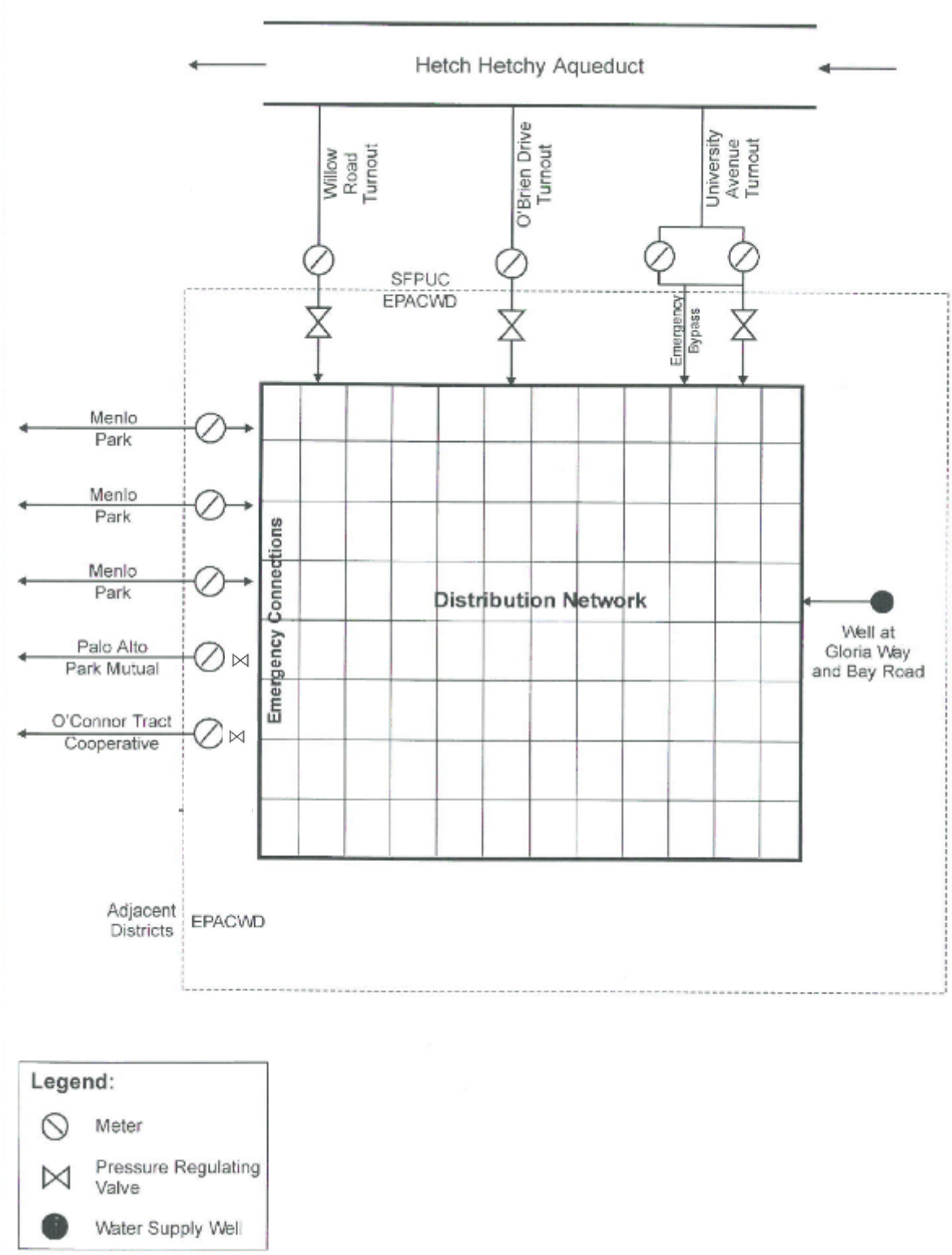
Due to circumstances surrounding the dissolution of the East Palo Alto County Waterworks District, which had formerly covered all of East Palo Alto and a portion of the neighboring Menlo Park, the City was required to transfer a 0.217 million gallons a day (mgd) of the East Palo Alto County Waterworks District SFPUC allocation to Menlo Park. Currently, Menlo Park receives some of this water through the City managed water system but may discontinue this and utilize the allocation from its own SFPUC connection.

Figure 2-3 City of East Palo Alto Distribution System – Map



Source: Water Atlas Book, California-American Water Company East Palo Alto, 2003.

Figure 2-4 City of East Palo Alto Distribution System – Graph



Source: East Palo Alto County Waterworks District Master Plan, 1998.

2.1.6 City of East Palo Alto Population

The City of East Palo Alto's water service area does not mirror the city boundaries. Therefore the population estimates must be adjusted accordingly for the areas served by Palo Alto Park Mutual and O'Connor Tract Cooperative Water Companies within the city limits.

According to the United States Census, the population of the City of East Palo Alto in 1990 was 23,451 with occupied housing units of 6,953 and an occupancy rate of 3.4 per unit. In 2000, the population was 29,506 with occupied housing units of 6,976 and an occupancy rate of 4.2 per unit. The 2010 Census initial population estimates for the City of East Palo Alto is 28,155.

Population figures were provided and developed from multiple sources and provided for the City of East Palo Alto and the East Palo Alto water service area. The City population was provided by the 2010 Census and from the Association of Bay Area Governments (ABAG). The service area population was developed by utilizing Appendix A in the *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use Handbook* and from the DSS model which utilized in the BAWSCA Water Conservation Implementation Plan (WCIP).

East Palo Alto's population grew by 26 percent through the 1990s, and decreased approximately 4.5 percent between 2000 and 2010. This is primarily due to the economic downturn which started around 2008. By 2035, the City's population is expected to rebound and reach 43,400 with 38,405 residing in the service territory.

Table 2-2 gives the current and projected population for the City of East Palo Alto and the City's Water service area:

Table 2-2 Population – Current and Projected

	2010	2015	2020	2025	2030	2035
East Palo Alto Population[1,2]	28,155	34,900	37,100	39,200	41,400	43,400
Service Area Population[3,4]	26,181	30,042	31,423	33,453	35,726	38,405

[1] *2010 population was provided by 2010 Census.*
[2] *2015-2035 population was provided by ABAG.*
[3] *2010 population was developed base on the Technical Methodology 2.*
[4] *2015-2035 population developed from the DSS Model from the BAWSCA WCIP, September 2009*

2.1.7 Socioeconomic Conditions

Today East Palo Alto is recognized as an ethnically diverse community. This in part is due to the city's history. The Ohlone/Costanoan Native American people, the area's original inhabitants, were followed by Spanish ranchers, Caucasian speculators and settlers, Chinese laborers and Italian flower growers. Middle-class Caucasian homeowners were drawn to the area by post-war housing developments. In the 1980's African Americans migrated to East Palo Alto as a result of displacement from the Redevelopment of San Francisco's Western Addition, becoming 61% of the total population of the City, and the largest African American community on the peninsula. Whites and Hispanics represented 25% and 14% of the population respectively. By 1990 the African American community had declined, but was still the largest ethnic group at 43%, closely followed by Hispanics, which grew to 34%. In 2000, Latinos became 59%, the majority of the population. In 2010, Latinos are about 65% of the total population, while the proportion of African Americans decreased to about 15%, a small minority of Pacitic Islander population reside in East Palo Alto, mostly Tongans with some Samonans and Fijians. East Palo Alto has the largest concentration of Pacific Islanders of any U.S. city or town outside of Hawaii.

The City of East Palo Alto is primarily a residential community. East Palo Alto's population in general resides in single-family housing, is lower-middle class, and is highly transient. According to the 2010 East Palo Alto Housing Element (using 2007 data), nearly 50 percent of its nearly 6,648 homes are rented. Average income is just over $49,000 per household, with 14 percent of families below the poverty level. An average household has 4.2 persons. Data from the Employment Development Department from January 2011 showed a 19.4 percent unemployment rate for the city.

The education level of East Palo Alto's residents is lower than average for the Bay Area. Less than 16 percent of the city's adult population has earned a bachelor's degree or higher.

Historically, trade has alternately focused on ranching, transportation and shipping, brick manufacturing, farming, servicing travelers of Bayshore Highway and Dumbarton Bridge, and flower growing. At present there is a mix of small industrial and commercial businesses.

In the last decade East Palo Alto has experienced significant population growth and development. The Redevelopment Agency has helped the city spur an acceleration of commercial developments including the University Circle building complex which includes a Four Seasons Hotel, and across the freeway, the Ravenswood Gateway 101 regional shopping mall, accommodating national companies such as Home Depot, Mi Pueblo and IKEA. Likewise, East Palo Alto residential areas are undergoing substantial infilling and qualitative upgrade and density increase.

2.1.8 Land Use and Development

The City of East Palo Alto housing is almost evenly split between multifamily and single family units; multifamily units consist of 42 percent and single family units consist of 56 percent. Between 2000 and 2008 approximately 86 new residential units per year were constructed. The East Palo Alto housing element has identified several locations for development of low income and very low housing income needs to accommodate its Regional Housing Need Allocation. This development will primarily be infill in the existing service territory and a new development identified as the Ravenswood/Four Corners Redevelopment (RBD) Area.

The RBD Assessment District is a redevelopment district of approximately 146 acres located in the northeastern comer of East Palo Alto and encompasses an estimated 143 parcels. The RBD extends from a northern wetland area to Weeks Street (including both sides of Weeks Street between Pulgas Avenue and the Baylands Nature Preserve), and roughly between the eastern boundary of East Palo Alto, and the western property lines (rear) of properties along Demeter Street and the eastern frontage along Clarke Avenue. The land is used primarily for low-density industrial operations, with some nonconforming residential uses, commercial and institutional/ governmental uses, vacant or unused land, and some wetland areas.

Current tenants include PG&E (substation), the City of East Palo Alto, San Mateo County, one auto salvage yards, a truck storage company, a bus company, a plumbing company, a furniture operation, steel supply companies, and several small light industrial businesses. Business operations range from office and warehousing activities to yard and storage activities. Other portions of the RBD include small wetland areas near the northern end of Demeter Street, Pulgas Street, and Tara Street. A railroad right-of-way extends along the western boundary of the RBD, curving further westward north of the University Village neighborhood.

The City has envisioned the rezoning of this area via a Specific Plan, which contemplates a future net development of approximately 351,820 square feet of industrial space, 1,268,500 square feet of office/retail, 61,000 square feet of governmental facilities, 19 single-family and 816 multifamily residential units, and 30 acres of park/trails. The planning horizon for RBD is 2030.

3.0 System Demands

3.1 Past, Current and Projected Water Deliveries by Sector

The City of East Palo Alto delivered 1,906 acre-feet of water to 4,183 customers in Fiscal Year (FY) 2009-2010. This amount is only slightly more than the city delivered in FY 2004-2005 (1,888 acre-feet to 3,565 customers).

The predominantly residential character of East Palo Alto coupled with the retail base that exists in the community creates a stable environment for water demand. Although water deliveries are projected to increase in the next 25 years, East Palo Alto anticipates little fluctuation in the type of water account and water use over the planning period.

Table 3-1 lists the past and current and projected water deliveries made by the City of East Palo Alto. The resulting water use data is separated by sector into the following categories: single-family and multi-family residential usage, commercial usage, industrial usage, institutional and governmental usage, landscape and recreational usage, and agricultural usage.

Table 3-1 Past and Current Water Deliveries

Water Use Sectors	2005		2010	
	Accounts	AFY	Accounts	AFY
Single-Family Residential	3,391	923	3,703	910
Multi-Family Residential	201	541	220	607
Commercial	110	263	100	202
Industrial	111	89	112	108
Municipal	27	66	47	62
Portable/Other	15	6	1	17
Total	3,855	1,888	4,183	1,906

The following tables are the projected water use for the service area. The 2015 through 2035 projections are calculated based on the year's estimated population and the gallons per capita per day as described later in section 3.5.

Table 3-2 Projected Water Deliveries

Water Use Sectors	2015		2020	
	Accounts	AFY	Accounts	AFY
Single-Family Residential	4,249	1,044	4,269	1,049
Multi-Family Residential	251	692	262	724
Commercial	170	343	185	374
Industrial	280	270	308	297
Municipal	55	73	59	78
Portable/Other	4	36	5	49
Total	**5,009**	**2,458**	**5,088**	**2,571**

Table 3-3 Projected Water Deliveries (cont.)

Water Use Sectors	2025	2030

	Accounts	AFY	Accounts	AFY
Single-Family Residential	4,546	1,117	4,855	1,193
Multi-Family Residential	279	770	298	823
Commercial	198	401	212	429
Industrial	330	318	353	340
Municipal	63	83	67	88
Portable/Other	5	49	6	51
Total	**5,421**	**2,738**	**5,791**	**2,924**

Table 3-4 Projected Water Deliveries (cont.)

Water Use Sectors	2035	
	Accounts	AFY
Single-Family Residential	5,220	1,283
Multi-Family Residential	320	884
Commercial	229	463
Industrial	381	367
Municipal	71	94
Portable	7	54
Total	**6,228**	**3,145**

3.1.1 Low Income Water Deliveries

According to the most recent Housing Element developed by the city, low income residents consisted of approximately 79% of the housing within the city. The following table shows the estimated low income water use projections.

Table 3-5 Low Income Water Demands

Low Income Water Demands (AFY)	2015	2020	2025	2030	2035
Single-family residential	825	829	882	942	1,014
Multi-family residential	547	572	608	650	698
Total	**1,371**	**1,401**	**1,491**	**1,593**	**1,712**

3.2 Sales to Other Agencies

Due to the dissolution of the East Palo Alto County Waterworks District, the City of East Palo Alto was required to transfer to the City of Menlo Park 0.217 mgd or 243 acre-feet per year (AFY). Currently, Menlo Park receives some of this water through the City managed water system but may discontinue this and utilize the allocation from its own SFPUC connection. The water delivered to the City of Menlo Park does not count against East Palo Alto's Individual Supply Guarantee of 1.963 AFY, but against the City of Menlo Park's. East Palo Alto serves approximately 200 City of Menlo Park customers from the East Palo Alto distribution system. Currently, the City of Menlo Park is working on a project to remove these customers from the East Palo Alto system and connect them into the Menlo Park system.

The city also has within its jurisdictional boundaries two mutual water companies, the Palo Alto Park Mutual Water Company and the O'Connor Tract Cooperative Water Company. The City of East Palo Alto may by resolution of necessity reserve the right to provide water utility service to it residents and businesses when the need arises. Thus, the City has projected a demand for sales to other agencies as a planning tool to provide service should it become necessary. However, it is not at this time possible to project real volumes of sales into the future due to the uncertain water transfer market in the San Francisco area.

Table 3-6 lists all City of East Palo Alto current and projected sales to other agencies:

Table 3-6 Sales to Other Agencies

Water Distributed (AFY)	2005	2010	2015	2020	2025	2030	2035
Menlo Park	156	98	0	0	0	0	0
Palo Alto Park Mutual Water Company	0	2	2	2	2	2	2
O'Connor Tract Mutual Cooperative Water Company	0	0	1	1	1	1	1
Total	156	95	3	3	3	3	3

3.3 Other Water Uses and Losses

Unaccounted-for-water system loss is calculated by subtracting metered water usage from the amount of water purchased from SFPUC. Normal unaccounted-for-water for a water system is around 8 percent. Typical and expected losses result from leakage of aging systems and connections, as well as from evaporation during irrigation cycles.

Table 3-7 documents current and projected unaccounted-for system loss:

Table 3-7 Unaccounted-For Water System Loss

Water Use (AFY)	2005	2010	2015	2020	2025	2030	2035
Unaccounted-for System Losses	227	27	197	206	219	234	252
Total	227	27	197	206	219	234	252

3.4 Total Water Usage

The combined current and projected water usage, including sales and system losses, for the City of East Palo Alto are given in Table 3-8:

Table 3-8 Total Water Use

Water Use (AFY)	2005	2010	2015	2020	2025	2030	2035
Total water deliveries	1,888	1,906	2,458	2,571	2,738	2,924	3,145
Sales to other water agencies	152	100	3	3	3	3	3
Additional water uses and losses	227	27	197	206	219	234	252
Total	2,267	2,033	2,658	2,780	2,960	3,161	3,400

3.5 Water Conservation Bill of 2009

The Water Conservation Act of 2009, SBX7-7, was signed into California law as part of a comprehensive water legislation package in November 2009. It requires water providers to reduce the average per capita daily consumption use statewide by 10% by 2015 and 20% by 2020.

Water suppliers have some flexibility in setting and revising water use targets leading up to the 2020 compliance period, including:

- A water supplier may set its water use target and comply individually, or as part of a regional alliance.
- A water supplier may revise its water use target in its 2015 or 2020 urban water management plan or in an amended plan.
- A water supplier may change the method it uses to set its water use target and report through an amendment to the 2010 plan or in its 2015 urban water management plan. Urban water suppliers are not permitted to change target methods after they have submitted their 2015 urban water management plan.

The Water Conservation Bill of 2009 provided four compliance methods that could be used to meet the 20 percent reduction. They are:

- Method 1: Eighty percent of the water supplier's baseline 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 CII uses;
- Method 3: Ninety-five percent of the applicable state hydrologic region target as stated in the State's March, 2011, *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan*; and
- Method 4: Savings by Water Sector. This method identifies water savings obtained through identified practices and subtracts them from the base daily per capita water use value identified for the water supplier..

The DWR *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan* provides a four step process for a water supplier to complete and meet the requirements of the Water Conservation Bill of 2009 in its 2010 UWMP:

Step 1: Determine Base Daily Per Capita Water Use

Step 2: Determine Urban Water Use Target

Step 3: Compare Urban Water Use Target to the 5-year Baseline

Step 4: Determine Interim Urban Water Use Target

Although the City of East Palo Alto is a member of BAWSCA, the city has developed its baseline target for the water service area individually and not part of a regional target. The City's recycled water use does not exceed 10 percent of the utilities' water demand, so the East Palo Alto used the 10-year base period.

3.5.1 Population Estimates

The water service area does not directly overlap the city boundaries and therefore were adjusted based on the 2000 Census tract maps. The population estimates for the baseline years for the analysis were developed utilizing *Appendix A in the Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use Handbook*. This method utilizes the 2000 Census data and calculates the persons per single-family connection and per multifamily connection then projects the population out based on the connections throughout the selected base period.

3.5.2 Water Supplies

For the purposes of determining base per capita water use, the gross water use equals the total volume of water (purchased water, groundwater, recycled water, etc.) that enters the distribution system over a continuous 12-month period (calendar or fiscal year). Some exclusions are allowed such as recycled water, industrial water, change in distribution storage, and sales or pass through to other water purveyors. The only applicable exclusion for the calculation of gross water use in East Palo Alto's case is the water sold to the City of Menlo Park.

The city has three metered connections with SFPUC. This data along with the water delivered to Menlo Park were utilized to develop the gross water use.

3.5.3 Base Daily Per Capita Water use

Although the City of East Palo Alto is a member of BAWSCA, the city has developed its baseline target for the water service area individually and not part of a regional target. The City's recycled water use does not exceed 10 percent of the utilities' water demand, so East Palo Alto used the 10-year base period. Please refer to Figure 2-3 which depicts the water service area.

Per capita water is calculated by dividing the total service area population by the gross water use. As shown in the table, per capita water use has ranged between 66 and 87 gallons per capita per day (GPCD) over the last 10 fiscal years. The following tables summarize the baseline and water use targets.

Table 3-9 Base Period Ranges

Base	Parameter		Units
10 year base period	2008 total water deliveries	2,290	*AF*
	2008 total volume of delivered recycled water	0	*AF*
	2008 recycled water as a percent of total deliveries	0	percent
	Number of years in base period[1]	10	years
	Year beginning base period range	2001	
	Year ending base period range[2]	2010	
5-year base period	Number of years in base period	5	years
	Year beginning base period range	2006	
	Year ending base period range[3]	2010	

Table 3-10 10 Year Base Daily Per Capita Water Use

Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Calendar Year			
Year 1	2001	23045	2,006,917	87
Year 2	2002	23598	1,884,142	80
Year 3	2003	23718	1,884,336	79
Year 4	2004	23838	2,055,436	86
Year 5	2005	23972	1,882,794	79
Year 6	2006	25874	1,887,258	73
Year 7	2007	24112	2,045,273	85
Year 8	2008	26007	2,039,024	78
Year 9	2009	26294	1,916,718	73
Year 10	2010	26181	1,727,457	66
			Base Daily Per Capita Water Use	**79**

Table 3-11 5 Year Base Daily Per Capita Water Use

Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Calendar Year			
Year 1	2006	25,875	1,887,258	73
Year 2	2007	24,113	2,045,273	85
Year 3	2008	26,008	2,039,024	78
Year 4	2009	26,295	1,916,718	73
Year 5	2010	26,182	1,727,457	66
			Base Daily Per Capita Water Use	**75**

3.5.4 Water Use Target

The provisions in Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use establish 100 gallons per capita per day as the floor for conservation efforts. Any utility that calculates a baseline at or below 100 gallons per capita per day is not required to further reduce per capita water use. East Palo Alto's baseline per capita water use is 79 gallons per capita per day using the calculations for 10- year range and 75 gallons per day per capita for the 5-year range. The method used by the City of East Palo Alto to determine its water use target was Method 3: Ninety-five percent of the applicable state hydrologic region target as stated in the State's April 30, 2009, draft 20x2020 Water Conservation Plan. The City of East Palo Alto is located in the San Francisco Bay Hydrological Region. This requires the city to have a GPCD use of 124. East Palo Alto meets this requirement.

3.5.5 Water Use Reduction Plan

As shown above, the city exceeds the requirements of the urban water use target, Method 3. Although the city does not need to implement any specific measures to meet the urban water use target, the city will continue to work with its customers to implement and use conservation measures in the future to maintain this GPCD.

4.0 System Supplies

The City of East Palo managed water system receives all of its domestic water from the SFPUC. Limited groundwater is produced for non potable uses such as street sweeping and construction uses. However, other water sources, such as desalinated San Francisco Bay water, recycled water, and increasing groundwater production have the potential to be used in the future.

This chapter provides an overview of the city's current and future water supply picture, including analyses of real and potential sources of supply, threats to the city's current and future water supply portfolio, and planned water supply projects and programs to increase the availability of potable water supplies in the future.

East Palo Alto, as well as to a greater extent the SFPUC, has many projects in place or currently going through the planning stages to improve the city's water supply portfolio. The SFPUC's projects to increase its water supply are organized under its Water Supply Improvement Program (WSIP). City-specific potential projects and programs include the installation of new groundwater wells and the installation of an emergency interconnection with Palo Alto Park Mutual Water Company and O'Connor Tract Co Op Water Company. Also discussed below are opportunities to augment the city's water supply through transfers and exchanges, and desalination.

Table 4-1 is a summary of the existing and planned water supply sources discussed in this chapter, and the current and planned quantities available to East Palo Alto from the present (2010) to 2035 in five-year increments.

Table 4-1 Current and Planned Water Supplies

Water Supply Source (AFY)	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
SFPUC	2,033	2,199	2,199	2,199	2,199	2,199
Groundwater	17	1,630	1,630	1,630	1,630	1,630
Recycled Water	0	0	100	100	100	100
Transfers	0	0	125	150	150	150
Interconnections*	0	0	0	0	0	0
Desalination	0	0	0	0	0	0
Totals	**2,050**	**3,829**	**4,054**	**4,079**	**4,079**	**4,079**

**Wells running 75%*
***Drought Emergency*

4.1 San Francisco Public Utilities Commission

4.1.1 San Francisco Public Utilities Commission

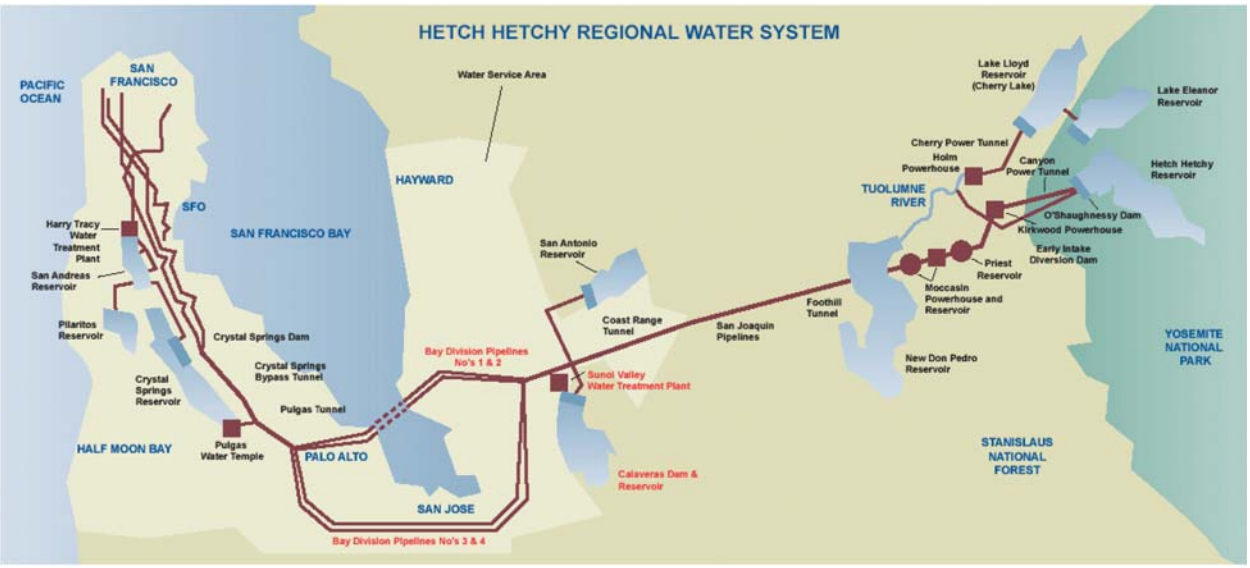
The City of East Palo Alto receives water from the City and County of San Francisco's Regional Water System (RWS), operated by the SFPUC. This supply is predominantly from the Sierra Nevada, delivered through the Hetch Hetchy aqueducts, but also includes treated water produced by the SFPUC from its local watersheds and facilities in Alameda and San Mateo Counties. The Regional Water System is shown in Figure 4-1.

Through the RWS, SFPUC supplies both retail and wholesale customers. Its retail customers include the residents, businesses and industries located within the City and County of San Francisco. SFPUC also provides retail water service to other customers located outside of San Francisco, including Treasure Island, the Town of Sunol, San Francisco International Airport, and Lawrence Livermore Laboratory. The SFPUC also sells water on a wholesale basis to 26 water agencies in San Mateo, Santa Clara and Alameda Counties of which East Palo Alto is one.

The amount of imported water available to the SFPUC's retail and wholesale customers is constrained by hydrology, physical facilities, and the institutional parameters that allocate the water supply of the Tuolumne River. Due to these constraints, the SFPUC is very dependent on reservoir storage to firm-up its water supplies.

The SFPUC serves its retail and wholesale water demands with an integrated operation of local Bay Area water production and imported water from Hetch Hetchy. In practice, the local watershed facilities are operated to capture local runoff.

Figure 4-1 San Francisco Public Utilities Commission Regional Water System



4.1.2 SFPUC Water Supply Improvement Program

In order to enhance the ability of the SFPUC water supply system to meet identified service goals for water quality, seismic reliability, delivery reliability, and water supply, the SFPUC has undertaken the Water System Improvement Program (WSIP), approved October 31, 2008. The WSIP will deliver capital improvements aimed at enhancing the SFPUC's ability to meet its water service mission of providing high quality water to customers in a reliable, affordable and environmentally sustainable manner. Many of the water supply and reliability projects evaluated in the WSIP were originally put forth in the SFPUC's Water Supply Master Plan (2000).

A Program Environmental Impact Report (PEIR) was prepared in accordance with the California Environmental Quality Act for the WSIP. The PEIR, certified in 2008, analyzed the broad environmental effects of the projects in the WSIP at a program level and the water supply impacts of various alternative supplies at a project level. Individual WSIP projects are also undergoing individual project specific environmental review as required.

In approving the WSIP, the Commission adopted a Phased WSIP Variant for water supply that was analyzed in the PEIR. This Phased WSIP Variant established a mid-term water supply planning milestone in 2018 when the Commission would reevaluate water demands through 2030. At the same meeting, the Commission also imposed the Interim Supply Limitation (ISL) which limits the volume of water that the member agencies and San Francisco can collectively purchase from RWS to 265 MGD until at least 2018. Although the Phased WSIP Variant included a mid-term water supply planning milestone, it did include full implementation of all proposed WSIP facility improvement projects to insure that the public health, seismic safety, and delivery reliability goals were achieved as soon as possible.

As of July 1, 2010, the WSIP was 27% complete overall with the planning and design work over 90% complete. The WSIP is scheduled to be completed in December 2015.

Figure 4-2 SFPUC Water System Improvement Program

4.1.3 2009 Water Supply Agreement

The business relationship between San Francisco and its wholesale customers is largely defined by the "Water Supply Agreement between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County" entered into in July 2009 (WSA). The new WSA replaced the Settlement Agreement and Master Water Sales Contract that expired June 2009. The WSA addresses the rate-making methodology used by the City in setting wholesale water rates for its wholesale customers in addition to addressing water supply and water shortages for the RWS. The WSA has a 25 year term, with provisions for two five-year extensions.

In terms of water supply, the WSA provides for an ISL of 184 million gallons per day (mgd), expressed on an annual average basis, at least through the year 2018. A surcharge will be imposed to enforce the interim supply limitation. By December 31, 2018, San Francisco will make further decisions regarding long-term water supplies through 2030. The WSA does not guarantee that San Francisco will meet peak daily or hourly customer demands when their annual usage exceeds the Supply Assurance. The SFPUC's wholesale customers have agreed to the allocation of the 184 mgd Supply Assurance among themselves, with each entity's share of the Supply Assurance set forth on Attachment C to the WSA. The Supply Assurance survives termination or expiration of the WSA and this agency's Individual Water Sales Contract with San Francisco.

In their individual water sales contracts with SFPUC, the cities of San José and Santa Clara retain their temporary interruptible status. San Francisco will supply a combined annual average of 9 mgd to the two cities through 2018, subject to interruption or reduction if wholesale customer use exceeds the 184 mgd limit.

Furthermore, the individual supply guarantees of the 26 wholesale customers (other than Hayward, San José and Santa Clara) are subject to reduction on a pro-rata basis if total delivery to City of Hayward and to the wholesale customers exceeds 184 MGD over a consecutive three-year period.

The Water Shortage Allocation Plan between the SFPUC and its wholesale customers, adopted as part of the WSA in July 2009, addresses shortages of up to 20% of system-wide use. The Tier 1 Shortage Plan allocates water from the RWS between San Francisco Retail and the wholesale customers during system-wide shortages of 20% or less. The WSA also anticipated a Tier 2 Shortage Plan adopted by the wholesale customers which would allocate the available water from the RWS among the wholesale customers.

4.1.4 City of East Palo Alto Individual Supply Guarantees

When owned and run by San Mateo County, the East Palo Alto County Waterworks District received a "supply assurance" allocation of 2.18 mgd from SFPUC. However, when the East Palo Alto County Water Works District was dissolved in 2001, the City of Menlo Park acquired part of the water system, taking with it 0.217 mgd of the original allocation and leaving the City of East Palo Alto water system with a revised allocation of 1.963 mgd.

In 2009, the City of East Palo Alto, along with 25 other Bay Area water suppliers signed the WSA with San Francisco, supplemented by an individual Water Supply Contract. These contracts, which expire in 25 years, provide for a 184 mgd (mgd, expressed on an annual average basis) Supply Assurance to the SFPUC's wholesale customers collectively. East Palo Alto's Individual Supply Guarantee (ISG) is 1.963 MGD (or approximately 2,199 acre feet per year). Although the WSA and accompanying Water Supply Contract expire in 2034, the Supply Assurance (which quantifies San Francisco's obligation to supply water to its individual wholesale customers) survives their expiration and continues indefinitely.

SFPUC has made available and the city has purchased water above the ISG for several of the years since 2002. Consistent with existing agreements, this has been possible because other BAWSCA agencies have not used their full contractual supply. In FY2009/10, total purchases were approximately 264 AF below the ISG (not including Menlo Park deliveries). This reduction in demand is primarily attributed to the economic downturn resulting in less local business activity and greater real estate vacancies. Table 4-2 summarizes city water purchases from SFPUC relative to the Individual Supply Guarantee of 2,199 AFY.

Table 4-2 East Palo Alto Historical Purchases

Year (AFY)	Purchase from SFPUC	Sales to Menlo Park	East Palo Alto Demand/ Purchase	Under/ (Over) Allocation
2002	2,283	172	2,110	89
2003	2,274	163	2,111	88
2004	2,463	161	2,303	(104)
2005	2,265	156	2,108	91
2006	2,248	134	2,113	86
2007	2,437	146	2,291	(92)
2008	2,417	133	2,284	(85)
2009	2,273	126	2,147	52
2010	2,033	98	1,935	264

Average	**2,307**	**143**	**2,156**	**43**

As noted in Section 3.2, the city supplies water to Menlo Park for service to approximately 200 customers. Menlo Park is in the process of connecting these customers into the Menlo Park water system. The water sold to the City of Menlo Park does not count against East Alto's Individual Supply Guarantee of 1.963, but against the City of Menlo Park.

4.1.5 Bay Area Water Supply and Conservation Agency

The Bay Area Water Supply and Conservation Agency (BAWSCA) was created on May 27, 2003 to represent the interests of the 26 agencies that include cities, water districts, a water company, and a university, in Alameda, Santa Clara and San Mateo counties that purchase water on a wholesale basis from the RWS. Collectively, the BAWSCA agencies are referred to as the Wholesale Customers.

BAWSCA is the only entity that has the authority to directly represent the needs of the wholesale customers that depend on the RWS. Through BAWSCA, the wholesale customers can work with the SFPUC on an equal basis to ensure the RWS is rehabilitated and maintained and to collectively and efficiently meet local responsibilities.

BAWSCA has the authority to coordinate water conservation, supply and recycling activities for its agencies; acquire water and make it available to other agencies on a wholesale basis; finance projects, including improvements to the regional water system; and build facilities jointly with other local public agencies or on its own to carry out the agency's purposes.

Compliance with the Urban Water Management Planning Act lies with each agency that delivers water to its customers. In this instance, the responsibility for completing an UWMP lies with the individual BAWSCA member agencies. BAWSCA's role in the development of the 2010 UWMP updates is to work closely with its member agencies and the SFPUC to maintain consistency among the multiple documents being developed.

4.2 Local Groundwater

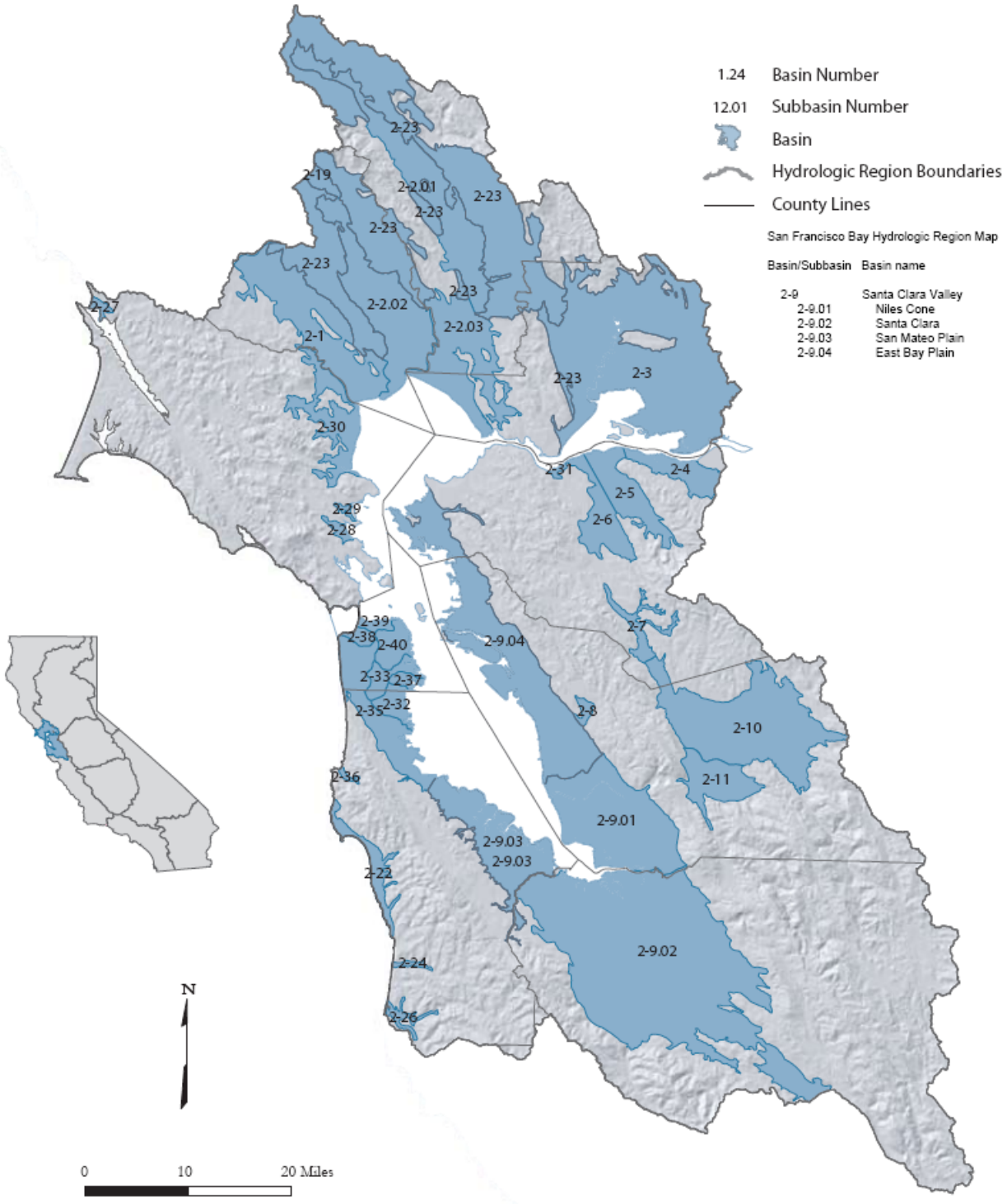
The City of East Palo Alto currently does not use local groundwater for drinking water purposes. However, some groundwater is utilized for street cleaning and construction dust-control. The city is able to and has in the past drawn groundwater out of this basin, mostly through its Gloria Bay Well, originally installed by the County of San Mateo. However, the quality of the groundwater was found to be poor, and the city ceased using it for drinking purposes in 1989 (minimal amounts have been used for street washing and construction water).

East Palo Alto is located over the Santa Clara Valley Groundwater Basin, San Mateo Subbasin and the San Francisquito Watershed. This San Mateo Subbasin is not adjudicated or otherwise regulated (i.e. groundwater management plan), and has not been identified or projected to be in overdraft by the California Department of Water Resources.

4.2.1 Santa Clara Valley Basin

The Santa Clara Basin is located in the San Francisco Hydrological Unit as defined by the Department of Water Resources. The basin is further divided into four subbasins: Niles Cone, Santa Clara, San Mateo Plain and East Bay Plain. The basin is defined as encompassing 345,300 square miles of the San Francisco Hydrological Unit. The basin straddles the southern portion of the San Francisco Bay and is bounded by the north on the east side of the bay by northwest trending Coast Range, on the west side of the bay by north by San Pablo Bay, and to the south by to the groundwater divide near the town of Morgan Hill. The Diablo Range bounds it on the west and the Santa Cruz Mountains form the basin boundary on the east.

Figure 4-3 San Francisco Bay Hydrologic Region Map



Source: DWR Bulletin 118 Website

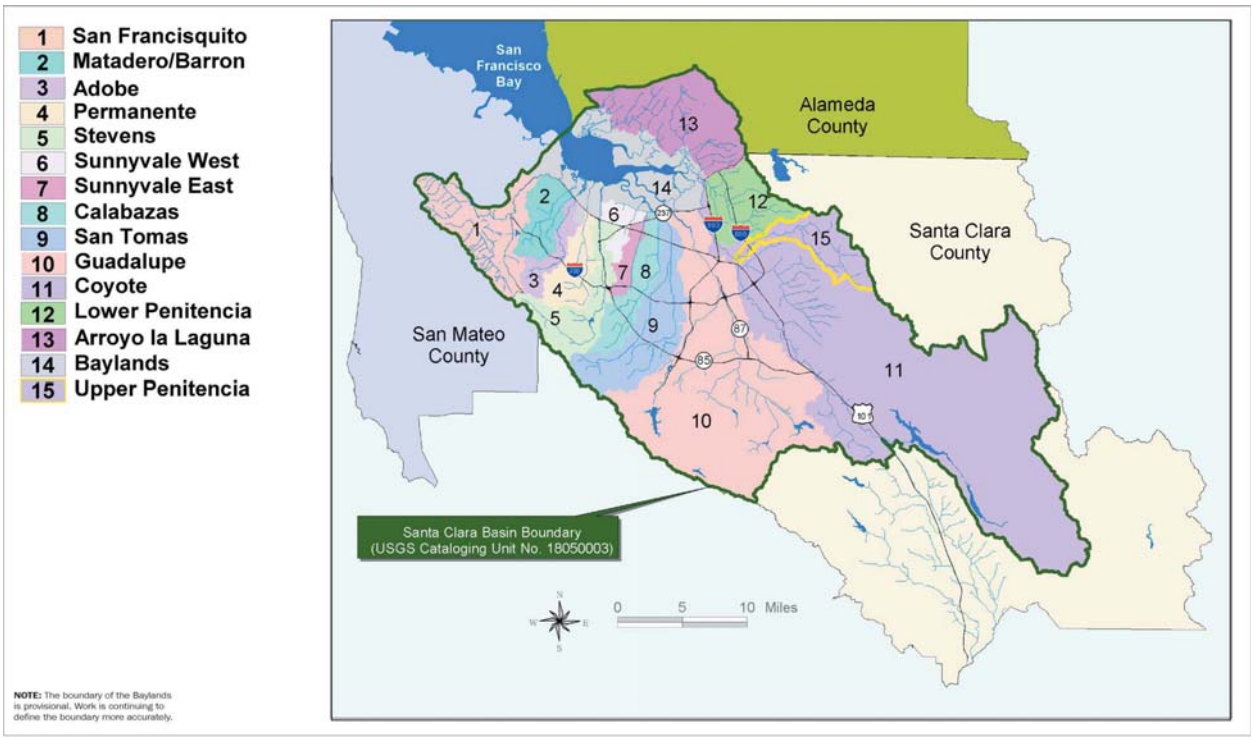
Santa Clara Watershed

For local and regional management purposes, the San Francisquito Watershed is considered to be within the overall Santa Clara Basin. The watershed primarily overlies the Santa Clara Groundwater Valley Basin, Santa Clara Subbasin.

The Santa Clara Watershed is defined as encompassing all 840 square miles of watersheds that empty into the southernmost portion of the San Francisco Bay south of the Dumbarton Bridge. The watershed is bounded by Dumbarton Bridge (passing between East Palo Alto and Fremont) to the north, the crest of the Diablo Mountains to the east, and the crest of the Santa Cruz Mountains to the west and south. The watershed's population is an estimated 1.9 million, including half of Santa Clara County and smaller portions of San Mateo and Alameda Counties, as well as part or all of 20 cities, 13 major watersheds, the Baylands and the South Bay itself. In addition to natural drainage from the watershed streams, the basin receives treated wastewater streams from three wastewater treatment plants located in the Cities of Palo Alto, Sunnyvale and San Jose. The Santa Clara Valley Water District is the primary water wholesaler in the basin.

The Santa Clara Valley Water District has taken the lead in developing the Santa Clara Basin Watershed Management Initiative (WMI), which is advocating particular watershed management measures. The City of East Palo Alto is not a signatory of the Santa Clara Basin WMI.

Figure 4-4 Santa Clara Watershed



Source: Santa Clara Basin Watershed Management Initiative, Watershed Characteristics Report 2003.

4.2.2 Santa Clara Valley Groundwater Basin, San Mateo Subbasin

The Santa Clara Valley Groundwater Basin, San Mateo Subbasin covers approximately 75 square miles on the west side of the San Francisco Bay. The San Mateo Subbasin occupies a geological trough running underground and parallel to the northwest-trending Coast Ranges at the southwest end of San Francisco Bay. The subbasin is bound by the Santa Cruz Mountains in the west, the Westside Basin to the north and San Francisquito Creek to the south. The basin is composed of alluvial fan deposits formed by tributaries to San Francisco Bay that drain the basin.

The water bearing formations of the San Mateo subbasin are comprised of two groups: the Santa Clara Formation and the Quaternary Alluvium (i.e., sediments deposited by streams). The Quaternary Alluvium is the most important water bearing formation of this basin; all larger yielding wells, including the Gloria Bay Well, acquire their water from it.

- **The Santa Clara Formation –** The Santa Clara Formation was formed during the Plio-Pleistocene Age and underlies the Quaternary Alluvium at depths greater than 200 feet. It is composed of gravel, sand, silt and clay. Permeability—the ability for water to travel through and collect in the ground—tends to increase from west to east but decrease with depth, implying that the formation became coarser grained and more permeable with time.

- **The Quaternary Alluvium –** The Quaternary Alluvium lies on top of the Santa Clara Formation at a maximum depth of 1,250 feet, and is composed of gravel, sand, silt and clay. The alluvium is coarse grained and is generally unconfined (i.e., open to direct percolation of surface water). A permeable alluvium deposited by the many streams that converge and flow eastward out of the basin underlies the central portion of the valley. A relatively shallow water table aquifer overlies confined and semi-confined aquifers in this lowland area. Most of the wells in the basin draw water from the deeper confined and semi-confined aquifers.

Natural recharge occurs by infiltration of water from streams that enter the valley from the upland areas within the drainage basin and by percolation of precipitation that falls directly on the valley floor. It is estimated that the San Francisquito Creek adds about 1,000 acre-feet of recharge to the groundwater subbasin immediately underneath East Palo Alto annually. Infiltration of runoff from the foothills, over-irrigation, urban watering and leakage from water distribution and storm water systems also contribute to groundwater recharge.

Historically, groundwater resources in the area were developed to meet irrigation needs. Heavy groundwater pumping from the early 1920s to the mid-1960s caused movement of saline water from San Francisco Bay inland and land subsidence in parts of Palo Alto and East Palo Alto. Since 1965, increased surface water deliveries from the Hetch Hetchy system has reduced groundwater demand and allowed the restoration of the groundwater subbasin to pre-1960 levels.

Surprisingly, the subbasin also benefits from the Alameda County Water District recharge program on the eastern side of the Bay. According to the Santa Clara Basin Watershed Management Initiative (2000), surface water spread by the District flows several hundred feet beneath the Bay and sustains groundwater pumping along the bayfront in Palo Alto, Menlo Park, East Palo Alto and Mountain View.

The shallow groundwater in the San Francisquito Creek alluvial fan section of the subbasin extends to depths of up to 100 feet. Upstream of San Mateo Drive water levels are more than 20 feet below the creek bottom. Groundwater levels may be near the streambed just downstream of Middlefield Road and then again in the tidal reach, downstream of Highway 101 and through East Palo Alto.

The groundwater in the San Mateo Subbasin tends to be quite hard and have high concentrations of iron and manganese.

4.2.3 Baylands

The City of East Palo Alto is located on the uniformly flat lands adjacent to the San Francisco Bay known as the Baylands. The elevation difference between the northwest section of the city adjacent the Bay and its southeast point is only 20 feet. The term “Baylands” refers to land bordering the Bay that lies between the maximum and minimum elevations of the tides, including land actually touched by the tides and land that would be tidal in the absence of any levees, seawalls or other human-made structures that block the tides. Baylands include tidal mudflats, tidal sloughs, coastal (tidal) salt marshes, diked salt marshes, brackish water marshes, salt ponds, freshwater marshes and an extensive system of dikes and levees.

4.2.4 San Francisquito Watershed

The San Francisquito Creek Watershed covers approximately 42 square miles of the South Bay area, draining the east-facing slopes of the Santa Cruz Mountains through to the San Francisco Bay. The upper part of the watershed is rural and hilly, while the lower part of the watershed is urban and flat. The highest elevation in the watershed is approximately 2,200 feet.

The watershed is “probably the most inter-jurisdictionally complicated watershed in the Bay Area” (USGS 2003), enveloping the Cities of East Palo Alto, Menlo Park, Palo Alto, Portola Valley and Woodside, unincorporated areas in both San Mateo and Santa Clara Counties, and Stanford University. What’s more, San Francisquito Creek forms the county line between San Mateo and Santa Clara Counties; the watershed is approximately 80 percent in San Mateo County and 20 percent in Santa Clara County.

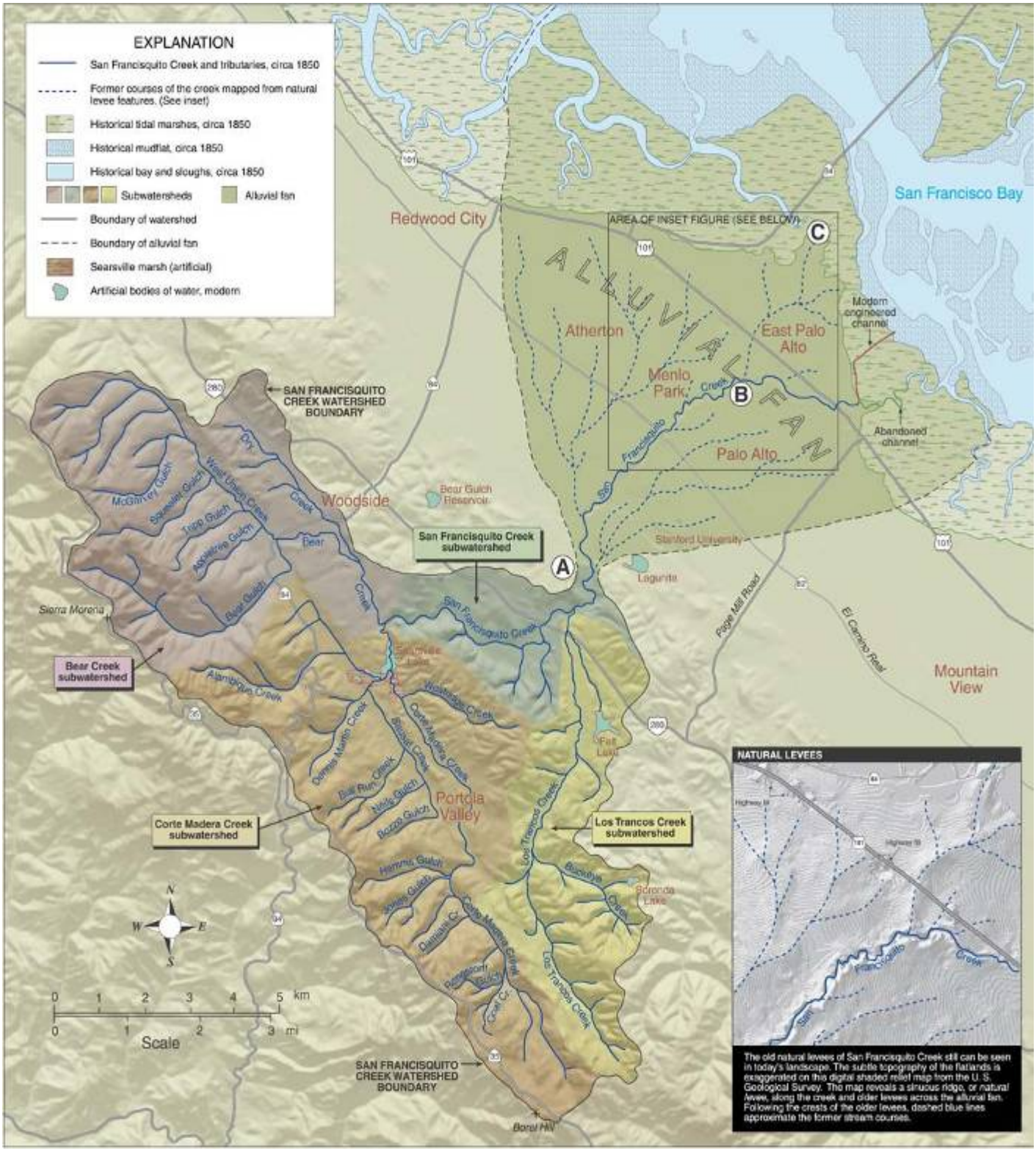
The San Francisquito Creek fan encompasses approximately 22 square miles. The subbasin boundaries roughly correspond to the extent of the San Francisquito Creek alluvial fan. The City of East Palo Alto lies entirely on the alluvial fan of San Francisquito Creek (see Figure 4-5 and 4-6), sharing this floodplain with the Cities of Menlo Park and Palo Alto. Historically, during floods the swollen creek would deposit sand, silt and gravel carried from the hills across the Baylands area. For thousands of years this process, coupled with the constantly changing course of the lower streambed, built up thick, fan-shaped sedimentary deposits of sand and gravel on which East Palo Alto and its neighbors now sit.

The San Francisquito Creek subbasin is composed of coarse- and fine-grained alluvial deposits of San Francisquito Creek. The groundwater system includes a shallow aquifer and a deep aquifer beneath a laterally extensive confining clay layer. The deep aquifer consists of an upper and lower zone. The groundwater subbasin is as much as 1,000 feet thick in places. The groundwater system includes a shallow aquifer that extends from the ground surface to about 15 to 100 feet below ground surface (bgs) and a deep aquifer beneath the confining layer that has two water-bearing zones. The upper zone is between 200 and 300 feet bgs and the lower zone extends to depths greater than 300 feet bgs.

The City of Menlo Park and East Palo Alto commissioned a study on the San Francisquito Creek Groundwater Subbasin (Watershed). The study area is shown in Figure 4-6. The report developed by Todd Engineers provides a preliminary feasibility level evaluation of the potential supply and quality of groundwater resources in Menlo Park and East Palo Alto.

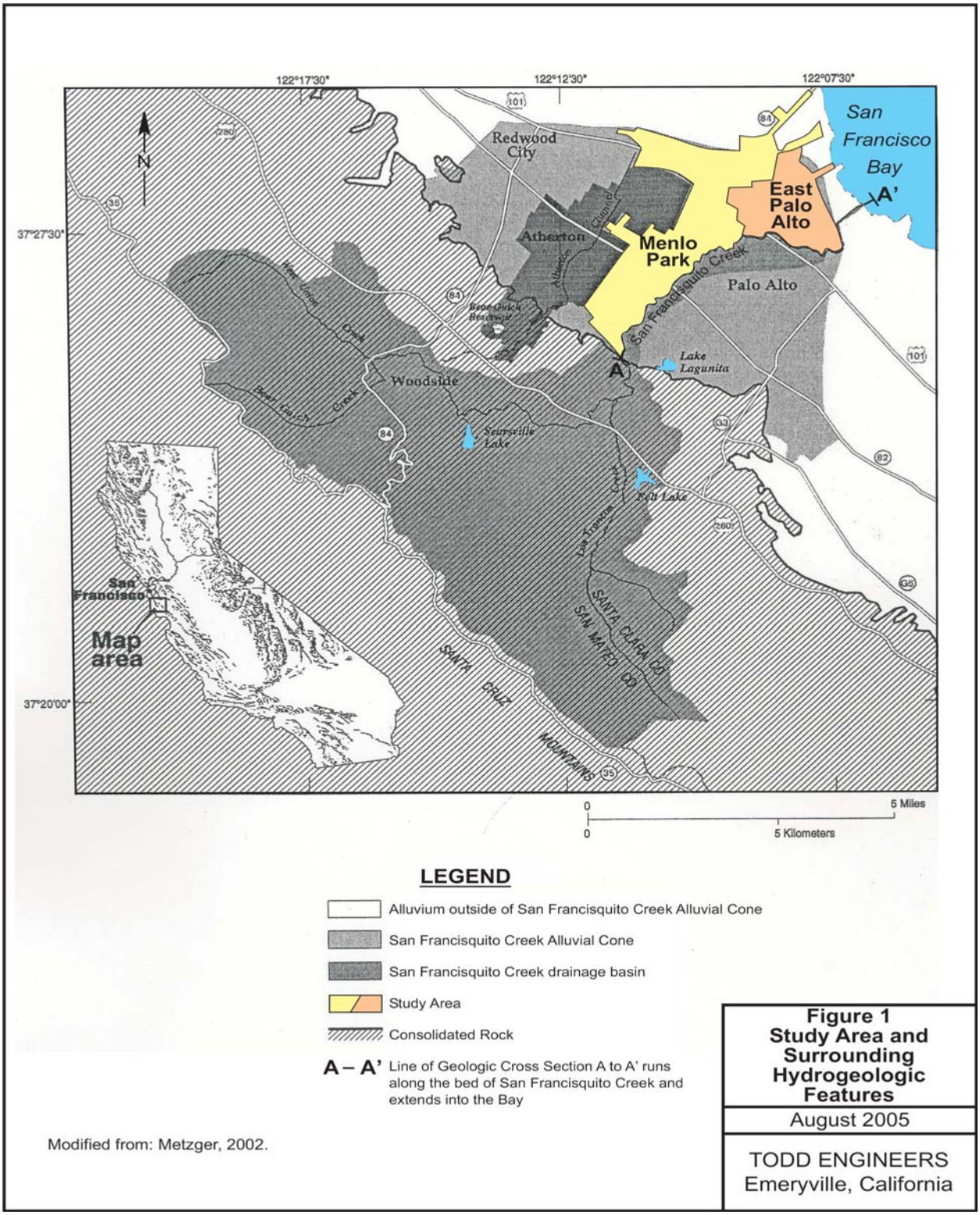
The report determined that supplemental wells could be installed by the City of East Palo Alto and Menlo Park for irrigation and/or potable use to augment existing water supplies in case of emergency or drought. Yields from a properly designed and sited large diameter well installed in the Cities can be expected to range from approximately 300 to 1,800 gpm. The preliminary estimate of annual groundwater recharge in the San Francisquito Subbasin ranges from approximately 4,000 to 8,000 AFY. The Cities could install supplemental wells to capture some portion of this annual recharge without mining the groundwater resource. Development of a regional strategy among the local water purveyors is recommended to manage the common groundwater resource. Such a strategy might include the regular monitoring of groundwater levels and quality.

Figure 4-5 San Francisquito Creek Watershed and Alluvial Fan



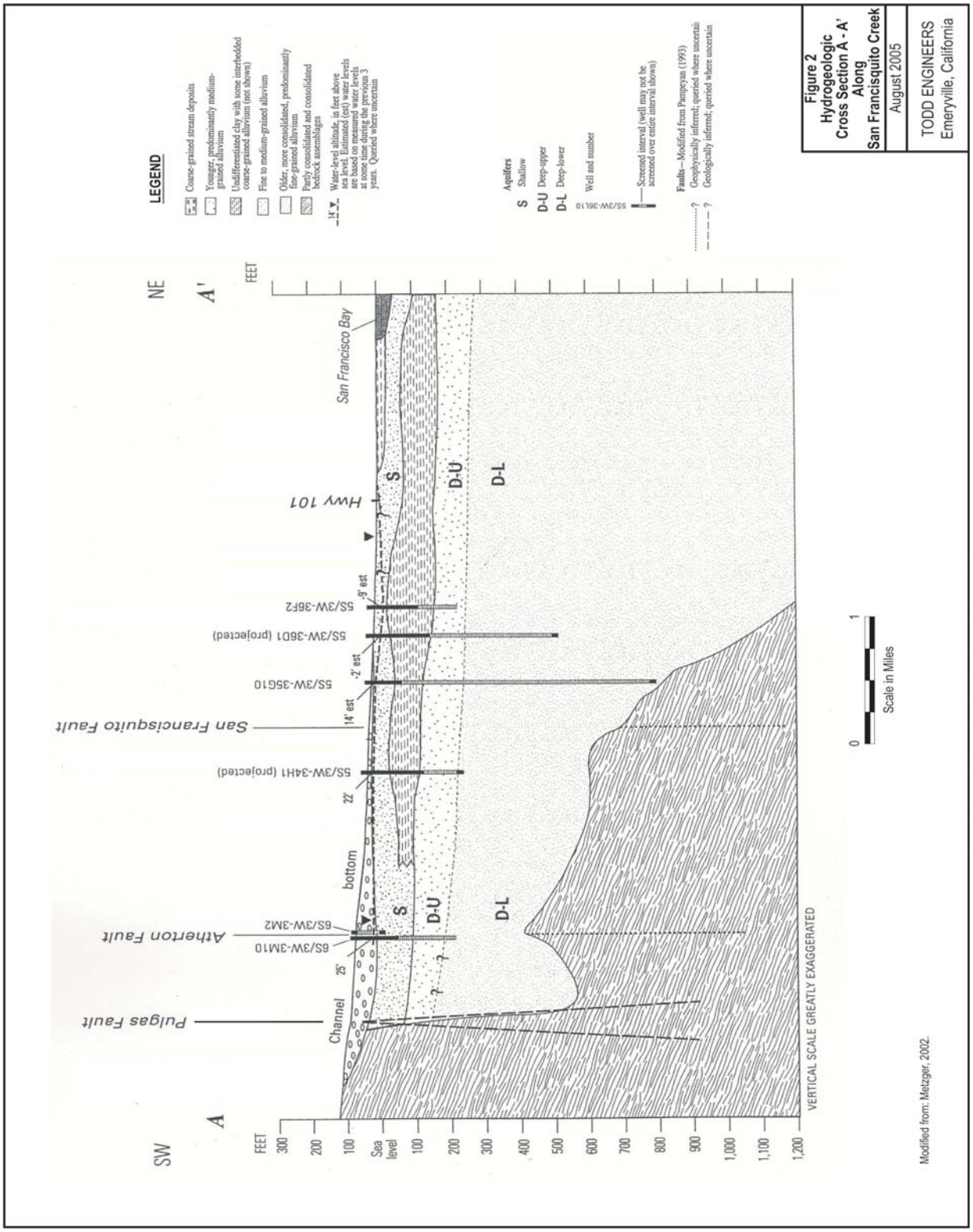
Source: Guide to San Francisco Bay Area Creeks, 2005.

Figure 4-6 San Francisquito Creek Study Area



Source: Feasibility of Supplemental Groundwater Resources Development, Todd Engineers 2005

Figure 4-7 San Francisquito Basin Hydrological Cross Section



Source: Feasibility of Supplemental Groundwater Resources Development, Todd Engineers 2005

4.2.5 Gloria Bay Well

The groundwater in East Palo Alto has high levels of total dissolved solids, nitrate, arsenic, iron and manganese. The groundwater resource could provide a secondary source of supply vital to the reliability of the water supply system.

The United States Environmental Protection Agency standards for drinking water fall into two categories—Primary Standards and Secondary Standards. Iron and manganese are both classified under the Secondary Maximum Contaminant Level (SMCL) standards. The SMCL for iron in drinking water is 0.3 milligrams per liter (mg/L) and 0.05 mg/L for manganese. The City of East Palo Alto water system's groundwater exceeds the iron and manganese SMCL.

The groundwater in East Palo Alto will be treated to precipitate, coagulate and filter out the iron, manganese and arsenic; however, the treated water will retain the dissolved solids. Therefore, the groundwater will need to be blended for nitrate and total dissolved solids reduction with water from Hetch Hetchy surface water system, which achieves extremely low nitrate and dissolved solids through its disinfection, pH and ion stabilization treatment process.

In 1981, the East Palo Alto County Water District installed the Gloria Bay Well at the corner of Gloria Way and Bay Road in order to supplement the Hetch Hetchy supply. Shortly after the groundwater well's activation, residents complained of a strange odor emanating from the water and claimed it made the water undrinkable. The water was found to be safe to drink, passing the California Department of Public Health state drinking water standards at the time, though not meeting the Department's aesthetic standards for odor. Officials were uncertain whether the odor was caused by the well water's contact with chlorinated San Francisco water (the SFPUC now uses chloramines instead of chlorine to treat its drinking water) or the specific mineral content of the well water itself. The well ceased production in 1989 and was officially taken out of domestic service in July 1999.

A pump test conducted in 2003 shows the groundwater well has the capacity to produce 350 gallons per minute (gpm). Well inspections completed at the same time determined that the screen perforations were located in the intervals from 259 to 282 feet and from 319.5 to 325.5 feet below ground surface. The casing is 12-inch, spiral-seam steel.

The groundwater well is currently utilized on a limited, part-time basis for non-domestic purposes. The water from the groundwater well serves the City of East Palo's street cleaning, construction dust-control, and sewer-line flushing programs. The well's discharge line is not connected to the distribution system.

Due to its rapidly increasing water needs, the city plans to redevelop the Gloria Bay Well and install new groundwater wells and treat the groundwater to meet California drinking water standards. The City of East Palo Alto proposes to construct two 500 gpm (or one 1,000 gpm) groundwater wells and a 1,500 gpm iron and manganese treatment facility with storage reservoirs for blending with the Hetch Hetchy surface water supply. The groundwater wells and treatment works are estimated to cost about $2.4 million and the reservoir(s) $7 million.

Table 4-3 Groundwater Production

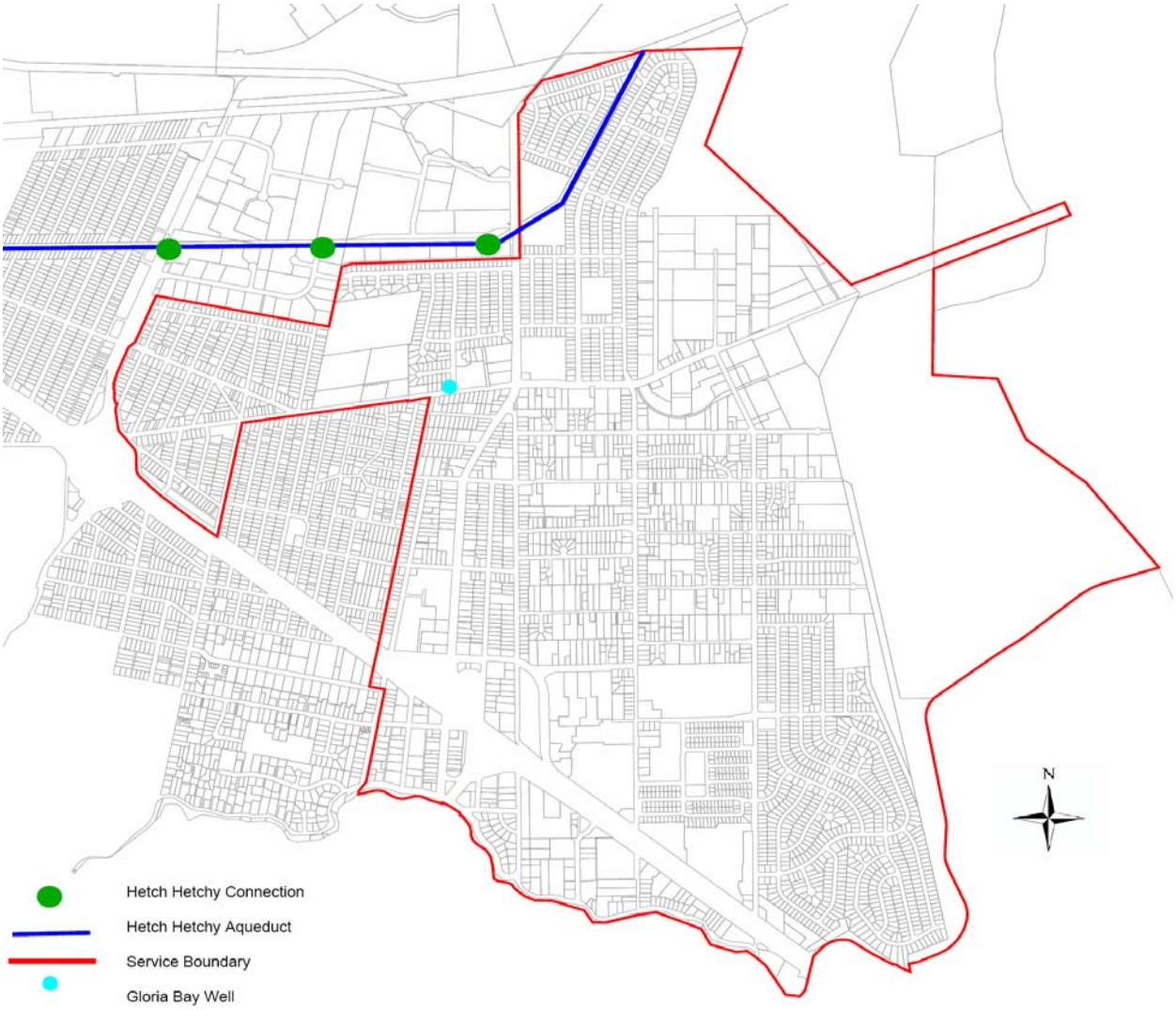
Basin name(s) (AFY)	Metered	2006	2007	2008	2009	2010
San Mateo Subbasin	Yes	2	3	18	1	17
Total groundwater pumped		2	3	18	1	17
Groundwater as a percent of total water supply		**0**	**0**	**0.8**	**0.0**	**0.8**

Table 4-4 shows the amounts of groundwater projected to be reintroduced into the City of East Palo Alto water system in the next 25 years.

Table 4-4 Potential Groundwater Pumping

Basin Name (AFY)	2015	2020	2025	2030	2035
Santa Clara Valley Groundwater Basin, San Mateo Subbasin	1,630	1,630	1,630	1,630	1,630
Potential % of Total Water Supply	42.57%	40.21%	39.96%	39.96%	39.96%

Figure 4-8 Well Location



4.3 Local Surface Water

The City of East Palo Alto does not draw on any local surface water sources for drinking water purposes, and has no plans to do so in the future. However, the SFPUC Hetch Hetchy system is primarily a surface water system; for more information see Section 4.1.

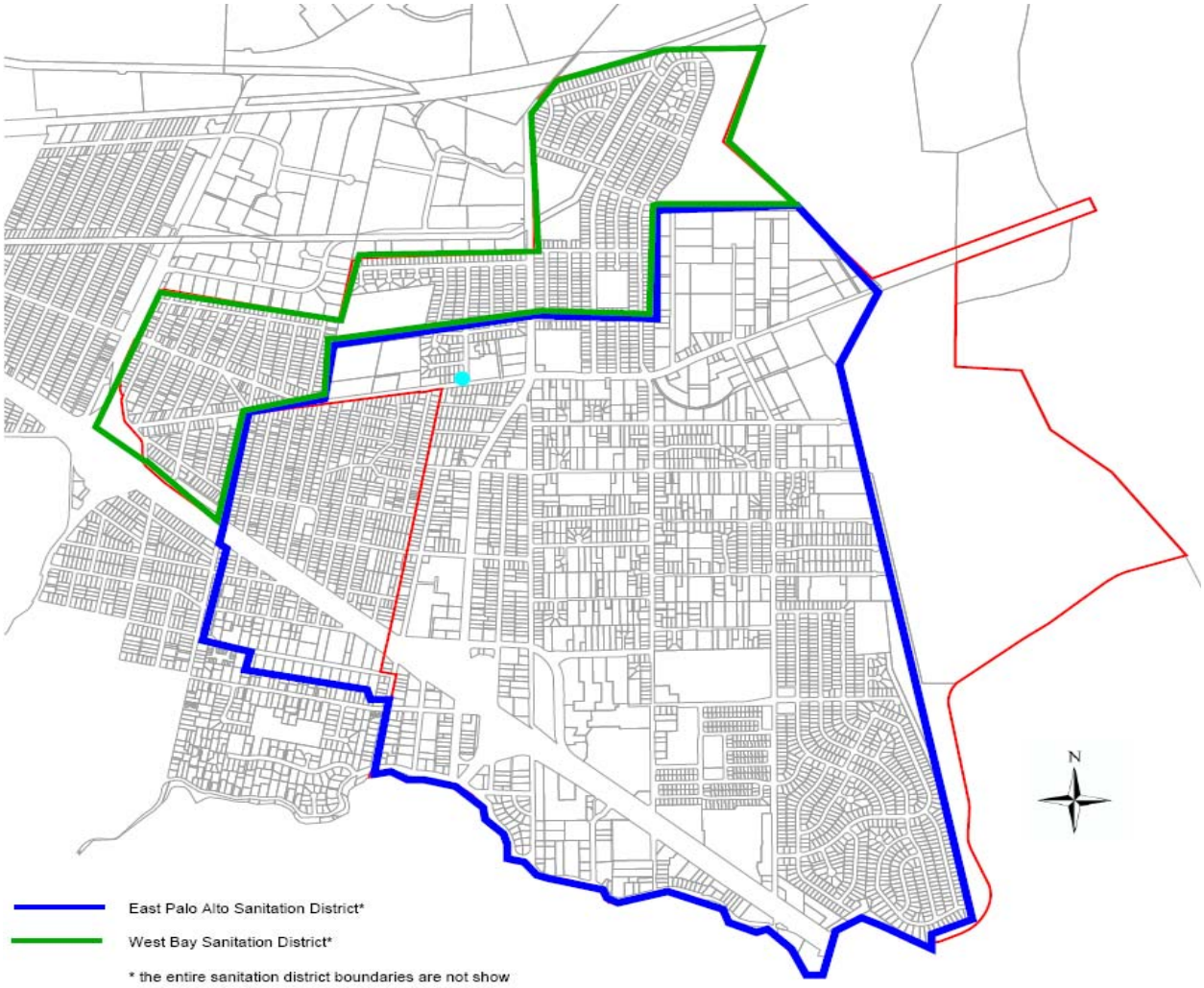
4.4 Recycled Water Opportunities

The City of East Palo Alto is served by two wastewater districts—the East Palo Alto Sanitary District (EPASD) and the West Bay Sanitary District (WBSD)—which transport wastewater out of the city boundaries. Both districts overlie areas of the city served by the East Palo Alto water system; though EPASD covers by far the majority of the city's service area while WBSD covers a small portion of the city as part of the district's larger service area to the north and east (see Figure 4-9). EPASD delivers its wastewater to the City of Palo Alto's Regional Water Quality Control Plant (RWQCP), and WBSD delivers its wastewater to the South Bayside System Authority Regional Treatment Plant (SBSARTP) in San Carlos.

Currently, there is no use of recycled water within the City of East Palo Alto. All wastewater for the city is conveyed outside the city limits and treated by the wastewater treatment facilities serving the Cities of Palo Alto and Redwood City. These two facilities receive all of the wastewater produced by East Palo Alto. The facilities provide full treatment capacity to prepare recycled water, which is then reused in Redwood City and in northern Santa Clara County, but there is no infrastructure in place to transfer recycled wastewater back into East Palo Alto.

However, the city plans to install satellite wastewater treatment plants to draw wastewater off the city's sewer lines *before* discharge outside the city boundaries and reuse treated wastewater for irrigation of public parks and facility landscaping. The city will also continue to study the use of recycled water in areas such as public works projects, dust control and soils compaction remediation, and irrigation in new developments such as the Ravenswood/Four Corners Redevelopment Area.

Figure 4-9 City of East Palo Alto Wastewater Districts Boundaries



4.4.1 Wastewater Resources

East Palo Alto Sanitation District

The EPASD serves portions of the Cities of East Palo Alto and Menlo Park, an area of approximately two square miles. Its collection system is comprised of between 30-35 miles of gravity sewer mains, ranging from 6-inch diameter to 24-inch diameter pipe. The district has no pump stations. Its service area includes over 6,800 residential and more than 300 commercial, industrial and institutional connections. Altogether, it serves over 22,000 local residents. EPASD discharges all wastewater collected to the RWQCP. The EPASD has 3.06 MGD (Annual Average) or 7.64% of treatment capacity allotment at the RWQCP. The RWQCP has a dry-weather capacity of 39 MGD and a wet-weather capacity of 80 mgd. Currently, the EPASD collects 657 million gallons of wastewater per year, or 1.8 mgd, from the City of East Palo Alto service area. The 2008 Palo Alto Recycled Water Facility Plan states that the RWQCP treats wastewater to the disinfected secondary-23 recycled water level[1] and discharges most of its effluent to the San Francisco Bay. For effluent that is not discharged to the Bay, the RWQCP has a 4 mgd recycled water facility that filters and disinfects the effluent to meet the requirements for disinfected tertiary recycled water "unrestricted use" as defined in California Code of Regulations, Title 22, Sections 60301 through 60355.

Palo Alto Sanitary District Recycled Water Project

Palo Alto's Water Reuse Program began in the early 1980's with the delivery of recycled water to Shoreline Golf Links. The system was expanded to include the Palo Alto Municipal Golf Course, Greer Park, and the Renzel Marsh (Phase 1). Phase 2 contains a pipeline along Embarcadero just east of Highway 101 and heads southeast along East Bayshore Road and serve the east side of the highway. The Palo Alto Sanitary District Recycled Water Project (Project) is currently in environmental review for Phase 3 of the City of Palo Alto Water Reuse Program. Phase 4 has been identified at a conceptual level and has not been examined at the facility-planning level. Phase 1 and Phase 2 are portions of the project that could directly serve East Palo Alto.

West Bay Sanitation District

In addition to a small portion of northern East Palo Alto, WBSD serves areas in the Cities of Menlo Park, Atherton, Redwood City, Woodside and unincorporated San Mateo and Santa Clara Counties. All wastewater collected within the district is transported through over 207 miles of main line trunk sewers to the Menlo Park Pumping Station and from there to the SBSARTP. Its service area includes over 18,380 residential and more than 625 commercial, industrial and institutional connections through 6-inch to 54-inch sewer mains.

WBSD owns and operates this treatment plant with the cities of Redwood City, Belmont, and San Carlos through a joint powers authority, the South Bayside System Authority. The SBSA treatment plant has a permitted operating capacity of 29 mgd average dry weather flow and a peak wet weather flow design capacity of 71 mgd. WBSD has treatment rights of 7.975 mgd of average dry-weather flow and 14.4 mgd of peak wet-weather flow at the SBSARTP. WBSD's average daily flow during dry weather is approximately 4.5 mgd or 68% of their capacity rights; it is not known how much of that flow comes out of East Palo Alto.

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[1] "Disinfected secondary-23 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 23 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30 day period.

Wastewater at SBSARTP is treated to advanced secondary standards. A portion of the secondary effluent is diverted and treated to disinfected tertiary recycled water criteria (Title 22 of the California Code of Regulations) established by the California Department of Public Health. The recycled water is currently delivered into the City of Redwood city's recycled water system. The remaining secondary effluent is discharged through an outfall into the San Francisco Bay in accordance with the National Pollutant Discharge Elimination System permit issued by the San Francisco Regional Water Quality Control Board in January 2007. Table 4-5 summarizes the current and projected amounts of wastewater treated and disposed either via the outfall or for recycled water use.

WBSD is entitled to a share of the effluent from SBSARTP and may eventually wish to exercise their entitlement and could deliver it to East Palo Alto. The treatment facilities at SBSARTP are located within Redwood City limits, making access to the effluent somewhat complicated because of the length of recycled transmissions lines required and it would involve trenching through residential neighborhoods and streets.

The South Bayside System Authority Recycled Water Project

The Redwood City Recycled Water Project began with a pilot or First Step Project in 2000. The success of the First Step Project resulted in extending the project for two additional two-year periods. At the end of this six years, the Redwood City Recycled Water Project commenced. Design and construction of the Redwood City Recycled Water Project was initiated in 2004, and included permanent recycled water treatment and storage facilities at SBSARTP, a recycled water distribution system, and on-site customer retrofit facilities. Treatment facilities at SBSARTP can produce up to 9,000 gpm of disinfected tertiary recycled water, reservoirs at SBSARTP provide 4.36 million gallons of storage, and the pump station at SBSARTP can deliver up to 13,100 gpm of recycled water to the transmission system.

The distribution system portion of the project includes two phases. Phase 1 has already been constructed and includes pipelines and customers east of Highway 101 in Redwood Shores, the Greater Bayfront Area, and the Seaport area. Phase 2 is eventually expected to include pipelines and pumping facilities to serve customers west of Highway 101. The recycled water pipeline distribution system for Phase 1 was completed in 2010.

Table 4-5 summarizes the current and projected amounts of wastewater treated and disposed either via the regional plants outfall or for recycled water use.

Both the RWQCP and SBSARTP put a portion of their wastewater streams through primary, secondary, and advanced (tertiary) stages of treatment to meet recycled water standards for unrestricted beneficial reuse per California Code of Regulations, Title 22 and the remaining through standards for restricted use. Both plants deliver this highly treated wastewater for reuse in certain sections of their service area. Neither, however, delivers recycled wastewater back to the City of East Palo Alto water service area.

As irrigation and other non-potable uses are the first to be cut back during drought, each of these projects could provide customers with a reliable, locally controlled supply to protect landscape value. It will also reduce the level of potable water rationing during drought, since non-potable water demand can continue to be fulfilled with recycled water.

In order to access recycled water, the City of East Palo Alto would have to connect to the SBSA or the Palo Alto Sanitary District recycled water lines. For the SBSA, at least four miles of pipe would need to be laid to transport to the city limits of East Palo Alto. The pipe would run from the corner of Maple Street and the Bayshore Freeway to the area located around East Bayshore Road and Laurel Lane. Additional infrastructure would be needed to get the recycled water to the place of use within the city limits.

More realistic connection would be to connect to the closer of the two recycled water systems, the Palo Alto Sanitary District Recycled Water system. This would require the construction of approximately 4,000 feet of pipe from the corner of Embarcadero Road and East Bayshore Road to the area located around East Bayshore Road and Pulgas Avenue. Again, additional infrastructure would be needed to get the recycled water to the place of use within the city limits. See Figure 4-10 for the closest recycled lines.

The City of Palo Alto is open to negotiating a connection to existing recycled-water pipelines. The southwest portion of the East Palo Alto, which includes the City of East Palo Alto Permit Center, Martin Luther King Park, Ravenswood Gateway 101 Park, Edison Brentwood Academy, and the potential Ravenswood Business Development, has the most potential to use the recycled water.

Figure 4-10 EPASD and SBSA Recycled Water Lines

Note: Not all recycled lines are depicted on the map.

Table 4-5 contains estimated current and projected quantities of wastewater collected within and treated outside of the City of East Palo Alto water service area:

Table 4-5 Wastewater Collection and Treatment

Type of Wastewater (AFY)	2005	2010	2015	2020	2025	2030	2035
East Palo Alto Sanitary District (Palo Alto RWQCP)							
Wastewater collected & treated in service area	1,208	1,220	1,702	1,780	1,894	2,024	2,175
Wastewater collected & Treated by RWQCP	26,883	24,979	26,323	27,556	28,900	30,691	30,691
Volume that meets recycled water standard	26,883	24,979	26,323	27,556	28,900	30,691	30,691
West Bay Sanitary District (South Bayside System Authority)							
Wastewater collected & treated in service area	302	305	425	445	474	506	544
Wastewater collected & Treated by SBSA	19,300	19,714	20,498	21,282	22,066	22,626	22,626
Volume that meets recycled water standard	30	490	987	1,264	1,432	1,590	1,590
Totals							
Wastewater collected & treated in service area	1,510	1,525	2,127	2,225	2,368	2,530	2,719
Wastewater collected & Treated by RWQCP &SBSA	46,183	44,693	46,821	48,838	50,966	53,317	53,317
Volume that meets recycled water standard	**26,913**	**25,469**	**27,310**	**28,820**	**30,332**	**32,281**	**32,281**

No recycled water is currently being used in the City of East Palo Alto water service area. However, recycled water may be used in the future. Table 4-6 lists the types and quantities associated with potential future recycled water uses in the city:

Table 4-6 Potential Future Recycled Water Uses

User type	Treatment Level	2010	2015	2020	2025	2030	2035
Landscape (Parks) (AFY)	Tertiary	0	0	75	100	100	100
Landscape (Medians) (AFY)	Tertiary	0	0	25	25	25	25
Street Sweeping (AFY)	Tertiary	0	0	25	25	25	25
	Total	**0**	**0**	**125**	**150**	**150**	**150**

4.4.2 Future Recycled Water Uses

Recycled water could be used for irrigation of landscaping on commercial properties, common areas of residential sites, city-owned streetscapes, and dust control at industrial and construction sites.

Locally, providing treated wastewater for reuse in the City of East Palo Alto for municipal parks, school and landscaped median irrigation (both Interstate 101 and local thoroughfares), commercial and industrial facilities has long been a priority to conserve water supplies in the face of ever increasing growth and water demand. The City of East Palo Alto is planning construction of a small-scale, membrane-based systems built on or near an existing sewer line in location where demand for reclaimed water is high.

Satellite Wastewater Treatment Plants

Satellite wastewater treatment plants or point-of-use facilities collect wastewater from an interceptor or trunk line, treat it so that it meets appropriate reuse standards, and then release it to nearby customers. Because the plants have such a small footprint, Membrane Biological Reactors (MBR) generally can be located even in dense urban locations without difficulty. The highly automated systems require relatively little operator oversight and tend to perform reliably.

The MBR process combines an aerobic biological process with an immersed membrane system. Cost-effective and reliable, this separation technology is suited for a wide range of municipal and industrial wastewater applications. MBR systems can also provide advanced nitrogen and phosphorus removal to meet the most stringent effluent requirements.

There are many equipment variations, configurations and options that can be used with MBR systems, all of which are designed to provide the necessary treatment for each wastewater or water reuse project. The equipment selected depends on effluent requirements, operation and maintenance requirements, power consumption, future expansion and initial capital costs.

Within the MBR process, the biological process and membrane operating systems are located in separate tanks to optimize performance of the overall process and to simplify operation and maintenance. This unique combination eliminates the need for clarifiers, return sludge pumping, polishing effluent filters and maintenance normally associated with a conventional clarification process.

By eliminating clarifiers, the biological process can be designed and operated for high-rate wastewater treatment, rather than sludge settleability. The biological system can also be operated at much higher mixed liquor suspended solids (MLSS) concentrations (8,000 to 16,000 mg/L). This results in a more efficient biological process that increases solids retention time, reduces sludge yield and improves reactor efficiency for nitrification and denitrification.

High MLSS levels also mean that the plants can operate with shorter hydraulic retention times, allowing smaller reactor basins than with conventional treatment. Space requirements in the plant can be up to 50 percent less than with a conventional biological process.

Operation of the MBR treatment process is easily automated and can be controlled with a microprocessor such as a membrane monitoring system, which continuously monitors and records important operational parameters. A highly automated design helps operators meet stringent environmental requirements.

4.4.3 Encouraging Recycled Water Use

A satellite wastewater treatment plant in the City of East Palo Alto will create up to 50,000 gallons per day of usable water, offsetting a like amount of water currently being imported and purchased from the SFPUC.

The cost of water imported from SFPUC is $828.00 per acre-foot and the retail rate is $1,180.00 per acre-foot. The cost to treat an acre-foot of wastewater at the regional wastewater treatment plant is approximately $2,661.00 per acre-foot.

The assumption is that if an acre-foot of wastewater makes it to the wastewater treatment plant it will cost $2,661.00 to treat and $1,180.00 to import and purchase that acre-foot retail; thus, the expense is $3,841.00 per acre-foot. If a satellite wastewater treatment plant costs $950.00 per acre-foot, the net savings to the city and commercial/industrial customers could be as much as $2,891.00 per acre-foot.

Satellite wastewater will be priced at least 5 percent less than the retail water rates to encourage use. Customers must be educated about the total saving and benefits of using recycled water.

Table 4-7 lists the methods the City of East Palo Alto plans to use to encourage recycled water use, and the projected resulting water savings from each action:

Table 4-7 Methods to Encourage Recycled Water Use

Actions	**Use Projected to Result from This Action** (AFY)				
	2015	**2020**	**2025**	**2030**	**2035**
Financial incentives	0	50	75	75	75
Environmental recognition	0	10	20	20	20
Exemptions from mandatory water shortage restrictions	0	10	20	20	20
Total	**0**	**70**	**115**	**115**	**115**

4.5 Interconnection(s)

The City of East Palo Alto and its water contractor, American Water Enterprise, have been in the process of assessing the city's water system, identified the critical assets and rated the potential threats. A strategy has been developed to reduce the risk to the water system. The most significant risk reduction measure identified in the process was redundancy design in the system through construction of interconnections between water system transmission infrastructures.

Increased physical security will reduce some risk associated with a potential threat, but not all. Another level of reliability can be achieved by including and/or increasing redundancy in the system (e.g. multiple pump stations and treatment plants, and/or overlapping distribution systems). With sufficient redundancy, the City of East Palo Alto can quickly recover from the loss of a single asset by redirecting distribution lines.

Specifically, the project will install additional interconnections between the East Palo Alto water system to the Palo Alto Park Mutual Water Company water system (Public Water System ID No. 4110020) and O'Connor Tract Co Op Water Company with a 6-inch bidirectional metered system interconnection. The city already has interconnections with the City of Menlo Park.

Palo Alto Park Mutual Water Company water system and O'Connor Tract Co Op Water Company rely on groundwater and are not impacted as greatly during drought periods.

4.6 Transfer or Exchange Opportunities

The existing San Francisco regional water system does not have sufficient supplies in dry years. The WSA allows for the transfer or exchange of water among parties, both inside and outside of the RWS. Within the SFPUC system, it is possible to transfer ISG and/or unused portions of water allocations among contracting agencies. The Water Shortage Allocation Plan (WSAP) adopted by SFPUC and its wholesale customers provides for voluntary transfers of water among wholesale customers during periods when mandatory rationing is in effect within the RWS. Some wholesale customers have the capacity to draw more heavily on other water supplies, such as the State Water Project or groundwater, during dry years and may be willing to transfer a portion of their ISG to other customers.

Both the WSA and state law also allow purchase and transfer of water from outside the SFPUC service area. As permitted by the WSA and state law, water may be purchased from outside of the RWS and conveyed to SFPUC and/or East Palo Alto through third-party transmission systems. Additional water could be secured either by SFPUC or East Palo Alto to augment its water supply. Such an arrangement would require both a contract with the third-party water supplier, and an agreement between East Palo Alto and the SFPUC on the water quality, price, and operational terms.

In additional to acquiring transferred water individually, BAWSCA has statutory authority to assist the wholesale customers of the Hetch Hetchy regional water system to plan for and acquire supplemental water supplies.

For additional information regarding transfer and exchange opportunities between BAWSCA member agencies that receive water from SFPUC or between a BAWSCA agency and SFPUC, please refer to the SFPUC WSAP (specifically Sections 2.5 and 3.4 (see Appendix F for a copy of the WSAP)).

Table 4-9 outlines the transfer and exchange opportunities for the City of East Palo Alto:

Table 4-9 Transfer and Exchange Opportunities

Transfer agency (AFY)	Transfer or exchange	Short-Term Proposed Quantity	Long-Term Proposed Quantity
BAWSCA Member Agencies	Transfer	500	150
City of Menlo Park	Transfer	100	0
O'Connor Tract Mutual Cooperative Water Company	Transfer	40	0
Total		**640**	**150**

4.7 Desalination Opportunities

The act of changing seawater into potable or fresh drinking water is called desalination. As the demand and competition for water in California increases and traditional ways of increasing water supply (construction of dams, aqueducts and pipelines) becomes less publicly acceptable, alternative ways of developing new water sources are being looked at. In 2004 the California Congress passes legislation requiring urban water suppliers to consider desalination opportunities in their Urban Water Management Plans.

East Palo Alto has no plans for development of desalinated water at this time. It is possible a desalination facility may be part of a preferred supply portfolio identified in the BAWSCA Long Term Reliable Water Supply Strategy. The Bay Area Regional Desalination Project is the only known effort between water agencies to evaluate a large scale Bay Area desalination project. The project is a collaboration between East Bay Municipal Utility District (EBMUD), SFPUC, Contra Costa Water District, and Zone 7 Water Agency to jointly explore developing the feasibility of a regional desalination facility that could benefit San Francisco Bay Area residents and businesses served by these agencies.

5.0 Water Supply Reliability

Water supply reliability is a measure of the City of East Palo Alto's ability to provide an adequate water supply during times of shortage. Reliability focuses mostly on drought, though it must take into consideration other potential threats to the water supply.

Combining SFPUC's supply assurance with data from Section 3.4 on the city's total projected water demand, this chapter will lay out three climatic scenarios—an average water year, a single dry water year, and multiple dry water years—for the city's water supply over the next 25 years.

5.1 SFPUC 2018 Interim Supply Limitation

As part of its adoption of the WSIP in October 2008, discussed in Section 4.1.2, the Commission adopted a water supply element, the Interim Supply Limitation (ISL), to limit sales from the RWS watersheds to an average annual of 265 mgd through 2018. The wholesale customers' collective allocation under the ISL is 184 mgd and San Francisco's is 81 mgd. Although the wholesale customers did not agree to the ISL, the WSA provides a framework for administering the ISL.

BAWSCA has developed a strategy to address each of its member agencies' unmet needs flowing from the ISL through its Water Conservation Implementation Plan and the Long-term Reliable Water Supply Strategy, separately addressed in Section 5.4.

5.1.1 Interim Supply Allocations

The Interim Supply Allocations (ISAs) refers to each individual wholesale customer's share of the ISL. On December 14, 2010, the Commission established each agency's ISA through 2018. In general, the Commission based the allocations on the lesser of the projected fiscal year 2017-18 purchase projections or Individual Supply Guarantees. The ISAs are effective only until December 31, 2018 and do not affect the Supply Assurance or the Individual Supply Guarantees, both discussed separately herein. San Francisco's Interim Supply Allocation is 81 mgd.

East Palo Alto's ISA is 1.96 mgd.

As stated in the WSA, the wholesale customers do not concede the legality of the Commission's establishment of the ISAs and Environmental Enhancement Surcharge, discussed below, and expressly retain the right to challenge either or both, if and when imposed, in a court of competent jurisdiction.

5.1.2 Environmental Enhancement Surcharge

The Commission plans to establish the Environmental Enhancement Surcharge concurrently with the budget-coordinated rate process. This surcharge will be unilaterally imposed by SFPUC on individual wholesale customers, and SFPUC retail customers, when each agency's use exceeds their ISA and when sales of water to the wholesale customers and San Francisco retail customers, collectively, exceeds the ISL of 265 mgd.

The SFPUC is in the process of developing the methodology and amount of this volume-based charge. The Environmental Enhancement Surcharge will become effective beginning fiscal year 2011-12.

5.2 Tier 1 and Tier 2 Water Allocations

5.2.1 Tier One Drought Allocations

In July 2009, in connection with the WSA, the wholesale customers and San Francisco adopted a WSAP to allocate water from the RWS to retail and wholesale customers during system-wide shortages of 20% or less (the "Tier One Plan"). The Tier One Plan replaced the prior IWSAP, adopted in 2000, which also allocated water for shortages up to 20%. The Tier One Plan also allows for voluntary transfers of shortage allocations between the SFPUC and any wholesale customer and between wholesale customers themselves. In addition, water "banked" by a wholesale customer, through reductions in usage greater than required, may also be transferred.

The Tier One Plan, which allocates water between San Francisco and the wholesale customers collectively, distributes water based on the level of shortage:

Table 5-1 Water Deliveries in SFPUC Service Area

Level of System Wide Reduction in Water Use Required	Share of Available Water	
	SFPUC Share	Wholesale Customers Share
5% or less	35.5%	64.5%
6% through 10%	36.0%	64.0%
11% through 15%	37.0%	63.0%
16% through 20%	37.5%	62.5%

The Tier One Plan will expire at the end of the term of the WSA, unless extended by San Francisco and the wholesale customers.

5.2.2 Tier Two Drought Allocations

The wholesale customers have negotiated and adopted the "Tier Two Plan", the second component of the WSAP which allocates the collective wholesale customer share among each of the 26 wholesale customers (see Appendix H). This Tier Two allocation is based on a formula that takes multiple factors for each wholesale customer into account, including:

- Individual Supply Guarantee;
- Seasonal use of all available water supplies; and
- Residential per capita use.

The water made available to the wholesale customers collectively will be allocated among them in proportion to each wholesale customer's Allocation Basis, expressed in millions of gallons per day, which in turn is the weighted average of two components. The first component is the wholesale customer's Individual Supply Guarantee, as stated in the WSA, and is fixed. The second component, the Base/Seasonal Component, is variable and is calculated using the monthly water use for three consecutive years prior to the onset of the drought for each of the wholesale customers for all available water supplies. The second component is accorded twice the weight of the first, fixed component in calculating the Allocation Basis. Minor adjustments to the Allocation Basis are then made to ensure a minimum cutback level, a maximum cutback level, and a sufficient supply for certain wholesale customers.

The Allocation Basis is used in a fraction, as numerator, over the sum of all wholesale customers' Allocation Bases to determine each wholesale customer's Allocation Factor. The final shortage allocation for each wholesale customer is determined by multiplying the amount of water available to the wholesale customers' collectively under the Tier One Plan, by the wholesale customer's Allocation Factor.

The Tier Two Plan requires that the Allocation Factors be calculated by BAWSCA each year in preparation for a potential water shortage emergency. As the wholesale customers change their water use characteristics (e.g., increases or decreases in SFPUC purchases and use of other water sources, changes in monthly water use patterns, or changes in residential per capita water use), the Allocation Factor for each wholesale customer will also change. However, for long-term planning purposes, each wholesale customer shall use as its Allocation Factor, the value identified in the Tier Two Plan when adopted.

The Tier Two Plan will expire in 2018 unless extended by the wholesale customers.

5.3 Reliability of the Regional Water System

The SFPUC's WSIP provides goals and objectives to improve the delivery reliability of the RWS including water supply reliability. The goals and objectives of the WSIP related to water supply are:

Program Goal	System Performance Objective
Water Supply – *meet customer water needs in non-drought and drought periods*	• Meet average annual water demand of 265 mgd from the SFPUC watersheds for retail and wholesale customers during non-drought years for system demands through 2018. • Meet dry-year delivery needs through 2018 while limiting rationing to a maximum 20 percent system-wide reduction in water service during extended droughts. • Diversify water supply options during non-drought and drought periods. • Improve use of new water sources and drought management, including groundwater, recycled water, conservation, and transfers.

The adopted WSIP had several water supply elements to address the WSIP water supply goals and objectives. The following provides the water supply elements for all year types and the dry-year projects of the adopted WSIP to augment all year type water supplies during drought.

5.3.1 Water Supply – All Year Types

The SFPUC historically has met demand in its service area in all year types from its watersheds. They are the:

- Tuolumne River watershed
- Alameda Creek watershed
- San Mateo County watersheds

In general, 85 percent of the supply comes from the Tuolumne River through the Hetch Hetchy Reservoir and the remaining 15 percent comes from the local watersheds through the San Antonio, Calaveras, Crystal Springs, Pilarcitos and San Andreas Reservoirs. The adopted WSIP retains this mix of water supply for all year types.

5.3.2 Water Supply – Dry-Year Types

The adopted WSIP includes the following water supply projects to meet dry-year demands with no greater than 20 percent system-wide rationing in any one year:

- Restoration of Calaveras Reservoir capacity
- Restoration of Crystal Springs Reservoir capacity
- Westside Basin Groundwater Conjunctive Use
- Water Transfer with Modesto Irrigation District (MID) / Turlock Irrigation District (TID)

In order to achieve its target of meeting at least 80 percent of its customer demand during droughts, the SFPUC must successfully implement the dry-year water supply projects included in the WSIP.

5.3.3 Projected SFPUC System Supply Reliability

The SFPUC has provided information regarding the projected RWS supply reliability (see table in Appendix G). This table assumes that the wholesale customers purchase 184 mgd from the RWS through 2030 and the implementation of the dry-water water supply projects included in the WSIP. The numbers represent the wholesale share of available supply during historical year types per the Tier One Water Shortage Allocation Plan. This table does not reflect any potential impact to RWS yield from the additional fishery flows required as part of Calaveras Dam Replacement Project and the Lower Crystal Springs Dam Improvements Project.

5.3.4 Impact of Recent SFPUC Actions on Dry Year Reliability of SFPUC Supplies

In adopting the Calaveras Dam Replacement Project and the Lower Crystal Springs Dam Improvements Project, the SFPUC committed to providing fishery flows below Calaveras Dam and Lower Crystal Springs Dam as well as bypass flows below Alameda Creek Diversion Dam. The fishery flow schedules for Alameda Creek and San Mateo Creek represent a potential decrease in available water supply of an average annual 3.9 mgd and 3.5 mgd, respectively with a total of 7.4 mgd average annually. These fishery flows could potentially create a shortfall in meeting the SFPUC demands of 265 mgd and slightly increase the SFPUC's dry-year water supply needs. If a shortfall occurs, it is anticipated at the completion of construction of both the Calaveras Dam Replacement Project and the Lower Crystal Springs Dam Improvements project in approximately 2015 and 2013, respectively when the SFPUC will be required to provide the fishery flows.

The adopted WSIP water supply objectives include (1) meeting a target delivery of 265 mgd through 2018 and (2) rationing at no greater than 20 percent system-wide in any one year of a drought. As a result of the fishery flows, the SFPUC may not be able to meet these objectives between 2013 and 2018 without (1) a reduction in demand, (2) an increase in rationing, or (3) a supplemental supply. The following describes these actions.

Reduction in Demand

The current projections for purchase requests through 2018 remain at 265 mgd. However, in the last few years, SFPUC deliveries have been below this level, as illustrated below. If this trend continues, the SFPUC may not need 265 mgd from its watersheds to meet purchase requests through 2018. As a result, the need for supplemental supplies of 3.5 mgd starting in 2013 and increasing to 7.4 mgd in 2015 to offset the water supply loss associated with fish releases may be less than anticipated.

Table 5-2 Past Water Deliveries in SFPUC Service Area[2]

	FY2006	FY 2007	FY 2008	FY 2009	FY 2010
Total Deliveries (mgd)	247.5	257	254.1	243.4	225.2

Increase in Rationing

The adopted WSIP provides for a dry year water supply program that, when implemented, would result in system-wide rationing of no more than 20 percent. The PEIR identified the following drought shortages during the design drought; 3.5 out of 8.5 years at 10 percent rationing and 3 out of 8.5 years at 20 percent. If the SFPUC did not develop a supplemental water supply in dry years to offset the effects of the fishery flows on water supply, rationing would increase during dry years. If the SFPUC experiences a drought between 2013 and 2018 in which rationing would need to be imposed, rationing would increase by approximately 1 percent in shortage years. Rationing during the design drought would increase by approximately 1 percent in rationing years.

Supplemental Supply

The SFPUC may be able to manage the water supply loss associated with the fishery flows through the following actions and considerations:

- Development of additional conservation and recycling
- Development of additional groundwater supply
- Water transfer from MID and/or TID
- Increase in Tuolumne River supply
- Revising the Upper Alameda Creek Filter Gallery Project capacity[3]
- Development of a desalination project

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[2] Reference: SFPUC FY09-10 J-Table Line 9 "Total System Usage" plus 0.7 mgd for Lawrence Livermore National Laboratory use and 0.4 mgd for Groveland. No groundwater use is included in this number. Unaccounted-for-Water is included.

[3] The adopted WSIP included the Alameda Creek Fishery Enhancement project, since renamed the Upper Alameda Creek Filter Gallery (UACFG) project, which had the stated purpose of recapturing downstream flows released under a 1997 California Department of Fish and Game MOU. Implementation of the UACFG project was intended to provide for no net loss of water supply as a result of the fishery flows bypassed from ACDD and/or released from Calaveras Dam. At the time the PEIR was prepared, the UACFG was described in the context of recapturing up to 6300 AF per year. The UACFG will undergo a separate CEQA process in which all impacts associated with the project will be analyzed fully.

5.3.5 Meeting the Level of Service Goal for Delivery Reliability

The SFPUC has stated a commitment to meeting its contractual obligation to its wholesale customers of 184 mgd and its delivery reliability goal of 265 mgd with no greater than 20 percent rationing in any one year of a drought. In Resolution No. 10-0175 adopted by the Commission on October 15, 2010, the Commission directed staff to provide information to the Commission and the public by March 31, 2011 on how the SFPUC has the capability to attain its water supply levels of service and contractual obligations. This directive was in response to concerns expressed by the Commission and the Wholesale Customers regarding the effect on water supply of the instream flow releases required as a result of the Lower Crystal Springs Dam Improvement Project and the Calaveras Dam Replacement Project. In summary, the SFPUC has a projected shortfall of available water supply to meet its LOS goals and contractual obligations. The SFPUC has stated that current decreased levels of demand keep this from being an immediate problem, but that in the near future, the SFPUC must resolve these issues. Various activities are underway by the SFPUC to resolve the shortfall problem. SFPUC staff will report back to the Commission by August 31, 2011 to provide further information on actions to resolve the shortfall problem.

5.4 BAWSCA Long Term Reliable Water Supply Strategy

BAWSCA's water management objective is to ensure that a reliable, high quality supply of water is available where and when people within the BAWSCA service area need it. A reliable supply of water is required to support the health, safety, employment, and economic opportunities of the existing and expected future residents in the BAWSCA service area and to supply water to the agencies, businesses, and organizations that serve those communities. BAWSCA is developing the Long-Term Reliable Water Supply Strategy (Strategy) to meet the projected water needs of its member agencies and their customers through 2035 and to increase their water supply reliability under normal and drought conditions.

The Strategy is proceeding in three phases. Phase I was completed in 2010 and defined the magnitude of the water supply issue and the scope of work for the Strategy. Phase II of the Strategy is currently under development and will result in a refined estimate of when, where, and how much additional supply reliability and new water supplies are needed throughout the BAWSCA service area through 2035, as well as a detailed analysis of the water supply management projects, and the development of the Strategy implementation plan. Phase II will be complete by 2013. Phase III will include the implementation of specific water supply management projects. Depending on cost-effectiveness, as well as other considerations, the projects may be implemented by a single member agency, by a collection of the member agencies, or by BAWSCA in an appropriate timeframe to meet the identified needs. Project implementation may begin as early as 2013 and will continue throughout the Strategy planning horizon, in coordination with the timing and magnitude of the supply need.

The development and implementation of the Strategy will be coordinated with the BAWCSA member agencies and will be adaptively managed to ensure that the goals of the Strategy, i.e., increased normal and drought year reliability, are efficiently and cost-effectively being met.

5.5 East Palo Alto Supply Reliability

When the SFPUC declares a water shortage, East Palo Alto may be required to make water use cutbacks. Table 5-3 shows the current level of water supply reliability based on a set of operational, engineering, and hydrological assumptions from SFPUC. East Palo Alto has a contractual Individual Supply Guarantee of 2,199 AFY, this amount is not an absolute guarantee. In times of shortage, SFPUC will provide less than the assurance.

Table 5-3 SFPUC Supply Reliability

Water supply sources[1]	Purchase Year 2010	One Critical Dry Year	Multiple Dry Water Year Supply		
			Year 1	Year 2	Year 3
SFPUC System-Wide Shortage (%)		10	10	20	20
SFPUC Wholesale Allocation (AFY)	206,106	170,934	170,934	148,419	148,419
East Palo Alto Allocation Factor		1.39	1.39	1.39	1.39
City of East Palo Alto Allocation (AFY)	2,033	2,033	2,033	2,033	2,033
Percent of Water Supply Assurance	100	100	100	100	100

Wholesale water demands were very low relative to available supply throughout the Hetch-Hetchy System in 2010. Based on information provided by the SFPUC and application of the Tier 1 Drought Allocation Plan and the DRIP, our projected drought allocations from the SFPUC in 2010 and immediately thereafter are actually greater than our 2010 purchases of 1.81 mgd (e.g., our agency is projected to receive up to 2.1 mgd under a 10% system-wide rationing, and 1.8 mgd under a 20% system-wide rationing). As such, our agency has shown that in 2010, even under extended drought conditions, we are able to get 100% of our SFPUC purchase projections.

Source: SFPUC letter to Nicole Sandkulla dated March 31, 2011. The Allocation Factor is based on the current Tier 2 Drought Implementation Plan (DRIP) value of 1.39%. The Allocation Factor will be recalculated by BAWSCA each year as it is based on a variety of factors including historical water purchases over last 3 years. The drought frequency percentages are based on a repeat of the actual historic hydrologic period 1920 through 2002. In 9.6% of years (8 out of 83), there will be at least a 10 percent system-wide cutback based on this information.

5.6 Supply and Demand Comparison

The available supplies and water demands for East Palo Alto's service area were analyzed to assess the region's ability to satisfy demands during three scenarios: a normal water year, single-dry year and multiple-dry years. The tables in this section present the supplies and demands for the various drought scenarios for the projected planning period of 2015-2035 in five year increments.

Table 5-4 Supply and Demand Comparison Normal Water Year

Current Supplies / *Potential Additional Supplies (AFY)*	**2015**	**2020**	**2025**	**2030**	**2035**
Supply totals	2,199	2,199	2,199	2,199	2,199
Demand totals	2,658	2,780	2,960	3,161	3,400
Surplus or (Shortfall)	(459)	(581)	(761)	(962)	(1,201)
Difference as % of Supply	-20.9%	-26.4%	-34.6%	-43.7%	-54.6%
Difference as % of Demand	-17.3%	-20.9%	-25.7%	-30.4%	-35.3%
Potential New Supply Sources					
Gloria Bay Well	*420*	*420*	*420*	*420*	*420*
New Groundwater Wells	*1,210*	*1,210*	*1,210*	*1,210*	*1,210*
Recycled Water		*125*	*150*	*150*	*150*
Transfers/Exchanges					
TOTAL Potential Additional Supplies	***1,630***	***1,755***	***1,780***	***1,780***	***1,780***
Surplus or (Shortfall)	***1,171***	***1,174***	***1,019***	***818***	***579***

Table 5-5 gives the city's single dry year water supply reliability scenario for the years 2015, 2020, 2025, 2030, and 2035:

Table 5-5 Supply and Demand Comparison During Single Dry Years

Current Supplies / *Potential Additional Supplies (AFY)*	2015	2020	2025	2030	2035
Supply totals	2,033	2,033	2,033	2,033	2,033
Demand totals	2,658	2,780	2,960	3,161	3,400
Surplus or (Shortfall)	(625)	(747)	(927)	(1,128)	(1,367)
Difference as % of Supply	-30.7%	-36.7%	-45.6%	-55.5%	-67.2%
Difference as % of Demand	-23.5%	-26.9%	-31.3%	-35.7%	-40.2%
Potential New Supply Sources					
Gloria Bay Well	*420*	*420*	*420*	*420*	*420*
New Groundwater Wells	*1,210*	*1,210*	*1,210*	*1,210*	*1,210*
Recycled Water		*125*	*150*	*150*	*150*
Transfers/Exchanges					
TOTAL Potential Additional Supplies	***1,630***	***1,755***	***1,780***	***1,780***	***1,780***
Surplus or (Shortfall)	***1,005***	***1,008***	***853***	***652***	***413***

Table 5-6 gives the city's multiple dry year water supply reliability scenario for the years 2015, 2020, 2025, 2030, and 2035:

Table 5-6 Supply and Demand Comparison During Multiple Dry Years (First Year)

Current Supplies / *Potential Additional Supplies (AFY)*	2015	2020	2025	2030	2035
Supply totals	2,033	2,033	2,033	2,033	2,033
Demand totals	2,658	2,780	2,960	3,161	3,400
Surplus or (Shortfall)	(625)	(747)	(927)	(1,128)	(1,367)
Difference as % of Supply	-30.7%	-36.7%	-45.6%	-55.5%	-67.2%
Difference as % of Demand	-23.5%	-26.9%	-31.3%	-35.7%	-40.2%
Potential New Supply Sources					
Gloria Bay Well	*420*	*420*	*420*	*420*	*420*
New Groundwater Wells	*1,210*	*1,210*	*1,210*	*1,210*	*1,210*
Recycled Water		*125*	*150*	*150*	*150*
Transfers/Exchanges					
TOTAL Potential Additional Supplies	***1,630***	***1,755***	***1,780***	***1,780***	***1,780***
Surplus or (Shortfall)	***1,005***	***1,008***	***853***	***652***	***413***

Table 5-7 Supply and Demand Comparison During Multiple Dry Years (Second Year)

Current Supplies / *Potential Additional Supplies (AFY)*	2015	2020	2025	2030	2035
Supply totals	2,033	2,033	2,033	2,033	2,033
Demand totals	2,658	2,780	2,960	3,161	3,400

Surplus or (Shortfall)	(625)	(747)	(927)	(1,128)	(1,367)
Difference as % of Supply	-30.7%	-36.7%	-45.6%	-55.5%	-67.2%
Difference as % of Demand	-23.5%	-26.9%	-31.3%	-35.7%	-40.2%
Potential New Supply Sources					
Gloria Bay Well	*420*	*420*	*420*	*420*	*420*
New Groundwater Wells	*1,210*	*1,210*	*1,210*	*1,210*	*1,210*
Recycled Water		*125*	*150*	*150*	*150*
Transfers/Exchanges					
TOTAL Potential Additional Supplies	***1,630***	***1,755***	***1,780***	***1,780***	***1,780***
Surplus or (Shortfall)	***1,005***	***1,008***	***853***	***652***	***413***

Table 5-8 Supply and Demand Comparison During Multiple Dry Years (Third Year)

Current Supplies / *Potential Additional Supplies (AFY)*	**2015**	**2020**	**2025**	**2030**	**2035**
Supply totals	2,033	2,033	2,033	2,033	2,033
Demand totals	2,658	2,780	2,960	3,161	3,400
Surplus or (Shortfall)	(625)	(747)	(927)	(1,128)	(1,367)
Difference as % of Supply	-30.7%	-36.7%	-45.6%	-55.5%	-67.2%
Difference as % of Demand	-23.5%	-26.9%	-31.3%	-35.7%	-40.2%
Potential New Supply Sources					
Gloria Bay Well	*420*	*420*	*420*	*420*	*420*
New Groundwater Wells	*1,210*	*1,210*	*1,210*	*1,210*	*1,210*
Recycled Water		*125*	*150*	*150*	*150*
Transfers/Exchanges					
TOTAL Potential Additional Supplies	***1,630***	***1,755***	***1,780***	***1,780***	***1,780***
Surplus or (Shortfall)	***1,005***	***1,008***	***853***	***652***	***413***

In viewing the above tables, East Palo Alto is projected to be unable to meet its water supply reliability, without new water supply sources. If new sources are not secured, the city would have to declare a moratorium on new growth, and declare a water emergency and institute its Water Shortage Contingency Plan, which is detailed in Chapter 7.0.

5.7 Threats to Water Supply

Certain potential threats to the East Palo Alto's water supply must be monitored closely in order to detect and ameliorate future impacts to the availability and sufficiency of the city's water supply. These threats include future extended droughts, legal issues, and water quality and environmental concerns. A matrix of these threats to the city's current and future water sources are listed in Table 5-9:

Table 5-9 Factors Resulting in Inconsistency of Supply

Name of Water Source	Drought	Legal	Water Quality	Environmental

Groundwater	N/A	Adjudication	Salt Water Infiltration; Iron, Manganese	N/A
SFPUC	Sierra Snowpack	Allocation	N/A	Hetch Hetchy Restoration; Endangered Species; SFPUC Fisheries Flows

5.7.1 Drought

Drought is perhaps the most serious threat to the city's water supply through its impact on the Sierra Mountains' snowpack which feeds the Hetch Hetchy water supply system.

The local region experienced a prolonged drought from 1987 through 1992. During this time, the SFPUC met its retail customer needs through water purchases, conservation and voluntary rationing, followed by mandatory rationing. Wholesale customers such as East Palo Alto also reduced their demand through conservation and rationing. As a result of the drought-induced conservation programs, the SFPUC's retail and wholesale per capita water use has remained below pre-drought use.

5.7.2 Legal

Potential legal issues that may affect the City of East Palo Alto's water supplies are 1) possible change in its allocation of SFPUC water, and 2) future adjudication of its local groundwater source.

Allocation

As described in Section 4.1.4, the East Palo Alto, as a signatory to the WSA, is allocated a set amount of water from the SFPUC Hetch Hetchy system. The city is currently attempting to secure additional allocations with other wholesale members due to development within the city both currently and projected for the future. The city will do everything in its power to maintain and, if possible, increase its SFPUC allocation.

Adjudication

Currently, the groundwater within the San Mateo Subbasin of the Santa Clara Valley Groundwater Basin (see Section 4.2) is unregulated, which means that the city can pump out as much groundwater as it wishes, as long as it does not cause injury to a neighboring groundwater pumper.

It is possible that in the future a legal action may be brought against a groundwater pumper within the Santa Clara Valley Groundwater Basin in a California Superior Court, and that this legal action may result in an adjudication, or court-declared limitation, of the city's ability to pump groundwater from the basin. If such an event should occur, the city will be forced to abide by the court's ruling and pump only as much groundwater as stipulated in the official court judgment (or mutual stipulation by the parties to the lawsuit). The City of East Palo Alto will, of course, by that time be a party to the stipulation and have some say as to the groundwater restrictions instituted by the judicial court.

5.7.3 Water Quality

SFPUC Water Quality

In 2010, as in years past, the East Palo Alto's tap water met all United States Environmental Protection Agency (USEPA) and state drinking water health standards, according to the city's reporting to the California Department of Health Services.

The Hetch Hetchy Reservoir water meets all federal and state criteria for watershed protection, disinfection treatment, bacteriological quality and operational standards. As a result, the USEPA and the California Department of Health Services granted the Hetch Hetchy water source a filtration exemption so that water from this source does not require filtration treatment to ensure its safety. This exemption is contingent upon the Hetch Hetchy water quality continuing to meet the state criteria, which the city is confident SFPUC will continue to do.

Groundwater Quality

The city's potential groundwater source is another story entirely. Residing so close to the Bay, the city's groundwater is prone to salt water infiltration. Also, local groundwater tends to have high concentrations of iron and manganese, non-hazardous elements that can be a nuisance in a water supply.

Iron and manganese are common metallic elements found in the earth's crust which are chemically similar and cause similar problems. When exposed to air, iron and manganese sediments are oxidized and change from colorless, dissolved forms to colored, solid forms. Excessive amounts of these sediments are responsible for staining, and may even plug water pipes. Iron and manganese can also affect the flavor and color of food and water. Finally, nonpathogenic bacteria that feed on iron and manganese in water form slime in toilet tanks and can clog water systems.

If the city is able to reintroduce groundwater into its water supply in the future, the groundwater will be fully treated. The city does not project future water quality impacts having any affect on its future water supply scenarios.

5.7.4 Environmental

Three environmental issues may impact the SFPUC's ability to deliver to the City of East Palo Alto its full allocation of water in the future: 1) endangered species protection enforcement action, 2) Hetch Hetchy restoration, and 3) SFPUC Fishery Flows.

Endangered Species

Various fish species present in the Tuolumne River and Bay Area streams are either listed or candidates for listing under the state or federal endangered species acts. New listings and future enforcement actions under the acts could potentially directly affect water supplies available to the SFPUC system. In addition, future enforcement actions involving the Delta or Delta tributaries could further affect the availability of supplies to the State Water Project and the Central Valley Project, reducing SFPUC customers' alternate water supplies and increasing their need for additional SFPUC system deliveries.

Hetch Hetchy Restoration

There has been a spate of interest in the restoration of the Hetch Hetchy Valley to its pre-reservoir status. In 2006, the California Department of Water Resources prepared a report on the potential impacts of such a course of action. The report was limited to review of the many studies prepared during the last 20 years on the restoration of Hetch Hetchy Valley. The goal was to determine if, collectively, there was enough information to show the feasibility of restoring Hetch Hetchy Valley. Although the report was not considered a detailed report, it did note that restoring the Hetch Hetchy Valley could have a significant statewide implication from loss of water and power and from environmental impacts of replacing the water and power with other infrastructure. Though, at present, the chance of this occurring appears slim, environmental groups have been successful in challenging dam operations of late and may decide to turn their full attention on this issue.

SFPUC Fishery Flows

As described above in Section 5.3.4, the SFPUC is committed to providing fishery flows below Calaveras Dam and Lower Crystal Springs Dam as well as bypass flows below Alameda Creek Diversion Dam. The fishery flow schedules for Alameda Creek and San Mateo Creek represent a potential decrease in available water supply. These fishery flows could potentially create a shortfall in meeting the SFPUC demands of 265 mgd and slightly increase the SFPUC's dry-year water supply needs. If a shortfall occurs, it is anticipated at the completion of construction of both the Calaveras Dam Replacement Project and the Lower Crystal Springs Dam Improvements project in approximately 2015 and 2013, respectively when the SFPUC will be required to provide the fishery flows.

6.0 Demand Management

The City of East Palo Alto is committed to implementing water conservation programs at the local and regional level. Doing so will make it possible for the city to manage demand of water, especially during times of water scarcity.

This chapter gives an overview of regional water conservation efforts, the statewide water conservation Memorandum of Understanding (MOU) administered by the California Urban Water Conservation Council (CUWCC), and current and future City of East Palo Alto conservation measures.

6.1 Regional Water Conservation Coordination

BAWSCA and its member agencies look for opportunities to work with other water agencies, including the SFPUC and the Santa Clara Valley Water District (SCVWD), and leverage available resources to implement water use efficiency projects. For example, in 2005, BAWSCA and the SFPUC entered into a Memorandum of Understanding (MOU) regarding the administration of a Spray Valve Installation Program. Through this MOU, BAWSCA and the SFPUC worked cooperatively to offer and coordinate the installation of water conserving spray valves to food service providers throughout the BAWSCA service area. In addition, BAWSCA participates in the Bay Area Efficient Clothes Washer Rebate Program, which is a residential rebate program offered by all of the major Bay Area water utilities. Through participation in this program, BAWSCA and its participating member agencies were the recipients of $187,500 in Proposition 50 grant funds, which became available in Fiscal Year 2006/2007.

More recently, as part of the Bay Area Integrated Regional Water Management Plan, BAWSCA and the other major Bay Area water utilities submitted a Proposition 84 Implementation Grant Proposal in January 2011 to support regional water conservation efforts that offer drought relief and long-term water savings. The proposed project includes a package of water conservation programs to improve water use efficiency throughout the San Francisco Bay Area. The project provides direct funding, financial incentives (rebates), and/or subsidies for the implementation of programs that achieve reduced water demand, by all classes of water users: residential, and commercial, industrial and institutional. Four specific programs were selected for the project because they were determined to provide the most quantifiable and sustainable water savings, including: 1.) Water-Efficient Landscape Rebates, Training and Irrigation Calculator, 2.) High-Efficiency Toilet/Urinal Direct Install and/or Rebates, 3.) High-Efficiency Clothes Washer Rebates, and 4.) Efficient Irrigation Equipment Rebates.

BAWSCA and its member agencies will continue to look to partner with each other and the other Bay Area water utilities, as appropriate, to develop regional water conservation efforts that extend beyond local interests to examine costs, benefits and other related issues on a system-wide level. The goal is to maximize the efficient use of water regionally by capitalizing on variations in local conditions and economies of scale.

6.2 California Urban Water Conservation Council

The premier statewide organization dedicated to urban water conservation is the California Urban Water Conservation Council (CUWCC). The CUWCC administers the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), the result of a coordinated effort by the California Department of Water Resources (DWR), water utilities, environmental organizations and other interested groups to develop a central list of urban water conservation practices.

The CUWCC has identified fourteen (14) principal areas in which there are significant opportunities for urban water conservation, collectively known as “Best Management Practices,” or BMPs. The State Legislature codified these BMPs into the Urban Water Management Planning Act, renaming them “Demand Management Measures,” or DMMs.

The MOU requires that a water utility implement only the DMMs that are economically feasible. If a DMM is not economically feasible, the water utility may request an economic exemption for that DMM. The DMMs as defined in the MOU are generally recognized as standard definitions of water conservation measures.

Water providers who are signatories to the CUWCC MOU are allowed to submit copies of their mandatory BMP annual reports in lieu of a description of the DMMs in their Urban Water Management Plans. Though East Palo Alto is not a signatory to the MOU, it participates in the implementation of the BMPs/DMMs as a member of the BAWSCA—a CUWCC Group 3 (non-water provider) signatory.

6.3 BAWSCA Water Conservation Implementation Plan

In September 2009, BAWSCA completed the Water Conservation Implementation Plan (WCIP). The goal of the WCIP is to develop an implementation plan for BAWSCA and its member agencies to attain the water efficiency goals that the agencies committed to in 2004 as part of the Program Environmental Impact Report (PEIR) for the Water System Improvement Program (WSIP) which is further described in Section 4.1.2. The WCIP's goal was expanded to include identification of how BAWSCA member agencies could use water conservation as a way to continue to provide reliable water supplies to their customers through 2018 given the SFPUC's 265 mgd ISL. The SFPUC imposed the ISL on October 31, 2008, to limit the volume of water that the BAWSCA member agencies and San Francisco can collectively purchase from the RWS to 265 mgd until at least 2018.

Based on the WCIP development and analysis process, BAWSCA and its member agencies identified five new water conservation measures, which, if implemented fully throughout the BAWSCA service area, could potentially save an additional 8.4 mgd by 2018 and 12.5 mgd by 2030. The demand projections for the BAWSCA member agencies, as transmitted to the SFPUC on June 30, 2010, indicate that collective purchases from the SFPUC will stay below 184 mgd through 2018 as a result of revised water demand projections, the identified water conservation savings, and other actions.

Several member agencies have elected to participate in the BAWSCA regional water conservation programs and BAWSCA continues to work with individual member agencies to incorporate the savings identified in the WCIP into their future water supply portfolios with the goal of maintaining collective SFPUC purchases below 184 mgd through 2018.

6.4 Legal Authority to Implement Demand Management Measures

The City of East Palo Alto, as a municipally owned water utility, has the legal authority to implement demand management measure by ordinance or resolution through the City Council.

6.5 City of East Palo Alto Water Conservation Measures

In addition to the general water conservation measures found in the City of East Palo Alto's Municipal Code (Chapters 17.04 and 13.24.330-450—Appendix D), the city has either already implemented, is scheduled to implement, or has decided to not implement and will revaluate at a later time the following conservation measures.

6.5.1 DMM A - Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers

Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers consist of water audit services to all water customers. Customers who come into the American Enterprise office or East Palo Alto City Office, would be notified of the opportunity for water survey performed to help reduce their water use. American Water Enterprise staff members would work with the water customers to check for leaks, check water using fixtures, irrigation and landscape. The customer would also be given instruction on how to read the water meter and water utility bill. Based on the survey, staff would make written recommendations based on the customer's water use practices. If leaks are found, staff works with the customer to repair the leaks. When funding is available, audits may be performed. Approximately 86 surveys were conducted in the 2009-10 water year at a cost of approximately $4,300.

Estimating the benefits from a residential water survey program is difficult because it is up to the individual customer to implement recommendations from a survey. Due to the already low GPC, the City estimates a five percent decrease in water use for each unit surveyed. The average cost of the survey program is estimated to be approximately $50 per survey. The life span of a water survey is approximately three years. If 10 percent of residential connections are surveyed over the next ten years implementation program it would result in a savings of approximately 2.2 AFY. A snapshot of these potential savings is shown in Table 6-1.

Table 6-1 Cost-Benefit Analysis of DMM A

Total Cost	$17,064
Total Benefits	$15,244
Discount Rate (%)	6.0
B/C Ratio	0.89
Time Horizon (years)	12
Cost of Water (per AF)	$828
Average Water Savings (AFY)	2.2

The B/C ratio for this DMM is approximately 0.89. Since this B/C ratio is less than 1.0, it is not currently cost-effective for the City to implement this DMM.

6.5.2 DMM B - Residential Plumbing Retrofit

The city's plumbing codes reflect county and state laws regarding the use of water conserving devices. State law requires that all showerheads sold in California must meet a standard of 2.5 gallons per minute or less. Toilets can be retrofitted with displacement devices that reduce the amount of water used up to 4.2 gallons per day, and water faucets can be fitted with aerators that save approximately 1.5 gallons per day.

In addition the City's plumbing code for new construction and remodels, East Palo Alto distributes water conservation items such as low flow shower heads, kitchen sink aerators, and garden hose guns. Due to the lack of funding, and the already low gpcd for the City, minimal marketing is done for this DMM. The primary form of marketing is to notify customers who visit into the American Enterprise office or East Palo Alto City office of the availability of conservation devices. These items are then distributed to customers at the office as customers request them. Approximately 100 conservation items were handed out in the 2009-10 water year at a cost of approximately $400.

The City currently does not track the conservation items distributed to individual accounts. The effectiveness of this DMM may be evaluated by comparing metered water use for customers before and after installation of the conservation devices. Due to the lack of resources, no evaluation of the effectiveness has been completed; although a system wide effectiveness of water conservation has been looked at and is shown in Section 6.6. In the future and if resources become available, the City should track and compare meter usage to accounts who have installed conservation devices. Currently, any new funding that becomes available would be used for development of new supplies and storage facilities.

6.5.3 DMM C - System Water Audits, Leak Detection and Repair

The City of East Palo Alto tracks the difference between water produced or purchased and the amount of water sold to it customers. The difference, expressed as a percentage of total water produced, is referred to as unaccounted for water. Recent data shows that the City of East Palo Alto's unaccounted for water is approximately 8 percent. The generally accepted industry standard for unaccounted for water is from 7% to 15%. All water delivered to the City of East Palo Alto is recorded on master meters connected to the SFPUC Hetch Hetchy Aqueduct. All water distributed by the City of East Palo Alto to its customers is metered, with the exception of water used from fire hydrants for emergencies, periodic flushing, leaks and theft. The Utility Billing Software program enables American Water to log water use data and history of each service. Data for each service includes an account number, address, meter size and charges along with the water usage. With this data, the City of East Palo Alto and American Water Enterprises can calculate the unaccounted for water.

The City and American Water Enterprise do not have resources to perform leak detection. The City would have to hire a leak detection company. The estimated cost to perform the leak detection is $250 per mile. The estimated cost to fix leaks is estimated to be $4,000. The entire water system would be checked every other year. It is estimated that the losses would be reduced by half. A snapshot of these potential savings is shown in Table 6-1.

Table 6-2 Cost-Benefit Analysis of DMM C

Total Cost	$265,958
Total Benefits	$458,871
Discount Rate (%)	6.0
B/C Ratio	1.73
Time Horizon (years)	10
Cost of Water (per AF)	$828
Average Water Savings (AFY)	77

The benefit-to-cost (B/C) ratio is approximately 1.73. A B/C ratio above 1.0 is considered beneficial; therefore, the City should consider implementing this program. Due to the lack of resources and considering the unaccounted for water is at the lower threshold of the acceptable range, the City has decided to not do any further leak studies or investigations. The City of East Palo Alto currently relies on SFPUC for all its domestic water needs. Additionally, East Palo Alto has no storage reservoirs and relies completely on the SFPUC system except some minor uses for street sweeping and construction water from the Gloria Bay Well. Any new funding that becomes available would be used for development of new supplies and storage facilities.

6.5.4 DMM D - Metering With Commodity Rates for All New Connections and Retrofit of Existing Connections

The City of East Palo Alto requires meters on all connection to the water distribution system, including detector check meters on new private fire protection services. Currently, there are no known unmetered connections to the water distribution. All new commercial and industrial developments are required to have dedicated water meters and dedicated meters for landscape irrigation in commercial and industrial developments. Residential, multi-family, commercial, institutional, and industrial currently all pay $2.71 per hundred cubic feet of potable water.

6.5.5 DMM E - Large Landscape Conservation Programs and Incentives

The largest landscape areas in the community are city-owned and consist of four parks. American Water Enterprise estimates that there are ten additional large landscape accounts. To assist in landscape conservation for future developments, the City Council adopted the Chapter 13.24 - Water System and Chapter 17.04 - Water Conservation in 2001. See Appendix D and E. Chapter 13.24 established standards and procedures for the design, installation, and management of landscapes in order to utilize available plant, water, and land resources to avoid excessive landscape water demands while ensuring high quality landscape design. Chapter 17.04, specifically 17.04.120 (known as the Water Efficiency Landscaping Ordinance) is to assist developers in the design of water efficient landscaping for new developments. Both ordinances require developers to submit a landscape plan for review and approval by the city. These requirements are applicable to new and rehabilitated landscaping for apartments; condominiums; any multiple-unit residential developments; commercial developments; industrial developments; single-family residential and recreational developments.

Due to the already low GPC, the City estimates a five percent decrease in water use for each account surveyed. BAWSCA maintains a Large Landscape Audit program of whcihc the City could participate in. The average cost of the survey program through BAWSCA is estimated to be approximately $1,700 per survey. The City estimates the life span of the water survey is three years. If the City strives for a five percent reduction in large landscape use and two accounts are surveyed over the next seven years it would result in a savings of approximately 21 AFY. A snapshot of these potential savings is shown in Table 6-3.

Table 6-3 Cost-Benefit Analysis of DMM E

Total Cost	$20,012
Total Benefits	$107,138
Discount Rate (%)	6.0
B/C Ratio	5.4
Time Horizon (years)	9
Cost of Water (per AF)	$828
Average Water Savings (AFY)	21

The benefit-to-cost (B/C) ratio is approximately 5.4. A B/C ratio above 1.0 is considered beneficial; therefore, the City should consider implementing this program if resources become available. Due to the lack of resources the City has decided to not to evaluate the large landscapes accounts. The City of East Palo Alto currently relies on SFPUC for all its domestic water needs. Additionally, East Palo Alto has no storage reservoirs and relies completely on the SFPUC system except some minor uses for street sweeping and construction water from the Gloria Bay Well. Any new funding that becomes available would be used for development of new supplies and storage facilities.

6.5.6 DMM F - High-Efficiency Washing Machine Rebate Programs

The City of East Palo Alto is a member of BAWSCA. BAWSCA implements several subscription conservation measures which are funded by the agencies participating in the program. The BAWSCA High Efficiency Residential Washing Machine Rebates measure (BAWSCA WMR) started in October 2001. In 2002, nine large Bay Area water agencies, including BAWSCA, joined forces to offer a single Bay Area Water Utility Regional Washing Machine Rebate Program (Bay Area WMRP) that collectively targeted 2.7 million residential accounts. In addition to BAWSCA, the other participants in the Bay Area WMRP include Contra Costa Water District, Zone 7 Water Agency, EBMUD, Alameda County Water District, SCVWD, Marin Municipal Utility District, Sonoma County Water Agency, City of Davis, and beginning July 1, 2006, the SFPUC. From 2001 to 2006, Electric & Gas Industries Association (EGIA) supported the administration of the Bay Area WMRP. In 2006, BAWSCA and the other Bay Area Water Utilities contracted with Pacific Gas & Electric (PG&E) to administer and advertise the Bay Area WMRP.

During Fall 2009 the BAWSCA WRM supported up to $200 rebates for Tier 3 machines ($125 from the water utilities and $75 from PG&E) and $125 rebates for Tier 2 machines ($90 from the water utilities and $35 from PG&E). In Spring 2010, the BAWSCA WMR was modified to support $175 rebates for Tier 3 machines ($125 from the water utilities and $50 from PG&E). BAWSCA member agency participation in the BAWSCA WMR has been strong since BAWSCA began implementing this measure. There were fifteen agencies that participated in the BAWSCA WMRP in FY 2009/10. In total, the BAWSCA member agencies issued 6,941 rebates in FY 2009/10; 6,616 for Tier 3 machines and 325 for Tier 2 machines, for a total expenditure of approximately $942,000.

To date, through the BAWSCA WMR, a total of 31,082 rebates have been paid to customers within the BAWSCA service area. As this measure has evolved, the market penetration and customer participation in the measure has increased. This has been evidenced by the increase in number of rebates given by the BAWSCA member agencies from 1,244 in FY 2001/02 to 6,941 in FY 2009/10.

As part of its administration of the BAWSCA WRM for the participating member agencies, BAWSCA performed the following activities:

- Development and production of BAWSCA specific promotional materials;
- Advertising and outreach;
- Hosting information on the BAWSCA website;
- Contract negotiation with PG&E;
- Coordination with other members of the Bay Area WRMP;
- Coordinating management of rebate distribution and approvals to and from PG&E and the participating agencies;
- Liaison between agencies and PG&E;
- Manage agency invoicing for rebate payment; and
- Track progress against individual agency conservation targets.

In addition, for the last several years, BAWSCA and the other participating Bay Area water agencies were successful in applying for and receiving grant funding from the State to support the Bay Area WMRP. The latest grant was awarded in May 2007 in the amount of $2,981,350 from Proposition 50. The BAWSCA share of this grant award was $300,000. BAWSCA is in the process of developing an application for a second round of grant funding for the WMRP which is expected to be available beginning July 2011.

Through BAWSCA's successful efforts to secure these grants, all BAWSCA member agencies have had access to grant funds to increase customer participation in the BAWSCA WMR and benefit from the overall cost effectiveness of the BAWSCA WMR. The cost effectiveness of the BAWSCA WMR in FY 2009/10 is estimated at $408 per AF of water saved. Thus, this measure continues to be a very cost effective means of achieving water conservation savings in the home, especially when compared to the wholesale cost of purchasing water from the SFPUC, which was $719 per AF for FY 2009/10.

American Water Enterprises, on behalf of East Palo Alto, contributes approximately $3,000 a year for participation in this program. .There were 21 washer rebates granted in the City managed water service area in the 2009-10 water year.

The City currently does not track the rebate program to individual accounts. The effectiveness of this DMM may be evaluated by comparing metered water use for customers before and after installation of the High Efficiency Residential Washing Machine. Due to the lack of resources, no evaluation of the effectiveness has been completed; although a system wide effectiveness of water conservation has been looked at and is shown in Section 6.6. In the future and if resources become available, the City should track and compare meter usage to accounts who have installed the High Efficiency Residential Washing Machine. Currently, any new funding that becomes available would be used for development of new supplies and storage facilities.

6.5.7 DMM G - Public Information Programs

American Water Enterprise continually informs customers at the payment window about the necessity for Water conservation. American Water Enterprise interacts with approximately 1,000 customers a year through this process. American Water Enterprise prints a water conservation message once a year on the bottom of each bill. During times of required conservation, staff hands out fliers which discuss the need for conservation.

Additionally, the City of East Palo Alto is a member of BAWSCA. BAWSCA implements several core conservation measures which are funded by the BAWSCA general budget. BAWSCA partners with the member agencies to offer Water Efficient Landscape Education Classes. The BAWSCA Water Efficient Landscape Education Classes are free to the public and are designed to introduce homeowners and landscape professionals to the concepts of sustainable landscape design, with a focus on creating beautiful, water efficient gardens.

Some of the topics generally covered in the classes included use of California native plants to create a beautiful low water use and drought tolerant garden, as well as tips to create Japanese and Mediterranean style gardens and efficient irrigation and alternatives to lawns, as well as the use of gray water and rainwater to supplement irrigation.

Customer interest in the classes has increased and as a result, the number of classes has continued to increase throughout the region to meet customer demands.

Another joint effort with BAWSCA is the Water Wise Gardening in the Bay Area. This educational tool is available online via BAWSCA's website so that it can be readily accessed by the public. The Water Wise Gardening in the Bay Area tool contains information on how to create and maintain a beautiful, low water use garden and includes photographs of water efficient gardens and provides links to the plants that compose the featured gardens.

The featured gardens are primarily composed of sites in the Bay Area, specifically within the BAWSCA service area.

6.5.8 DMM H - School Education Programs

As a member of BAWSCA, East Palo Alto is participating in school education programs. BAWSCA has teamed up with the Tuolumne River Trust to conduct water conservation outreach to elementary schools in the BAWSCA service area. The Tuolumne River Trust's school outreach is called "That's the Tuolumne in my Tap" and includes a slideshow presentation to fourth and fifth graders about the Tuolumne river resource and water conservation. The Tuolumne River Trust's outreach is designed to educate local students about where their water comes from and to promote an ethic of environmental stewardship. The presentation focuses on the history and special qualities of the Tuolumne River, the animals that depend on the River, and what can be done to help protect the River by conserving water. More information about the Tuolumne River Trust's School education efforts can be seen on their website, http://www.tuolumne.org. As a member of BAWSCA and being located within San Mateo, the City of East Palo Alto has access to the Tuolumne River Trust presentations for its local schools. The City of East Palo Alto will continue to work with the School District to have Tuolumne River Trust present at the local schools.

BAWSCA supplied the Tuolumne River Trust with information and materials that described the local water conservation options that the Tuolumne River Trust distributed to the students. Such materials included information about the HET and washing machine rebates, schedules for the Water Efficient Landscape Education Classes, information about the online WaterWise gardening tool, and Water Saving Hero brochures. In total, the Tuolumne River Trust gave presentations to 2,757 students in 102 classrooms and 30 schools throughout the BAWSCA service area including East Palo Alto.

6.5.9 DMM I - Conservation Programs for Commercial, Industrial and Institutional Accounts

Currently, East Palo Alto is not implementing this DMM. If the city were to implement this program in the future, the program could potentially provide a toilet replacement to commercial, industrial and institutional facilities. High volume, non ULFT toilets flushing at 3.5 or greater gallons per flush would be replaced with high efficiency toilets that flush at 1.28 or less gallons per flush. Additionally the city could offer free high efficiency flush valve retrofit kits (0.5 gpf) to replace flush valves in high volume urinals that flush at greater than 1.0 gallons per flush. Free installation could be included in this service for both toilets and urinals.

The goal of this program would be to achieve annual water savings by Commercial, Industrial and Institutional accounts by approximately ten percent. The average cost of the survey program is estimated to be approximately $650 per survey. The life span of a program is approximately five years. If ten percent of accounts are surveyed over the next ten years, it would result in an average savings of approximately 21.25 AFY. A snapshot of these potential savings is shown in Table 6-4.

Table 6-4 Cost-Benefit Analysis of DMM I

Total Cost	$207,294
Total Benefits	$155,652
Discount Rate (%)	6.0
B/C Ratio	0.75
Time Horizon (years)	15
Cost of Water (per AF)	$828
Average Water Savings (AFY)	21.25

The B/C ratio for this DMM is approximately 0.75. Since this B/C ratio is less than 1.0, it is not currently cost-effective for the City to implement this DMM.

6.5.10 DMM J - Wholesale Agency Assistance Programs

The City of East Palo Alto is not a wholesale Agency and therefore this DMM is not applicable.

6.5.11 DMM K - Conservation Pricing

The City of East Palo Alto, through its Contract Agent American Water Enterprises, charges a set price per unit of potable water, referred to as a uniform volume charge. Residential, multi-family, commercial, institutional, and industrial currently all pay $2.71 per hundred cubic feet of potable water. A monthly minimum charge varies based on meter size. The current minimum charge for each meter size are listed below.

Table 6-5 Minimum Charges

Meter Size	Minimum Charge
5/8 X 3/4 inch	$9.29
3/4 inch	$9.29
1 inch Residential	$9.29
1 inch Other than Residential	$73.45
1-1/2 inch	$100.66
2 inch	$176.83
3 inch	$201.31
4 inch	$213.56
6 inch	$225.80
Fire Detection Check (All Sizes)	$59.85
Rental Meters (All Sizes)	$193.15

This existing rate structure facilitates conservation since customer bills vary directly with the level of water usage. The Uniform Volume Charge also provides a clear and easy to understand price signal to the customer. To date the utility has avoided an inverted rate block structure in order to preserve this option for use during a prolonged drought.

6.5.12 DMM L - Conservation Coordinator

The City of East Palo Alto does not have a Water Conservation Coordinator classification position. Due to budget constraints, the conservation coordinator duties fall on the City Engineer. The City Engineer acting as the Conservation Coordinator duties include program management, tracking, planning, responding to public requests, and any required reporting. Additionally, the city is a member of BAWSCA which has implemented several regional conservation programs. The City Engineer works with BAWSCA, and other local agencies in coordinating regional conservation programs that have been implemented or will be implemented.

6.5.13 DMM M - Water Waste Prohibition

The City of East Palo Alto has water waste prohibitions in place. Below are excerpts from the City of East Palo Alto’s Municipal Code prohibiting water waste.

17.04.050 - Waste.

Unreasonable use of water is prohibited. Upon written notification to the user by the water agency, all unreasonable use of water shall be terminated and any required repairs to broken or defective plumbing, sprinkler, watering or irrigation devices shall be made within five calendar days or water service to the use may be terminated until corrective measures are taken.

17.04.060 - Pool and hot tub covers.

Covers shall be required for all new swimming pools and hot tubs and encouraged to be installed for existing pools.

17.04.100 - Vehicle washing.

Any new or remodeled vehicle washing facility requiring a plumbing permit, which utilizes more than twenty-five (25) gallons of water per vehicle, shall have a waste wash water recycling system.

The municipal code is enforced during normal and shortage conditions. Due to the lack of resources, the municipal code for waste is not strictly enforced during normal conditions. During times of water shortages, enforcement is increased. In the future and if resources become available, the City should enforce the municipal code during normal conditions. Currently, any new funding that becomes available would be used for development of new supplies and storage facilities.

6.5.14 DMM N - Residential ULFT Replacement Programs

East Palo Alto currently does not operate an ultra-low-flush toilet replacement program. BAWSCA maintains a residential ultra-low-flush toilet replacement program. This program is one of BAWSCA Subscription which is fully funded by the individual agency that elects to participate in the measure based on their participation level. BAWSCA and the participating member agencies offer rebates of up to $100 per toilet if a customer replaces a toilet that uses 3.5 gallons per flush or more with an EPA WaterSense Labeled HET. The water customer purchases and installs an EPA WaterSense Labeled HET, completes an application provided by BAWSCA, and then sends the application and proof of purchase, and proof of residency (water service account number) to BAWSCA.

The City does not currently budget for this program. The average cost of the rebate is estimated to be $100 and the man hours to verify installation would be approximately $50. Approximately 40 ULFT's would be installed each year with an estimated life span of five years. Programs such as these have been shown to produce savings of approximately 1.9 gallons per flush over high-water-using toilets. The benefit-to-cost (B/C) ratio is approximately 0.25. A snapshot of these potential savings is shown in Table 6-6.

Table 6-6 Cost-Benefit Analysis of DMM N

Total Cost	$46,810
Total Benefits	$11,762
Discount Rate (%)	6.0
B/C Ratio	0.25
Time Horizon (years)	15
Cost of Water (per AF)	$828
Average Water Savings (AFY)	1.52

The B/C ratio for this DMM is approximately 0.25. Since this B/C ratio is less than 1.0, it is not currently cost-effective for the City to implement this DMM.

6.5.15 Non implemented DMM's

The City of East Palo Alto currently relies on SFPUC for all its domestic water needs. Additionally, East Palo Alto has no storage reservoirs and relies completely on the SFPUC system except some minor uses for street sweeping and construction water from the Gloria Bay Well. East Palo Alto currently has an allocation of 2,199 AFY from SFPUC during normal years. This allocation is subject to cut backs during drought emergencies. As shown previously in Table 4.2, East Palo Alto normally uses their full allocation.

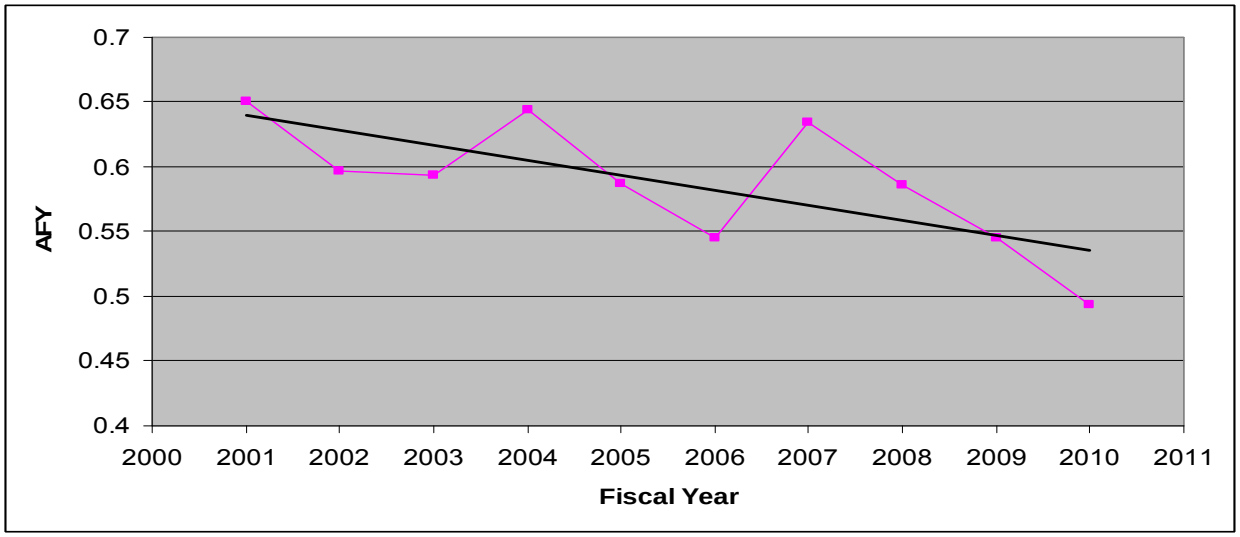
In the last 10 years, the water system per capita water use has been between 66 gpcd and 87 gpcd. Because of this very low water use, one of the lowest in the SFPUC wholesale area if not the lowest, conservation will not reduce the per capita water use enough to sustain predicted future growth. Therefore, for the utility to meet the demands for future growth, East Palo Alto must look for new water sources, specifically groundwater, to supplement its SFPUC deliveries. Additionally, because East Palo Alto is 100% dependent on the SFPUC system and having no water storage facilities, they are prone to being immediately without water during an emergency with the SFPUC system. The new groundwater source would be equipped with backup generators to supplement SFPUC deliveries and be utilized for emergency situations.

Due to these reasons, the City is financially focused on addressing the critical water supply issues in the system. Any available funding would be used to develop storage and additional groundwater supplies.

6.6 Evaluation of DMM Measures

It is difficult to verifiably quantify water savings with a reasonable level of certainty within a water system due to the many variables within the system. East Palo Alto is consistently less than 100 gpcd since the City took control in 2001 as shown in Table 3-10. In 2010, the City's water use was 66 gpcd and has average 79 over the past 10 years. This is one of the lowest gpcd among the BAWSCA wholesale member agencies. In addition to the gpcd analysis described in Chapter 3.5, the city evaluates the effectiveness of its conservation measures which have been implemented and estimates their conservation savings by dividing annual water demand by total number of service connections. Since FY2001, the year East Palo Alto took over the water system, the city has reduced potable water consumption by almost 25%, from 0.65 AFY per service connection to 0.49 AFY per service connection. Figure 6-1 shows the downward trend of water consumption over the last 10 years.

Figure 6-1 Water Consumption per Connection (AFY)



7.0 Water Shortage Contingency Plan

The City of East Palo Alto's water shortage contingency plan is housed within its Municipal Code (Chapter 13.24, Article VI, entitled "Conservation Plan"—see Appendix E). The plan outlines three phases of action due to shortages of 20, 40 and 60 percent of the city's water supply. This chapter outlines this plan and regional emergency planning.

7.1 Stages of Action

Currently, the City of East Palo Alto follows a three-phase water shortage plan that is keyed to water supply reductions from SFPUC:

- A **Phase I** water shortage is announced if the City Engineer declares a drought and/or the SFPUC reduces its water supply to the city by twenty (20) percent;

- A **Phase II** water shortage is announced if SFPUC reduces its water supply to the city by forty (40) percent; and

- A **Phase III** water shortage is announced if SFPUC reduces its water supply to the city by sixty (60) percent.

In the event of an emergency, the City Engineer may declare any of the phases of reduction. He will immediately report his declaration to the City Council and seek a resolution affirming his declaration. If the shortage is anticipated, either by notice from SFPUC or by general response to statewide draught, the City Engineer will request a resolution from the City Council declaring the appropriate phase.

7.2 Preparation for Catastrophic Water Supply Interruption

The City of East Palo Alto water system receives all of its water supply from the SFPUC Hetch Hetchy system which crosses the San Andreas Fault. Many other fault lines bisect major water facilities throughout the San Francisco Bay region. Experts consider it likely that the supplies will be disrupted in the event of a major earthquake.

SFPUC estimates that restoring service from these facilities following a catastrophic outage could take several months. This, in turn, could reduce annual deliveries by up to 100 percent for SFPUC-supplied water. The Urban Water Management Planning Act requires agencies to consider the effect of a 50 percent cutback in water supplies. This corresponds approximately to the degree of cutback contemplated by SFPUC's earthquake disruption scenario.

In the event of a total failure of the Hetch Hetchy system, the City of East Palo Alto would first activate the Gloria Bay groundwater well (water quality only exceeds secondary standards) which will provide up to 432,000 gallons per day (gpd). Second, the city would seek local groundwater capacity from the O'Connor Tract Cooperative Water Company and the Palo Alto Park Mutual Water Company of up to 200,000 gpm. Finally, the City of East Palo Alto may seek to activate its emergency connection with the City of Palo Alto, which, in cooperation with the City of East Palo Alto, may develop additional local groundwater supplies. Further, the City of East Palo Alto intends to work more closely with the City of Palo Alto to develop potential emergency supplemental deliveries from the Santa Clara Valley Water District which imports water from both the State Water Project and Central Valley Project to the peninsula.

- **Gloria Bay Well** 432,000 gallons per day

- **Local Groundwater Interconnections** 200,000 gallons per day
- **City of Palo Alto Interconnection** 500,000 gallons per day 25%

1,150,000 gallons per day 55%

7.2.1 SFPUC Emergency Preparedness Plans

Following the 1989 Loma Prieta Earthquake, the SFPUC created a departmental SFPUC Emergency Operations Plan (EOP). The SFPUC EOP was originally released in 1992, and has been updated approximately every 2 years. The EOP addresses a broad range of potential emergency situations that may affect the SFPUC and supplements the City and County of San Francisco's EOP, which was prepared by the Department of Emergency Management and most recently updated in 2008. Specifically, the purpose of the SFPUC EOP is to describe its emergency management organization, roles and responsibilities, and emergency policies and procedures.

In addition, SFPUC divisions and bureaus have their own EOPs (in alignment with the SFPUC EOP), which detail that entity's specific emergency management organization, roles and responsibilities, and emergency policies and procedures. The SFPUC tests its EOPs on a regular basis by conducting emergency exercises. Through these exercises, the SFPUC learns how well the plans and procedures will or will not work in response to an emergency. EOP improvements are based on the results of these exercises and real-world event response and evaluation. The SFPUC also has an emergency response training plan that is based on federal, State and local standards and exercise and incident improvement plans. SFPUC employees have emergency training requirements that are based on their emergency response roles.

7.2.2 SFPUC Emergency Drinking Water Planning

In February 2005, the SFPUC Water Quality Bureau published the City Emergency Drinking Water Alternatives report. The purpose of this project was to develop a plan for supplying emergency drinking water in the City of San Francisco after damage and/or contamination of the SFPUC raw and/or treated water systems resulting from a major disaster.

With respect to emergency response for the SFPUC RWS, the SFPUC has prepared the SFPUC Regional Water System Emergency Response and Recovery Plan (ERRP), completed in 2003 and updated in 2006. The purpose of the ERRP is to describe the SFPUC RWS emergency management organizations, roles and responsibilities within those organizations, and emergency management procedures. This contingency plan addresses how to respond to and to recover from a major RWS seismic event, or other major disaster. The ERRP complements the other SFPUC emergency operations plans at the department, division and bureau levels for major system emergencies.

The SFPUC has also prepared in the SFPUC Regional Water System Notification and Communications Plan. This plan, which has been updated several times since it was first prepared in 1996 (most recently in July of 2010), provides contact information, procedures and guidelines to be implemented by the following entities when a potential or actual water quality problem arises: the SFPUC Water Supply and Treatment Division, Water Quality Division, SFPUC wholesale customers, BAWSCA, and City Distribution Division (considered to be a customer for the purposes of this plan). The plan treats water quality issues as potential or actual supply problems, which fall under the emergency response structure of the ERRP.

7.2.3 SFPUC Power Outage Preparedness and Response

The SFPUC's water transmission system is primarily gravity fed, from the Hetch Hetchy Reservoir to the city. Within San Francisco's in-City distribution system, the key pump stations have generators in place and all others have connections in place that would allow portable generators to be used.

Although water conveyance throughout the RWS would not be greatly impacted by power outages because it is gravity fed, the SFPUC has prepared for potential regional power outages as follows:

- The Tesla Treatment Facility, the Sunol Valley Water Treatment Plant, and the San Antonio Pump Station, have back-up power in place in the form of generators or diesel powered pumps.

- Both the Harry Tracy Water Treatment Plant and the Baden Pump Station have back-up generators in place.

- Administrative facilities that will act as emergency operation centers also have back-up power.

- Additionally, as described in the next section, the WSIP includes projects which will expand the SFPUC's ability to remain in operation during power outages, seismic and other emergency situations.

7.2.4 SFPUC Capital Projects for Seismic Reliability and Overall System Reliability

As discussed previously in Section 4.1.2, the SFPUC is also undertaking a WSIP to enhance the ability of the SFPUC water system to meet identified service goals for water quality, seismic reliability, delivery reliability, and water supply.

As illustrated Figure 4-2, the WSIP projects include several projects located in San Francisco to improve the seismic reliability of the in-city distribution system, as well as many projects related to the SFPUC RWS to address both seismic reliability and overall system reliability. All WSIP projects are expected to be completed by 2016.

In addition to the improvements that will come from the WSIP, San Francisco has already constructed the following system interties for use during catastrophic emergencies, short-term facility maintenance and upgrade activities, and in times of water shortages:

- A 40 mgd system intertie between the SFPUC and SCVWD (Milpitas Intertie);

- A 35 mgd intertie with EBMUD allowing EBMUD to serve the City of Hayward's demand and/or supply the SFPUC directly (and vice versa); and,

- One permanent and one temporary intertie to the South Bay Aqueduct, which would enable the SFPUC to receive State Water Project water.

The WSIP intertie projects include the EBMUD-Hayward-SFPUC Intertie. The WSIP also includes projects related to standby power facilities at various locations. These projects will provide for standby electrical power at 6 critical facilities to allow these facilities to remain in operation during power outages and other emergency situations. Permanent engine generators will be provided at 4 locations (San Pedro Valve Lot, Millbrae Facility, Alameda West, and Harry Tracy Water Treatment Plant), while hookups for portable engine generators will be provided at 2 locations (San Antonio Reservoir and Calaveras Reservoir).

7.2.5 San Mateo Operational Area Emergency Operations Plan

The San Mateo Operational Area Emergency Operations Plan (EOP) addresses the county's planned response to extraordinary emergency situations associated with natural disasters, man-made technological incidents and national security emergencies. These emergencies generate unique situations requiring expanded emergency response. The EOP does not address normal day-to-day emergencies or the well-established and routine procedures used in coping with such emergencies.

This EOP is a preparedness document—designed to be read, understood and exercised prior to an emergency. Each city is responsible for insuring the preparation and maintenance of appropriate and current Standard Operating Procedures (SOPs), Emergency Operating Procedures (EOPs), resource and alert lists that will support the San Mateo Operational Area Emergency Operations Plan. The SOPs/EOPs and alert lists should include specific emergency authorities that designated officials and their successors assume during emergency situations.

The San Mateo County EOP is designed to be consistent with both state and federal plan requirements. The San Mateo County EOP:

- Supports the Standardized Emergency Management System utilized by the San Mateo County Emergency Operations Center (EOC) Response Team;
- Supports the Incident Command System utilized by field responders;
- Provides EOC Response Team members with procedures, documentation and user friendly checklists to effectively manage emergencies
- Provides detailed information on supplemental requirements such as public information, damage assessment and recovery operations.

7.2.6 Risk Based Vulnerability Assessment

American Water Enterprise, contract water system operator for the City of East Palo Alto, has conducted a thorough Risk Based Vulnerability Assessment of the water system. The report discusses in specific detail the threats facing the East Palo Alto Service Area distribution system, and makes general and site specific recommendations on how to mitigate the risks which have been assessed.

The Risk Assessment Methodology for Drinking Water Systems (RAW-W) process was developed at the Sandia National Laboratories in partnership with the American Water Works Association Research Foundation (AWWARF). It framed a methodology for the City of East Palo Alto to use to review the water system facilities and make informed decisions the risks from malevolent attack.

The assessment process identified which facilities and operations are most critical to achieving core mission goals and providing reliable, high-quality, potable water to the customers. The methodology undertaken during the assessment process has helped the City of East Palo Alto implement security measures which are most effectively applied within the constraints of limited time and resources.

In order to provide a measure for comparison, some baseline assumptions were made before undertaking the assessment. The assumptions are a composition of the core missions of the water system and United States Environmental Protection Agency delineated consequence events that could prevent the service of water.

7.3 Prohibitions, Penalties and Consumption Reduction Methods

During each phase of a city-wide water shortage, the City of East Palo Alto institutes certain mandatory prohibitions against particular water use practices. These prohibitions are sector-specific and at times detail watering schedules and percentage restrictions on a sector-by-sector basis.

Table 7-1 lists the mandatory water use prohibitions, as further detailed in East Palo Alto's Municipal Code (attached as Appendix E), for each water shortage phase and the percentage of projected reduction in water usage per prohibition.

Table 7-1 Mandatory Prohibitions

Prohibitions	Stage When Prohibition Becomes Mandatory	Projected Reduction (%)
Restrict excess runoff – general	Phase I	1
Restrict excess runoff – irrigation	Phase I	1
Restrict lawn/landscape irrigation – 6pm-8am	Phase I	1
Restrict commercial agriculture/nursery – 6pm-11am	Phase I	1
No pavement washdown	Phase I	2
No restaurant water service, except by request	Phase I	1
Water meter tampering protection	Phase I	1
Fire hydrant usage protection	Phase I	1
Required conservation plan and irrigation schedule – major irrigators	Phase I	3
Restrict vehicle washing (reclaimed water exemption)	Phase I	2
No aesthetic water usage	Phase I	5
Post notice of water shortage in hotels/motels	Phase I	2
90% limited overall use (single-family limited exemption)	Phase II	10
Restrict pool use	Phase II	1
Restrict lawn/landscape irrigation – every third day, 6pm-6am (reclaimed water exemption)	Phase II	5
Restrict commercial agriculture/nursery, major irrigators – every other day, 6pm-10am (reclaimed water exemption)	Phase II	1
80% limited overall use (single-family limited exemption)	Phase III	20
No lawn/landscape irrigation	Phase III	20
Restrict commercial agriculture/nursery, major irrigators – every third day, 6pm-10am (reclaimed water exemption)	Phase III	2

In additional to the already adopted ordinances, the City Council may order implementation of additional water conservation measures. Such additional measures shall be implemented by resolution published one time in a daily newspaper of general circulation covering the service area of the city water department. Any prohibitions on the use of water shall become effective immediately upon publication. The application of surcharges shall commence one month after the date the curtailment becomes effective.

The City of East Palo Alto has determined the following penalties, fines, restrictions and criminal charges for excessive water use during each of the water shortage phases, depending on number of notices and extent of violation. These actions are listed in Table 7-2:

Table 7-2 Penalties and Charges for Excessive Use

Penalties or Charges	Stage When Penalty Takes Effect
$50 Administrative Fine	All Stages; First Violation
$100 Administrative Fine	All Stages; Second Violation

$200 Administrative Fine	All Stages; Third Violation
Flow Restriction Device Installation	All Stages; Third Violation
Misdemeanor Charge	All Stages; Third Violation
Termination of Water Service (Restoration Charge $100)	All Stages; Fourth Violation
Surcharge equal to 25% use exceedance	All Stages; Each Violation

7.4 Revenue and Expenditure Impacts

Water utility expenditures can be generally categorized as fixed or variable expenses. The variable costs are almost entirely related to the costs of purchasing water supplies. The fixed costs primarily relate to the cost of operating and maintaining the distribution system. As consumption falls, the fixed expenses must be spread over fewer units sold which can trigger a rate increase.

Additionally, as consumers reduce their usage in response to the drought, the utility will experience a decline in sales. The impact of this sales erosion on revenues can be mitigated to some extent by drawing upon cash reserve balances or enacting a rate increase. Another option is for East Palo Alto to establish a reserve to earmark penalty surcharge revenue as a funding source.

The City of East Palo Alto is also considering developing a water sales contingency reserve fund to balance the budget during abnormally low water use years. To estimate the impact of each stage on revenues, current commodity rates and charges are applied to the water use levels. These revenue reductions are combined with estimated increased expenses resulting from managing the supply shortfall to derive the net revenue shortfalls. An estimated revenue shortfall, without a water sales contingency fund, must be developed for each stage with and without additional purchased water costs.

7.5 Use Monitoring Procedure

Demands must be monitored frequently during emergency water shortages to enable the City of East Palo Alto to effectively manage the balance between supply and demand. This section presents suggested City of East Palo Alto practices to adequately monitor the drought status finances:

- **Normal Monitoring Procedure**

  In normal water supply conditions, production figures are recorded daily. Totals are reported monthly to the Finance and Public Works Departments.

- **Phase I and II Water Shortages**

  During a Phase I or II water shortage, weekly production figures are forwarded to the Finance and Public Works Department. This department compares the weekly production to the target weekly production to verify that the reduction goal is being met. Monthly reports are sent to the City Council. If reduction goals are not met, the Public Works Director will notify the City Council so that corrective action can be taken.

- **Phase III Water Shortage**

  During a Phase III water shortage, the procedure listed above will be followed, with the addition of a daily production report to the Public Work Director. Additionally, regular patrols will be sent out to directly monitor residential water usage and, if necessary, enforce conservation measures.

8.0 Climate Change

The issue of climate change has become an important factor in water resources planning in the State, and is frequently being considered in urban water management planning purposes, though the extent and precise effects of climate change remain uncertain. As described by the SFPUC in its Final Water Supply Availability Study for the City and County of San Francisco, dated October 2009, there is evidence that increasing concentrations of greenhouse gasses have caused and will continue to cause a rise in temperatures around the world, which will result in a wide range of changes in climate patterns. Moreover, there is evidence that a warming trend occurred during the latter part of the 20th century and will likely continue through the 21st century. These changes will have a direct effect on water resources in California, and numerous studies have been conducted to determine the potential impacts to water resources. Based on these studies, climate change could result in the following types of water resource impacts, including impacts on the watersheds in the Bay Area:

- Reductions in the average annual snowpack due to a rise in the snowline and a shallower snowpack in the low and medium elevation zones, such as in the Tuolumne River basin, and a shift in snowmelt runoff to earlier in the year;
- Changes in the timing, intensity and variability of precipitation, and an increased amount of precipitation falling as rain instead of as snow;
- Long-term changes in watershed vegetation and increased incidence of wildfires that could affect water quality;
- Sea level rise and an increase in saltwater intrusion;
- Increased water temperatures with accompanying potential adverse effects on some fisheries and water quality;
- Increases in evaporation and concomitant increased irrigation need; and
- Changes in urban and agricultural water demand.

According to the SFPUC (2009), other than the general trends listed above, there is no clear scientific consensus on exactly how climate change will quantitatively affect the state's water supplies, and current models of water systems in California generally do not reflect the potential effects of climate change.

Initial climate change modeling completed by the SFPUC indicates that about seven percent of runoff currently draining into Hetch Hetchy Reservoir will shift from the spring and summer seasons to the fall and winter seasons in the Hetch Hetchy basin by 2025. This percentage is within the current interannual variation in runoff and is within the range accounted for during normal runoff forecasting and existing reservoir management practices. The predicted shift in runoff timing is similar to the results found by other researchers modeling water resource impacts in the Sierra Nevada due to warming trends associated with climate change.

The SFPUC has stated that based on this preliminary analysis, the potential impacts of climate change are not expected to affect the water supply available from the San Francisco Regional Water System (RWS) or the or the overall operation of the RWS through 2030.

The SFPUC views assessment of the effects of climate change as an ongoing project requiring regular updating to reflect improvements in climate science, atmospheric/ocean modeling, and human response to the threat of greenhouse gas emissions. To refine its climate change analysis and expand the range of climate parameters being evaluated, as well as expand the timeframes being considered, the SFPUC is currently undertaking two additional studies. The first utilizes a newly calibrated hydrologic model of the Hetch Hetchy watershed to explore sensitivities of inflow to different climate change scenarios involving changes in air temperature and precipitation. The second study will seek to utilize state-of-the-art climate modeling techniques in conjunction with water system modeling tools to more fully explore potential effects of climate change on the SFPUC water system as a whole. Both analyses will consider potential effects through the year 2100.

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APPENDIX A

Urban Water Management Planning Act and SBX7-7

Section K: California Water Code, Division 6, Part 2.6: Urban Water Management Planning

The following sections of California Water Code Division 6, Part 2.6, are available online at http://www.leginfo.ca.gov/calaw.html.

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

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

10610.2.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Chapter 2. Definitions

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

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

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

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

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

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

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

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

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

Chapter 3. Urban Water Management Plans

Article 1. General Provisions

10620.

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

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

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

(d) (1) An urban water supplier may satisfy the requirements of this part by participation in 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.

(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

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

Article 2. Contents of Plans

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

10631. A plan shall be adopted in accordance with this chapter 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 those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

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

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

(c) (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.

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

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

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.

(B) Residential plumbing retrofit.

(C) System water audits, leak detection, and repair.

(D) Metering with commodity rates for all new connections and retrofit of existing connections.

(E) Large landscape conservation programs and incentives.

(F) High-efficiency washing machine rebate programs.

(G) Public information programs.

(H) School education programs.

(I) Conservation programs for commercial, industrial, and institutional accounts.

(J) Wholesale agency programs.

(K) Conservation pricing.

(L) Water conservation coordinator.

(M) Water waste prohibition.

(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

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

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

(j) 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 subdivisions (f) and (g) 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.

(k) Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

10631.1.

(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.

10631.5.

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

(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

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

(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

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

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

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water

supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

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

(b) A description of the 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

10635.

(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand

assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

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

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

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

Article 3. Adoption and Implementation of Plans

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

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

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

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

10644.

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

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the 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.

(c) (1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report those 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

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.

Section L: California Water Code, Division 6, Part 2.55: Water Conservation

The following sections of California Water Code Division 6, Part 2.55, are available online at http://www.leginfo.ca.gov/calaw.html.

Chapter 1. General Declarations and Policy	§10608-10608.8
Chapter 2. Definitions	§10608.12
Chapter 3. Urban Retail Water Suppliers	§10608.16-10608.44

Legislative Counsel's Digest

Senate Bill No. 7
Chapter 4

An act to amend and repeal Section 10631.5 of, to add Part 2.55 (commencing with Section 10608) to Division 6 of, and to repeal and add Part 2.8 (commencing with Section 10800) of Division 6 of, the Water Code, relating to water.

[Approved by Governor November 10, 2009. Filed with Secretary of State November 10, 2009.]

Legislative Counsel's Digest

SB 7, Steinberg. Water conservation.

(1) Existing law requires the Department of Water Resources to convene an independent technical panel to provide information to the department and the Legislature on new demand management measures, technologies, and approaches. "Demand management measures" 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.

This bill would require the state to achieve a 20% reduction in urban per capita water use in California by December 31, 2020. The state would be required to make incremental progress towards this goal by reducing per capita water use by at least 10% on or before December 31, 2015. The bill would require each urban retail water supplier to develop urban water use targets and an interim urban water use target, in accordance with specified requirements. The bill would require agricultural water suppliers to implement efficient water management practices. The bill would require the department, in consultation with other state agencies, to develop a single standardized water use reporting form. The bill, with certain exceptions, would provide that urban retail water suppliers, on and after July 1, 2016, and agricultural water suppliers, on and after July 1, 2013, are not eligible for state water grants or loans unless they comply with the water conservation requirements established by the bill. The bill would repeal, on July 1, 2016, an existing requirement that conditions

eligibility for certain water management grants or loans to an urban water supplier on the implementation of certain water demand management measures.

(2) Existing law, until January 1, 1993, and thereafter only as specified, requires certain agricultural water suppliers to prepare and adopt water management plans.

This bill would revise existing law relating to agricultural water management planning to require agricultural water suppliers to prepare and adopt agricultural water management plans with specified components on or before December 31, 2012, and update those plans on or before December 31, 2015, and on or before December 31 every 5 years thereafter. An agricultural water supplier that becomes an agricultural water supplier after December 31, 2012, would be required to prepare and adopt an agricultural water management plan within one year after becoming an agricultural water supplier. The agricultural water supplier would be required to notify each city or county within which the supplier provides water supplies with regard to the preparation or review of the plan. The bill would require the agricultural water supplier to submit copies of the plan to the department and other specified entities. The bill would provide that an agricultural water supplier is not eligible for state water grants or loans unless the supplier complies with the water management planning requirements established by the bill.

(3) The bill would take effect only if SB 1 and SB 6 of the 2009–10 7th Extraordinary Session of the Legislature are enacted and become effective.

The people of the State of California do enact as follows:

SECTION 1. Part 2.55 (commencing with Section 10608) is added to Division 6 of the Water Code, to read:

Part 2.55. Sustainable Water Use and Demand Reduction

Chapter 1. General Declarations and Policy

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

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

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 subdivision (a) 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 required pursuant to Part 2.6 (commencing with Section 10610) due in 2010 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) An urban retail water supplier shall be 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 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.

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 United States Department of Defense military installation's requirements under federal Executive Order 13423.

(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. The department shall review the 2015 urban water management plans and report to the Legislature by December 31, 2016, 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 in order to achieve the 20-percent reduction and to reflect updated efficiency information and technology changes.

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 on facilities it operates to support urban retail water suppliers in meeting the target identified in Section 10608.16.

APPENDIX B

Resolution to Adopt the Urban Water Management Plan

RESOLUTION NO. 4160

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF EAST PALO ALTO ADOPTING THE 2010 URBAN WATER MANAGEMENT PLAN (UWMP), USING METHOD 3 TO MEET THE REGION TARGET AS STATED IN THE STATE'S WATER CONSERVATION PLAN, AND DIRECTING STAFF TO SUBMIT THE FINAL UWMP TO THE STATE'S WATER RESOURCES DEPARTMENT WITHIN 30 DAYS.

WHEREAS, the City of East Palo Alto recognizes the importance of water conservation and is committed to promoting and practicing the sustainable use of its water resources, and;

WHEREAS, the California Legislature enacted the Water Conservation Act of 2009 to reduce State-wide urban water use by 20 percent by the year 20220, which requires each urban retail water supplier to develop and urban water use target for the year 2020 and an interim urban water use target for the year 2015; and

WHEREAS, the City as an urban retail water supplier must adopt one of four methods outlined in the California Water Code for determining urban and interim urban water targets; and

WHEREAS, The provisions in Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use establish 100 gallons per capita per day as the floor for conservation efforts. Any utility that calculates a baseline at or below 100 gallons per capita per day is not required to further reduce per capita water use; and

WHEREAS, East Palo Alto's baseline per capita water use is 79 gallons per capita per day using the calculations for 10- year range and 75 gallons per day per capita for the 5-year range; thus, meeting the City's water target through Method 3: Ninety-five percent of the applicable state hydrologic region target as stated in the State's April 30, 2009, draft 20x2020 Water Conservation Plan; and

NOW THEREFORE, BE IT RESOLVED that the City of East Palo Alto

1. Adopts the City of East Palo Alto's 2010 Urban Water Management Plan, using method 3 to meet the region target as stated in the state's water conservation plan.
2. Directs Staff to submit the final UWMP document to the State of California Department of Water Resources within 30 days.

PASSED AND ADOPTED this 21st day of June, 2011 by the following roll call vote:

AYES:	**WOODS, ABRICA, EVANS, MARTINEZ, ROMERO**
NOES:	0
ABSENT:	0
ABSTAIN:	**0**

Reso. 4160

Carlos Romero, Mayor

APPROVED AS TO FORM:

VALERIE J. ARMENTO, City Attorney

ATTEST:

M L Gordon, City Clerk

APPENDIX C

Public Notices

Integrated Resource Management, Inc.

March 15, 2011

David Boesch, County Manager
San Mateo County
400 County Center, 1st Floor
Redwood City, CA 94063

Re: Review of City of East Palo Alto's Urban Water Management Plan

This is to notify you that the City of East Palo Alto will be reviewing its Urban Water Management Plan and considering amendments and changes to its Urban Water Management Plan. We invite your agency's participation in this process.

American Water Enterprises, contract operator for the City of East Palo Alto, has retained Integrated Resource Management, LLC to review the City's Plan.

We will make any proposed revisions to our Plan available for public review and will hold a public hearing later this year. We look forward to your participation in the development of East Palo Alto's 2010 Urban Water Management Plan, and appreciate your involvement.

If you have any questions or need additional information please contact me at ksage@irmwater.com or (909) 621-1266.

Sincerely,

Kevin Sage
Integrated Resource Management, LLC

405 North Indian Hill Boulevard
Claremont, CA 91711-4600

(909) 621-1266
(909) 621-1196 Fax

Integrated Resource Management, LLC

SAMPLE LETTER TO AGENCIES

March 25, 2011

Name

Address

Phone Number

Re: Review of City of East Palo Alto's Urban Water Management Plan

This is to notify you that the City of East Palo Alto will be reviewing its Urban Water Management Plan and considering amendments and changes to its Urban Water Management Plan. We invite your agency's participation in this process.

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Sincerely,

Kevin Sage

Integrated Resource Management, LLC

405 North Indian Hill Boulevard
Claremont, CA 91711-4600

(909) 621-1266
(909) 621-1196 Fax

City of East Palo Alto

and

American Water Enterprises

UPDATE OF URBAN WATER MANAGEMENT PLAN

American Water Enterprises, contract operator for the City of East Palo Alto, will be reviewing and updating our Urban Water Management Plan during 2010 and 2011. The Plan was last updated in 2005. We encourage all of our customers to participate in this review process. We will make any proposed revisions to the Plan available for public review and will hold a public hearing in 2011. In the meantime, if you would like to learn more about the current Plan, the schedule for considering changes to it, or how to participate in the process, please contact:

Kevin Sage
405 North Indian Hill Boulevard
Claremont, California 91711
(909) 621-1266
(909) 621-1196
ksage@irmwater.com

City of East Palo Alto

and

American Water Enterprises

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ksage@irmwater.com

THE DAILY NEWS 4/5/11

Daily News 6/7/11

NOTICE OF PUBLIC HEARING
CITY COUNCIL OF THE CITY OF EAST PALO ALTO

PUBLIC HEARING ON URBAN WATER USE TARGETS AND URBAN WATER MAN - AGEMENT PLAN UP - DATE

NOTICE IS HEREBY GIVEN that the City Council of the City of East Palo Alto will hold, in conjunction with the adoption of the City's 2010 Urban Water Management Plan, an opportunity for the community to provide input on the City of East Palo Alto's 2010 Urban Water Management Plan, urban water use target for com - pliance with SBX7-7, also known as the Water Conservation Bill of 2009, including any impacts to the local economy, and the City of East Palo Alto's method of de - termining its urban water use target. The Urban Water Management Plan describing and spec - ifying the proposed urban water use tar - get is available for inspection at the of - fice of the City Clerk, City Hall, 2415 Uni - versity Avenue, East Palo Alto, California or at http://www.ci.east-palo-alto.ca.us/publicworks/pdf/EPA_Water_Master_Plan_Draft_2010.pdf

The public hearing will be held on Tues - day, June 21, 2011 at 6:00 o'clock p.m., or soon thereafter as the matter may be heard, in the City Council Chamber, City Hall, 2415 Uni - versity Avenue, East Palo Alto, California. At this time and place, all interested persons shall have the opportunity to present their con - cerns to the City Council.

Daily News 6/14/11

NOTICE OF PUBLIC HEARING
CITY COUNCIL OF THE CITY OF EAST PALO ALTO

PUBLIC HEARING ON URBAN WATER USE TARGETS AND URBAN WATER MAN - AGEMENT PLAN UP - DATE

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Daily News Classified
(650)327-7247

AFFIDAVIT OF PUBLICATION

DAILY NEWS GROUP

STATE OF CALIFORNIA
County of Santa Clara & San Mateo

The undersigned declares: That at all times hereinafter mentioned, affiant was a permanent resident of the United States, over the age of eighteen years old, and was at and during all said times the Classified Representative of the DAILY NEWS GROUP newspaper of general circulation published daily in the County of San Mateo, County of Santa Clara, State of California. The notice mentioned was set in type no smaller than nonpareil and was preceded with words printed in black face type not smaller than size 7, describing and expressing in general terms, the purpose and character of the notice intended to be given; that the

PUBLIC NOTICE

of which the annexed is a printed copy, was published and printed in said news papers 1 times 3/15/2013 I declare under penalty of perjury that the foregoing is true and correct.

Patricia Greely

Dated at Palo Alto, California, this 8th. Day of April, 2013.

NOTICE OF PUBLIC HEARING
CITY COUNCIL OF THE
CITY OF EAST PALO ALTO

PUBLIC HEARING ON URBAN WATER USE TARGETS AND AMENDED URBAN WATER MANAGEMENT PLAN UPDATE

NOTICE IS HEREBY GIVEN that the City Council of the City of East Palo Alto will hold, in conjunction with the adoption of the City's 2010 Urban Water Management Plan, an opportunity for the community to provide input on the City of East Palo Alto's Amended 2010 Urban Water Management Plan, urban water use target for compliance with SBx7-7, also known as the Water Conservation Bill of 2009, including any impacts to the local economy, and the City of East Palo Alto's method of determining its urban water use target. The Urban Water Management Plan describing and specifying the proposed urban water use target is available for inspection at the office of the City Clerk, City Hall, 2415 University Avenue, East Palo Alto, California or at http: //www.ci.east-paloalto.ca.us/publicworks/pdf/EPA_Water_Master_Plan_Draft_2010.pdf

The public hearing will be held on Tuesday, April 2, 2013 at 7:30 o'clock p.m., or soon thereafter as the matter may be heard, in the City Council Chamber, City Hall, 2415 University Avenue, East Palo Alto, California. At this time and place, all interested persons shall have the opportunity to present their concerns to the City Council.

Bret Swain
Senior Engineer

AFFIDAVIT OF PUBLICATION

DAILY NEWS GROUP

STATE OF CALIFORNIA
County of Santa Clara & San Mateo

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PUBLIC NOTICE

of which the annexed is a printed copy, was published and printed in said news papers 1 times 3/22/2013 I declare under penalty of perjury that the foregoing is true and correct.

.....
Patricia Greely

Dated at Palo Alto, California, this 8th. Day of April, 2013.

NOTICE OF PUBLIC HEARING
CITY COUNCIL OF THE
CITY OF EAST PALO ALTO

PUBLIC HEARING ON URBAN WATER USE TARGETS AND AMENDED URBAN WATER MANAGEMENT PLAN UPDATE

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Bret Swain
Senior Engineer

APPENDIX D

City of East Palo Alto Municipal Code Chapters 17.04 and 13.24.330-450 Water Conservation Measures

City of East Palo Alto Municipal Code

Water Conservation

Title 17 ENVIRONMENTAL CONTROL

Chapter 17.04 WATER CONSERVATION

Article I. Purpose and Definitions

17.04.010 Purpose.

This chapter is intended to promote reasonable conservation of water in the city consistent with maintaining a comfortable standard of living and a healthy economy. It provides a framework for the orderly and timely implementation of reasonable water conservation measures by the different elements of the city's economy. This chapter also carries out certain provisions of the Water Code of the state as embodied in Article XIV, Section 3 of the Constitution of the state which states that maximum beneficial use of the water resources of the state is necessary to prevent the waste or unreasonable use, or unreasonable method of use, of water. This chapter further implements the provisions of the conservation element of the comprehensive water resources management plan for San Mateo County as adopted by the San Mateo County board of supervisors on June 20, 1978.

It is recognized that stricter water conservation measures may be necessary during a future drought or water shortage emergency. Such further measures should not penalize water users for past conservation practices, nor should implementation of water conservation measures constitute a new basis to determine future reduction in case of a declared water shortage emergency. No provision in this chapter is intended to supersede any rule or regulation of the Public Utilities Commission of the state.

Sections 17.04.030, 17.04.040, 17.04.050 and 17.04.140 shall apply only to water agencies administered by the city council of East Palo Alto. (Prior code § 6-7.101)

17.04.020 Definitions.

The following words and terms as used in this chapter shall have the following meanings:

"Applied water" means water delivered to a user; also called delivered water. Applied water may be used for either inside uses or for outside watering. It does not include precipitations or distribution losses. It may apply to metered or unmetered deliveries.

"Commercial establishment" means establishments providing services, engaged in the fabrication of structures or other fixed improvements, or otherwise occupied in nonmanufacturing profit motivated activities. Examples are retail stores, restaurants, entertainment facilities and home building concerns.

"Commercial water use" means water used by a commercial establishment.

"Domestic use" means all inside and outside uses of water associated with residential use; water used by commercial and industrial establishments other than in their product manufacture.

"Establishment" means an economic unit which produces goods or services, such as a farm, a factory or a store. In most instances, the establishment is in a single physical location, and is engaged in only one, or predominantly one, type of economic activity.

"Evapotranspiration (ET)" means the process of water returning to the atmosphere through evaporation from land and water surfaces and through transpiration of plants.

"Farm ditch efficiency" means the percent of the total volume of water supplied to the farm which is applied to the fields (a measure of distribution losses.)

"Flat rate water" means water sold to customers at a fixed rate irrespective of quantity used.

"Industrial establishment" means an establishment engaged in the mechanical or chemical transformation of inorganic or organic substances into new products, and usually described as plant, factories or mills, which characteristically use power-driven machines and materials-handling equipment. Establishments engaged in assembling component parts of manufactured products are also considered manufacturing establishments if the new product is neither a structure nor other fixed improvement.

"Industrial water use" means water used by an industrial establishment in the process of their product manufacture.

"Inside water use" means that part of the water delivery used within a home, commercial establishment, or manufacturing establishment for any purpose; also called "internal water use."

"Leaching requirement (LR)" means the fraction of the irrigation water that must pass through the root zone in order to prevent soil salinity from reaching a level that would result in reduced growth to crops, trees, gardens or landscape plants.

"Metered water" means water sold to customers on the basis of actual measured use; does not include losses in distribution.

"Net water use" means the sum of delivered water consumptively used or otherwise not recoverable.

"Outside water use" means the use of water for irrigation of gardens, lawns, and other ornamentals, and for replenishing swimming pools, fountains, ponds, car washing, etc., also called external water use.

"Pool cover" means an installation over or on a swimming pool and hot tubs which is used to minimize water evaporation.

"Precipitation" means the total measurable supply of all natural forms of water falling on the land area, including dew, rain, mist, snow, hail and sleet; usually expressed as depth of liquid water on a horizontal surface on a daily, monthly or yearly basis.

"Public facilities" means all structures, parks and public places, other than open space, engaged either in serving the public or in providing a public use.

"Public water use" means water use associated with public facilities.

Reasonable Use. "Reasonable use" of water involves the application of sufficient applied water to meet demands of a designated beneficial use in a manner consistent with efficiency, public health and sanitation concerns, current technology and local economic conditions. During dry years, practical and economically feasible means should be taken to minimize applied water use and incidental losses. During periods of normal water supplies, reasonable urban water uses include, but are not limited to, the following beneficial uses:

1. The use of water for interior household purposes to maintain personal standards of cleanliness and sanitation;
2. The use of water for exterior household purposes to maintain personal standards of exterior cleanliness, landscaping and recreational facilities;
3. The use of water for commercial purposes to maintain the services offered and to satisfy the health, esthetic and safety needs of both employees and the public;

4. The use of water for industrial purposes, including cooling, processing and other production related needs, and to satisfy health, esthetic and safety needs of the employees;
5. The use of sufficient water to maintain community services including, but not limited to, public safety, including fire fighting; schools and institutions; transportation systems; public streets and buildings; water supplies; sewage and garbage disposals; recreational and esthetic enjoyment areas such as parks, swimming pools, lakes, streams, golf courses and landscaping.

"Recirculation" means the reuse of water within a partially or completely closed system of pipes and appliances without the benefit of treatment, where its quality, other than its temperature, may not be altered.

"Reclaimed water" means the collection and appropriate treatment of used water to bring it to a quality suitable for reuse.

"Recycle" means the recovery of water suitable for reuse without treatment.

"Residential water use" means all inside and outside uses of water associated with residential areas.

"Service area" means the area of land included in the distribution system of a water agency.

"Type of water use" means a distinction of water use based on either a kind of land use (recreational, residential, commercial, etc.) or a kind of water use (outside use, personal use, swimming pool use, dishwashing use, etc.)

"Unaccounted for water" means the difference between the quantity of water introduced into the system and the quantity delivered to the eventual consumer; usually expressed as a percentage of water introduced into the system.

"Unit water use" means the average quantity of water used per person, acre, etc., over a specified period of time.

"Unreasonable use (waste)" means failure to take appropriate measures to minimize excess application and incidental losses of water. Examples of waste are excessive runoff from irrigation or from broken plumbing.

"Unreclaimable water" means used water which is uneconomical to reclaim due to its location, or physical or chemical quality.

"Urban water use" means the use of water for urban purposes, including residential, municipal, commercial, industrial, recreational, military and institutional classes. The term is applied in the sense that it is a kind of use rather than a place of use; includes delivered water and unaccounted for water.

"Water agency" means the City of East Palo Alto; water agency organized, founded or established to produce and distribute water directly or indirectly to customers.

"Water application efficiency" means the percentage of the volume of water delivered to the farm or farms by a conveyance system to the volume of water delivered to the conveyance system at the supply source.

"Water produced" means the total water introduced into a system or the sum of applied water and unaccounted for water. (Prior code § 6-7.102)

Article II. Implementation

17.04.030 Metering.

On or after adoption of the ordinance codified in this chapter, all new water service connections provided by the water agency, including detector check meters on private fire protection services, shall be metered. (Prior code § 6-7.201)

17.04.040 Public assistance.

Water saving devices and information shall be made available by the water agency. However, the cost of any water saving device or devices shall be borne by the consumer requesting the device. The water agency shall also reasonably assist customers to detect leaks and increase the efficiency of applied water. (Prior code § 6-7.202)

17.04.050 Waste.

Unreasonable use of water is prohibited. Upon written notification to the user by the water agency, all unreasonable use of water shall be terminated and any required repairs to broken or defective plumbing, sprinkler, watering or irrigation devices shall be made within five calendar days or water service to the use may be terminated until corrective measures are taken. (Prior code § 6-7.203)

17.04.060 Pool and hot tub covers.

Covers shall be required for all new swimming pools and hot tubs and encouraged to be installed for existing pools. (Prior code § 6-7.204)

17.04.070 Residential water pressure.

Except for fire protection service lines, a pressure reducing valve, or valves, that will limit the static water pressure to any internal water outlet of the structure to eighty (80) pounds per square inch gauge, shall be installed in all new residential structures or those existing residential structures requiring a plumbing permit for modification of, or addition to, the existing plumbing. (Prior code § 6-7.205)

17.04.080 New or remodeled structures.

The following shall be installed in all new or remodeled residential, commercial or industrial structures:

A. Insulation of newly installed hot water pipes where such piping is located in attics, garages, crawl spaces or unheated spaces other than between floors or in interior walls, to provide a maximum heat loss of fifty (50) British Thermal Units per hour per linear foot for piping up to and including two inches in diameter, and one hundred (100) British Thermal Units per hour per linear foot for all sizes greater than two inches in diameter;
B. If newly installed or replaced, tank toilets utilizing not more than three and one-half gallons of water per flush action;
C. If newly installed or replaced, pressure reducing devices, or flow restrictors to limit the flow of water consistent with the intended use. (Prior code § 6-7.206)

17.04.090 Pressure reducing valve.

In new or remodeled commercial or industrial structures requiring a plumbing permit, a pressure reducing valve, or valves, to limit the static water pressure to eighty (80) pounds per square inch gauge to the upper floor of the structure, shall be installed only if no supplemental internal pumping is anticipated. The intent of this section is to limit available water pressure to the structure consistent with uses of water on the premises. (Prior code § 6-7.207)

17.04.100 Vehicle washing.

Any new or remodeled vehicle washing facility requiring a plumbing permit, which utilizes more than twenty-five (25) gallons of water per vehicle, shall have a waste wash water recycling system. (Prior code § 6-7.208)

17.04.110 Recirculation.

Two years from the effective date of the ordinance codified in this chapter, no use of water will be permitted where recirculation of the water is economically, technically and hygienically feasible in all new, commercial or industrial structures.

An "economically feasible recirculation installation" is defined as, over the useful life of the equipment to be installed, a system where the present worth of the cost of the water saved is more than the present worth of both the capital, and the annual operation and maintenance costs. Such economic and technical feasibility shall be prepared by the user with the determination of feasibility made by the city building official. (Prior code § 6-7.209)

17.04.120 Landscaping.

A. Purpose. The ordinance codified in this section shall be known and referred to as the Water Efficient Landscaping Ordinance and is adopted for the following purposes:

    1. To promote the values and benefits of landscaping while recognizing the need to invest water and other resources as efficiently as possible;

    2. To establish a structure for designing, installing and maintaining water efficient landscapes in new projects; and

    3. To establish provisions for water management practices and water waste prevention for established landscapes.

B. Applicability. This section shall apply to the following types of projects, except as provided in subsection C of this section:

    1. All projects where the entire property is being developed or redeveloped with one or more new structures, other than accessory structures. For purposes of this section, "new structures" are defined as those which have completely new foundations, walls and roofs;

    2. All projects where the existing structures are remodeled, renovated and/or expanded in size and where the project includes the relandscaping or loss due to damage or neglect during construction of fifty (50) percent, or more of the remaining landscape area. In such cases, only the newly landscaped areas and/or damaged areas shall be subject to this section;

    3. All landscaping projects, other than the construction of decks, patios, barbecues, play equipment and swimming pools, which require a planning approval or building permit.

C. Exemptions. This section shall not apply to the following types of projects:

    1. Cemeteries;

    2. Properties with an historical site designation;

    3. Ecological restoration projects that do not require a permanent irrigation system;

4. Land reclamation projects that do not require a permanent irrigation system; or

5. Any project with a landscaped area and/or existing landscaped area loss due to damage or neglect less than two thousand five hundred (2,500) square feet in area.

D. Review and Approval of Landscape Plans.

1. A landscape plan shall be submitted to the city which shall include all of the documentation listed in subsection E of this section.

2. Applicants must choose one of the following methods for submitting a landscape plan:

    a. Prior to submittal to the city, the landscape plan and all supporting documentation shall be reviewed by an independent certified landscape architect to ensure that all components of the landscape plan adhere to this section. The certified landscape architect shall sign the plans as verification that the landscape plans comply with this section.

    b. Applicants may submit a landscape plan to the city for review and at the time of submittal, inform the city that they wish to use the city's official landscape and irrigation specialist for the review and verification that the plans comply with this section. In this case, the applicant shall pay a fee to the city in an amount sufficient to cover the cost of all related reviews, inspections and verifications.

3. Verification by either an independent certified landscape architect or the city's official landscape and irrigation specialist shall be completed prior to issuance of a building permit for the project.

4. Prior to final building inspection of the project, the irrigation and landscaping shall be installed and the certified professional who reviewed the landscape plans shall verify that the installation was completed in compliance with the approved landscape plans and this section.

5. Prior to final building inspection of the project, a deed restriction shall be filed with the San Mateo County recorder's office stating that the property is subject to the requirements of this section and that any relandscaping of the property by the present or future property owners shall adhere to this section.

E. Landscape Plan Components. Landscape plans shall include the following information:

1. Landscape Area. The "landscape area" is defined as the gross lot area less the building footprint, driveway, parking areas, decks, patio, porches, walkways and grasscrete areas;

2. Description of Water Delivery Elements. The description of the water delivery elements shall include the following:

    a. The location, type and size of equipment such as meters, controllers, main and lateral lines, moisture sensors, valves, sprinkler heads, backflow devices and quick-couplers.

    b. Flowrate and static water pressure at the point of connection (POC),

    c. Flowrate and precipitation rate in inches per hour at each valve station,

    d. Projected water use to maintain adequate plant health and growth;

3. Soil Care Before Planting. Information on soil characteristics and preparation, including horticultural suitability of the soil and recommendations for amending and preparing the soil for planting;

4. Soil Care After Planting. A minimum of two inches of mulch shall be used in nonturf areas after planting. Visqueen, sheet plastic, or other nonporous materials shall not be placed under mulch;

5. Turf. The following shall apply:

    a. Turf area includes turf and water areas such as ponds, fountains, swimming pools and outdoor spas.

    b. No trees shall be planted in turf areas.

    c. No turf shall be allowed in areas eight feet wide or less, or on slopes exceeding fifteen (15) percent (6.6:1).

    d. Turf areas shall be limited to twenty-five (25) percent of landscape area or, for residential areas, five hundred (500) square feet per dwelling unit, whichever is greater.

    e. Drought tolerant turf species are encouraged.

6. Valves. The following shall apply:

    a. Sprinkler head check valves shall be used to prevent low head drainage.

    b. Separate valves for turf and nonturf areas shall be provided. Each valve shall service only plant materials of similar watering needs as well as similar micro-climates created within the project.

7. Sprinkler Heads. The following shall apply:

    a. Sprinkler heads shall be spaced at a maximum of fifty (50) percent of the diameter of throw for square spacing and sixty (60) percent for triangular spacing.

    b. Sprinkler heads shall have matched precipitation rates within each control valve circuit.

    c. Pop-up sprinklers in turf areas shall have at least a four-inch pop-up height.

8. Controllers. The following shall apply:

    a. Controllers shall be automatic and capable of dual programming, such that they may be set for separation of turf and nonturf areas.

    b. Controllers shall have multiple cycle capability.

    c. Controllers shall have percentage switches which should be able to be set for one season or one month and have switches that will easily increase or decrease the time programmed by a certain percentage. All stations should have their time increased/ decreased with only one entry.

9. Irrigation Schedule and Characteristics. The following shall apply:

    a. A schedule shall be developed which allows for plant material to be established. This shall have a maximum two-year time period. Once established, a revised schedule shall be developed for maintenance of the plant material. The schedule presently in effect shall be posted at the controller.

    b. The schedule shall include run times and frequency, an application rate which is less than one-quarter inch per cycle on all irrigation, a minimum one hour time interval between all applications, and provisions for irrigation only between the hours of ten p.m. and seven a.m.

    c. Drip, bubbler or mini-spray irrigation shall be provided for trees and shrubs.

    d. Backflow prevention units shall comply with all applicable health and safety standards.

    e. The irrigation system shall not deliver spray or run-off onto paved area or streets.

    f. Rain sensing override devices shall be required on all irrigation systems.

    g. Soil moisture sensing devices should be considered where appropriate.

10. Plant Selection. Water conserving or drought tolerant plant materials are recommended.

11. Water Features. All decorative pools, ponds, streams and fountains shall be equipped to recirculate water.

12. Maintenance Schedule. A maintenance schedule shall be prepared which provides for checking, adjusting and repairing irrigation equipment, aerating and dethatching turf areas, replenishing mulch, and fertilizing, pruning, weeding and removing litter. (Ord. 152 §§ 1--5, 1993: Ord. 99, 1988: Ord. 91, 1988: prior code § 6-7.210)

17.04.130 Agriculture.

In determining the reasonable beneficial use of irrigation water for field agriculture, local custom should be considered, and perhaps modified, according to evapotranspiration rates for different crops, infiltration rates of applied water on different soil types and land areas with varying degrees of slope, and water application efficiency and the types of distribution systems available. The development and utilization, within legal constraints, of the following water saving techniques shall be encouraged with consideration given to the economics of the various agricultural enterprises. These concepts shall be encouraged by advisory and regulatory agencies as follows:

A. Field Agriculture.

    1. Utilization of an efficient irrigation system suited to the conditions with the scheduling of irrigation according to plant requirements,

    2. Use of reclaimed wastewater to irrigate field grown flowers and ornamentals when water quality, environmental conditions, public health and economic considerations permit such use,

    3. Adjustment of planting schedules and amounts to projected water supply,

4. Construction of on-farm reservoirs to collect winter runoff and increase water storage,

5. Collection and recycling of runoff water where possible,

6. Encouragement of cooperation between riparian and nonriparian users who share a stream water supply;

B. Greenhouse Culture.

1. Utilization of an efficient irrigation system suited to the conditions,

2. Construction of reservoirs to catch runoff water from greenhouse roofs and adjoining areas,

3. Construction of catch basins with return pumping systems to collect and recycle drainage water from plants grown inside the greenhouse, if the quality is satisfactory,

4. Collection and use of rainfall and runoff from adjoining farm lands. (Prior code § 6-7.211)

17.04.140 Shortages.

Notwithstanding the foregoing relating to conservation of water supplies, it is apparent that in times of a declared water shortage emergency pursuant to Section 350 et seq. of the Water Code of the state, certain additional mandatory water conservation practices will be necessary. It is the intent of this chapter that after allocation and setting aside the amount of water needed for domestic use, sanitation and fire protection, the emergency regulations shall establish priorities in the use of water for other purposes and shall provide for the allocation, distribution, and delivery of water for such other purposes, without discrimination between consumers using water for the same purpose or purposes. Regulations so adopted shall not penalize water users for past conservation practices. (Prior code § 6-7.212)

City of East Palo Alto Municipal Code, Water System

Title 13 PUBLIC SERVICES

Chapter 13.24 WATER SYSTEM

Article VII. Landscape and Irrigation Standards

13.24.330 Landscape and irrigation.

No building permit is issued for buildings until the public works superintendent or designee reviews and approves a landscape plan for the project. A certificate of occupancy is issued only if landscaping and an irrigation system is installed in compliance with the approved landscape plan consisting of the elements set forth below. The landscape plan shall include the following elements: a calculation of water consumption for the landscaped area; a planting scheme; an irrigation plan; and a grading plan if found to be necessary by the community development director. Projects that must adhere to these standards are: apartments; condominiums; any multiple-unit residential developments; commercial developments; industrial developments; single-family residential and recreational developments. (Ord. 253 §7.1, 2001)

13.24.340 General requirements.

A. The standards described in this article are intended to be minimum requirements of development. Property enhancements beyond these standards are encouraged as they will further the goal of a more beautiful overall environment in which to live and work. Certain conditions outlined in this article may be waived or changed upon formal request and accepted by the superintendent of public works or designee, but in no case will any condition be modified in a manner which will adversely effect the intent of these standards.

B. Prior to any work at the project site, landscape and irrigation plans must be approved and signed by the superintendent of public works. These drawings shall contain all planting and irrigation work to be constructed as a part of the development. If the plans meet or exceed the requirements, the superintendent of public works or designee will approve them. If corrections to the plans are required, the deficiencies will be noted and the plans will have to be corrected by the developer and resubmitted. Compliance with the letter and intent of these standards is the superintendent's responsibility during construction and the property owner's responsibility for the life of the project. The superintendent of public works or designee has the responsibility to interpret and enforce these standards. (Ord. 253 §7.2, 2001)

13.24.350 Special requirements.

Areas of projects that will be dedicated to the city such as median islands, maintenance districts, parks, etc., shall be clearly delineated on the plans. Special requirements in addition to these standards may be required for those areas. Any special requirements will be noted after initial submittal of plans. Any questions regarding projects with special requirements are directed to the community development department. (Ord. 253 §7.3, 2001)

13.24.360 Submittal requirements.

A. The project developer, with the exception of a developer of only one residential unit, is required to submit two sets of planting and irrigation plans prepared by a state-licensed landscape architect or landscape contractor to the community development department concurrent with submittal of a building construction plan. The landscape improvement plans are checked and approved by the public works department in accordance with these standards and any conditions of approval required by the city. Approval of the plans by the superintendent of public works or designee is required prior to any construction at the project site.

B. The plans shall contain the required information in a clear and understandable format on sheets that are either twenty-four (24) inches by thirty-six (36) inches or thirty (30) inches by forty-two (42) inches and must include a title sheet, irrigation plan including general design criteria and information as specified below.

C. Title sheets must include: project name and address; developer's name, address and telephone number; landscape architect's or landscape contractor's name, address, telephone number, state registration stamp and signature; signature line for approval by superintendent of public works; site map with property lines and adjacent land uses identified; vicinity map indicating the location of the project within the city; sheet index, if applicable. (Ord. 253 §7.4, 2001)

13.24.370 Irrigation plans--General design criteria--Information.

The plan shall indicate irrigation systems designed to be water efficient and water conserving. Devices and equipment that aid in water conservation are encouraged and may be required on large projects. The irrigation system shall be compatible with the types of plantings specified and the specific requirements of the various planting area on the project site. The irrigation plan shall clearly note on plans the following information: north arrow; scale; point of connection, including static pressure; pipe size and types; water consumption; and servicing meter location and size.

A. All irrigation systems are to be controlled by a clock specifically designed for irrigation system control, connected to a permanent source of power.

B. Controllers must have multiple cycles start capacity and a flexible calendar program. An automatic rain shutoff valve is required.

C. All systems shall contain an appropriate testable backflow device. Reduced pressure devices are encouraged for all projects but are mandatory for meter box protections.

D. All piping, heads, valves, meters and other equipment shall be clearly located, sized and specified on the plan.

E. All pipes and wires installed under drives, walks or other paving shall be in PVC sleeves.

F. The system shall be valved to ensure variations in water requirements are considered. In no case are lawn and shrub areas allowed on the same valve.

G. All pressure tines two and one-half inches and smaller shall be PVC Schedule 40. Pressure lines over two and one-half inches shall be Class 315.

H. Notes, specifications and details are required on the installation of all items to be constructed.

I. Pop-up heads are required adjacent to areas where foot or vehicular traffic is anticipated except where drip-irrigation systems are installed.

J. Drip or bubbler irrigation systems are required for trees within parkways.

K. Sprinklers and sprays shall not be used in areas less than four inches wide. Drip and bubblers shall be used that do not exceed 1.5 gallons per minute per device.

L. Sprinkler heads with a precipitation rate of .85 inches per hour or less shall be used on slopes exceeding fifteen percent (15%) to minimize runoff, or exceeding ten percent within ten feet of hardscape.

M. Sprinkler head spacing shall be designed for head to head coverage. The system should be designed for minimum runoff and overspray onto non-irrigated areas.

N. Valves and circuits shall be separated based on water use.

O. Sprinkler heads must have matched precipitation rates within each control valve circuit.

P. Serviceable check valves are required where elevation differential may cause low head drainage.

Q. Estimated water consumption shall be calculated in gallons per year. (Ord. 253 §7.5, 2001)

13.24.380 Planting plans.

A. All planting designs submitted shall be sensitive towards the project site and neighboring developments. All plans should consider water efficiency, practicality of maintenance and enhancement of the site and immediate area of the project. Considerations of the plants' mature size and their appropriateness for the site and climate conditions must be considered. As used in this article, "hydrozone" means a portion of the landscaped area having plants with similar water needs that are served by a value or set of values with the same schedule. The city encourages the use of trees appropriate for East Palo Alto's hydrozone.

B. The city is located in a climate region classified as Mediterranean.

C. As part of any development, all areas not devoted to paving, building, improved recreational or open space structures shall be landscaped and permanently maintained by the property owner. This includes all parkway areas not devoted to sidewalks.

D. Approved landscaping shall be maintained on a scheduled basis.

E. The irrigation plan shall include an annual irrigation program. A monthly irrigation schedule is required for the plant establishment period, for the established landscape, and for any temporarily irrigated areas. (Ord. 253 §7.6, 2001)

13.24.390 Soil conditioning and maintaining.

A. A minimum of two inches of mulch shall be added in non-turf areas to the soil surface after planting. Nonporous material shall not be placed under the mulch.

B. Existing soil shall be scarified to a minimum depth of six inches. (Ord. 253 §7.7, 2001)

13.24.400 Turf selection and limitations.

A. No more than fifty percent (50%) of the total area not covered by structures for multifamily residential projects shall be covered by a combination of turf, pools, spas, and other improved recreational areas. Of this area, no more than seventy-five percent (75%) shall be covered with turf.

B. For single-family residential projects, no more than forty percent (40%) of the front yard may be covered with turf.

C. For nonresidential projects, no more than twenty-five percent (25%) of the total landscaping area shall be covered with turf and/or water (i.e., pools, ponds, and fountains). For such projects irrigated with reclaimed water, turf areas may not exceed forty percent (40%) of the total landscaped area. Turf limitation is excluded for public parks, golf courses, cemeteries and recreation areas.

D. No turf is allowed in areas less than four feet wide.

E. Shrubs shall be minimum five gallons.

F. Ground cover areas will be planted from flats or containers with a maximum spacing of twelve (12) inches on center.

G. Existing plant material to be saved must be healthy and growing. Existing trees and shrubs shall be trimmed in an aesthetically pleasing manner (place noted on plans). (Ord. 253 §7.8, 2001)

13.24.410 Street trees.

The public works department at the current rate of cost may fulfill a parkway tree-planting requirement Street trees are required for every development project. Every street in the city has a designated street tree. One specified minimum gallon size tree must be installed for every thirty-five (35) feet of property frontage. Trees may be clumped or spaced on a maximum of sixty-five (65) feet on center and planted according to these standards. General design criteria and information required for street trees are indicated below:

A. Trees shall be a minimum fifteen (15) gallon size with the planting of at least one twenty-four (24) inch box tree for every three fifteen (15) gallon trees planted, or one twenty-four (24) inch box tree per thirty-five (35) feet of lineal footage, whichever results in a greater number on on-site planting.

B. Spacing of trees in on-site planters shall be one tree per five parking spaces.

C. Palm tree sizes shall be of a minimum of eighteen (18) to twenty (20) feet of brown trunk. (Ord. 253 §7.9, 2001)

13.24.420 General requirements.

Safety and maintenance shall be considered in the placement of all plantings with the following specific guidelines:

A. Twenty (20) feet from the curb returns at street intersections.

B. Ten feet from light standard power poles.

C. Ten feet from fire hydrants.

D. Five feet from service walks, driveways, buildings, walls and permanent structure.

E. Ten feet from water and sewer lines.

F. Botanical name, common name, variety, sizes and quantity shall designate all plants specified.

G. All trees and shrubs shall be installed per standard details. The rootball shall be one inch above finished grade set in a temporary water basin with amended backfill. The shrub shall be planted in a plant basin two times the size of the rootball.

H. All trees shall be installed per the standard details. Two ten foot by two inch stakes with #12 gauge galvanized wire in rubber hose placed three feet and seven feet from the ground are required for all trees. A root barrier is required. A one-inch by four-inch croostie water basin shall be included in tree planting. The tree shall be planted with amended backfill in a plant basin one and one-half times the size of the rootball.

I. Plant design shall incorporate water saving materials; plants with similar water requirements shall be grouped together.

J. Not more than one-half of the planting areas shall be turf grass.

K. All turf areas for a total aggregate area of two thousand (2,000) square feet shall be sod. Any area greater than this may be hydroseed.

L. All turf areas should be mounded where possible at a minimum slope of one-foot to three-foot ratio. Maximum height of three feet.

M. At least one-half of the trees shall be canopy/shade trees.

N. An agricultural suitability soil test is recommended for all projects and may be required by the city.

O. Tree selection shall be in accordance with the East Palo Alto hydrozone. A list of plants, shrubs, and trees appropriate for the city shall be made available through the public works department and the water department. (Ord. 253 §7.10, 2001)

13.24.430 Parking areas.

A. Parking lots of fifteen (15) or more spaces must devote at least two percent of the total area, excluding perimeter landscaping, to landscape planting. This landscaping shall not be concentrated in any one area.

B. A three-foot wide (minimum) planting buffer is required along the perimeter of any parking area. This landscaping area shall not be considered as part of any required interior landscaping. (Ord. 253 §7.11, 2001)

13.24.440 Model homes.

Any residential development that has model homes shall include at least one model furnished with water efficient landscaping. Signs shall be used to identify the model as an example of water effect landscape and feature elements such as hydrozones and irrigation equipment that contribute to water efficiency. Information shall be provided by the seller about designing, installing, and maintaining water efficient landscapes and the requirements of this chapter. (Ord. 253 §7.12, 2001)

13.24.450 Exemptions.

This chapter does not apply to landscaping that is part of a registered historical site or to cemeteries. However, the city will encourage the efficient use of water and long-term landscape water conservation practices for such property. (Ord. 253 §7.13, 2001)

Source: City of East Palo Alto Municipal Code.

APPENDIX E

City of East Palo Alto Municipal Code Chapter 13.24 Water System Conservation Plan (Water Shortage Plan)

City of East Palo Alto Municipal Code

Water System

Title 13 PUBLIC SERVICES

Chapter 13.24 WATER SYSTEM

Article VI. Conservation Plan

13.24.220 Definitions.

The following words, terms and phrases, when used in this chapter, shall have the meaning ascribed to them in this section, except where the context clearly indicates a different meaning:

"Excess runoff" means water accumulation on streets, gutters, neighboring properties or other surfaces in an amount to cause flow.

"New development" means any addition, extension, conversion or enlargement of an existing structure or any new construction requiring a building permit.

"Water user" means any person, customer or property served within the incorporated boundaries of the city and the area outside the city boundary served by the city water department. (Ord. 253 §6.1, 2001)

13.24.230 Application.

This chapter shall apply to all water users. (Ord. 253 §6.2, 2001)

13.24.240 Water user responsibility.

Water users are deemed to have under control at all times their water distribution facilities and to know the manner and extent of their water use and excess runoff. In multiple dwellings, the owner is the water user in control of the premises and is in control and responsible for water usage. (Ord. 253 §6.3, 2001)

13.24.250 Phase I shortages.

A phase I shortage is declared and conservation measures listed in this section are implemented when the city engineer declares a drought condition or the city of San Francisco formally notifies the city the supply from the Hetch Hetchy watershed has been reduced by at least twenty percent (20%). No water user within the city and the service area of the city water department shall knowingly make, cause use or permit the use of water for residential, commercial, industrial, agricultural or any other purpose in a manner contrary to this chapter or in any amount in excess of that use permitted by the conservation stages designated in this chapter.

The conservation methods are as follows:

A. No water user shall cause or permit any water furnished to any property within the city and the city water department service area to run or to escape from any hose, pipe, valve, faucet, sprinkler or irrigation device onto any sidewalk, street or gutter or to otherwise escape from the property if such running or escaping can reasonably be prevented. If a break or leak occurs within the customer’s plumbing or private distribution system, it shall be presumed that a period of forty-eight (48) hours after the consumer discovers such a break or leak or receives notice from the city water department of such a break or leak, whichever occurs first, is a reasonable time within

which to correct such a break or leak. If such a break or leak is not corrected after forty-eight (48) hours, it will be a violation of this chapter.

B. Commercial and noncommercial watering of grass, lawns groundcover, open ground, shrubbery, crops, gardens and trees, including agricultural irrigation, in a manner or to an extent which allows substantial amounts of excess water to run off the area being watered is not permitted. A minimum amount of runoff that is a natural consequence of conservation watering, either by hand or mechanical sprinkling facilities is permitted so long as such runoff is not excess as defined.

C. Lawn watering, landscape irrigation and watering of public and private recreation facilities are to be done only between six p.m. and eight a.m. If a hand-held hose or drip irrigation system is used, watering may be done at any time.

D. Agricultural water users and commercial nurseries shall conduct watering between six p.m. and eleven a.m. If a hand-held hose or drip irrigation system is used, watering may be done at any time. Watering of livestock is permitted at any time.

E. There shall be no washing down of sidewalks, walkways, driveways, parking lots and other paved surfaces, except to alleviate immediate health, fire or sanitary hazards.

F. Restaurants may not serve water to their customers, except on specific request of the customer.

G. It is unlawful to remove, replace, alter or damage any water meter or any components thereof, including, but not limited to, the meter face, its dials or other water usage indicators and any flow-restricting devices installed.

H. Water from fire hydrants is not used for any purpose other than to fight fires or for other activities where such use is immediately necessary to maintain the health, safety and welfare of the residents of the city and customers of the city water system.

I. Schools, golf courses, governmental agencies, city parks and cemeteries, public or private, may be required to submit a copy of a water conservation plan and landscape irrigation schedules.

J. Washing of motor vehicles, trailers, boats and other equipment is done only with a hand-held bucket, or hose equipped with a positive shut-off nozzle for quick rinse, except that washing may be done with reclaimed wastewater or by a commercial car wash using recycled water.

K. No water is used to clean, fill or maintain levels in decorative fountains, ponds, lakes or other similar aesthetic structures, unless such water is part of a recycling system.

L. The filling or replenishment of swimming pools is permitted, but the property owner will be liable for any use of allotted water in excess of the phase II or phase III requirements.

M. The owner and operator of every hotel, motel, inn, guesthouse and short-term commercial lodging shall post a notice of water shortage and any necessary compliance measures. (Ord. 253 §6.4, 2001)

13.24.260 Phase II shortages.

A. A phase II shortage is declared by the city engineer and the following conservation measures are implemented when the city of San Francisco notifies the city the Hetch Hetchy watershed has been reduced by at least forty percent (40%):

1. Conservation measures listed for a phase I shortage are in effect, except that the restrictions on watering lawns, landscapes and other turf area are modified to limit the watering only once every third day between the hours of six p.m. and six a.m.

2. Agricultural and commercial nurseries and golf courses are prohibited from watering lawns, landscapes, or commercial stocks more often than every other day and between the hours of ten a.m. and six p.m., except that there is no restriction of watering utilizing reclaimed wastewater.

B. No customer whose water is supplied by the city shall make, cause, use or permit the use of water for any purpose in an amount in excess of ninety percent (90%) of the amount of use on the customer's premises during the corresponding billing period during the prior calendar year.

C. Single-family residential customers supplied water by the city are not required to reduce consumption below fifteen (15) billing units per month during phase II. (Ord. 253 §6.5, 2001)

13.24.270 Phase III shortages.

A. A phase III shortage is declared by the city engineer and the following conservation measures are implemented when the city of San Francisco notifies the city the Hetch Hetchy watershed has been reduced by at least sixty percent (60%):

1. Conservation measures listed for a phases I and II shortages are in effect, except that there is no watering of residential lawns, landscaping and other turf areas at any time except by bucket

2. Agricultural, commercial nurseries, golf courses, parks and other public open spaces and commercial landscaped areas are prohibited from watering more often than every third day and between the hours of ten a.m. and six p.m., except that there is no restriction on watering using reclaimed wastewater.

B. No customer whose water is supplied by the city shall make, cause, use or permit the use of water for any purpose in an amount in excess of eighty percent (80%) of the amount of use on the customer's premises during the corresponding billing period during the prior calendar year.

C. Single-family residential customers supplied water by the city are not required to reduce consumption below ten billing units per month during phase III. (Ord. 253 §6.6, 2001)

13.24.280 Exceptions and relief from compliance.

A. A water user may file an application for relief from this chapter. The city engineer shall develop such procedures as he/she considers necessary to resolve such applications in accordance with the terms of this section and shall, upon the filing by a water user of an application for relief, take such steps as he/she deems reasonable to resolve the application for relief. The city engineer may delegate his/her duties and responsibilities under this section as appropriate.

B. The application for relief may include a request that the water user be relieved, in whole or in part, from the water use curtailment of this chapter.

C. In determining whether to grant relief and the nature of any relief, the city engineer shall take into consideration the following:

1. Whether any additional reduction in water consumption will result in unemployment;

2. Whether additional members have been added to the household;

3. Whether any additional landscaped property has been added to the property since the corresponding billing period of the prior calendar year;

4. Changes in vacancy factors for multi-family housing;

5. Increased numbers of employees in commercial, industrial and governmental offices;

6. Increased production requiring increased process water;

7. Water uses during construction;

8. Adjustments to water use caused by emergency health and safety hazards;

9. First filling of a permit-constructed swimming pool; and

10. Water use necessary for reasons related to family illness or health.

D. In order to be considered, an application for relief must be in writing, filed with the city engineer within twenty (20) days from the date the provision from which relief is sought becomes applicable to the applicant. No relief is granted unless the water user shows that he/she has achieved the maximum practical reduction in water consumption other than in the specific areas in which relief is being sought. No relief is granted to any water user who, when requested by the city engineer, fails to provide any information necessary for resolution of the water user's application for relief. The decision is issued within fifteen (15) days and provided to the water user. (Ord. 253 §6.7, 2001)

13.24.290 Notices and penalties.

The city will impose the following penalties to consumers in violation of this chapter:

A. The city water department shall give violators of this chapter a courtesy notice of the violation. Upon second and subsequent violations, the violator shall receive a citation and fine, respectfully.

B. The first citation shall specify the nature of the violation, the date on which it occurred and the corrective action taken. Upon a second citation, the water user is charged with an infraction and is subject to the following fines:

1. For the first violation, fifty dollars ($50.00);

2. For the second violation, one hundred dollars ($100.00);

3. For the third violation, two hundred dollars ($200.00), along with the installation of a flow restrictor at the customer's expense. A third violation constitutes a misdemeanor;

4. For a fourth violation, termination of water service. The charge for water service termination and restoration is one hundred dollars ($100.00).

C. For each violation by any water user of the water use curtailment provisions of this section, a surcharge is imposed in an amount equal to twenty-five percent (25%) of the portions of the water bill that exceed the respective percentages. This surcharge is paid to the city and is deposited in the water revenue fund as partial payment for the water department's conservation plan for that user. (Ord. 253 §6.8, 2001)

13.24.300 Hearing regarding violations.

A. Any water user receiving notice of a second or subsequent violation of this chapter shall have a right to a hearing by the city engineer.

B. The water user's written request for a hearing must be received within ten days of the issuance of the notice of violation. This request shall stay installation of a flow-restricting device on the water user's premises and the imposition of any surcharge until the city engineer renders his/her decision. His/her decision is issued within fifteen (15) days after the hearing, and a copy is provided to the water user.

C. The decision of the city engineer may be appealed to the city manager by the water user filing with the city manager a written request within fifteen (15) days of receipt of the decision from the city engineer. Filing of such a request stays the implementation of any surcharge or installation of a flow-restrictor.

D. The appeal hearing will be scheduled to occur within a reasonable period of time following the filing of the appeal. No formal rules of evidence apply. All evidence customarily relied upon by reasonable persons in the conduct of serious business affairs will be allowed, and the water user may present any such evidence which shows the alleged wasteful water use has not occurred. The decision of the city manager will be given in writing to the water user within fifteen (15) days after the appeal hearing, and that decision is final. (Ord. 253 §6.9, 2001)

13.24.310 Additional measures.

The city council may order implementation of water conservation measures in addition to those set forth in this chapter. Such additional measures are implemented by resolution published one time in a daily newspaper of general circulation covering the service area of the city water department. Any prohibitions on the use of water shall become effective immediately upon publication. The application of surcharges shall commence one month after the date the curtailment becomes effective. (Ord. 253 §6.10, 2001)

13.24.320 Effect on public health and safety.

Nothing in this chapter is construed to require the city engineer to curtail water to any user when such water is required by that customer to maintain an adequate level of public health and safety. The rights of the city under this chapter are in addition to any other rights of the city under any other applicable laws. (Ord. 253 §6.11, 2001)

Source: City of East Palo Alto Municipal Code.

APPENDIX F

Water Shortage Allocation Plan

ATTACHMENT H

WATER SHORTAGE ALLOCATION PLAN

This Interim Water Shortage Allocation Plan ("Plan") describes the method for allocating water between the San Francisco Public Utilities Commission ("SFPUC") and the Wholesale Customers collectively during shortages caused by drought. The Plan implements a method for allocating water among the individual Wholesale Customers which has been adopted by the Wholesale Customers. The Plan includes provisions for transfers, banking, and excess use charges. The Plan applies only when the SFPUC determines that a system-wide water shortage due to drought exists, and all references to "shortages" and "water shortages" are to be so understood. This Plan was adopted pursuant to Section 7.03(a) of the 1984 Settlement Agreement and Master Water Sales Contract and has been updated to correspond to the terminology used in the June 2009 Water Supply Agreement between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County ("Agreement").

SECTION 1. SHORTAGE CONDITIONS

1.1. Projected Available SFPUC Water Supply. The SFPUC shall make an annual determination as to whether or not a shortage condition exists. The determination of projected available water supply shall consider, among other things, stored water, projected runoff, water acquired by the SFPUC from non-SFPUC sources, inactive storage, reservoir losses, allowance for carryover storage, and water bank balances, if any, described in Section 3.

1.2 Projected SFPUC Purchases. The SFPUC will utilize purchase data, including volumes of water purchased by the Wholesale Customers and by Retail Customers (as those terms are used in the Agreement) in the year immediately prior to the drought, along with other available relevant information, as a basis for determining projected system-wide water purchases from the SFPUC for the upcoming year.

1.3. Shortage Conditions. The SFPUC will compare the available water supply (Section 1.1) with projected system-wide water purchases (Section 1.2). A shortage condition exists if the SFPUC determines that the projected available water supply is less than projected system-wide water purchases in the upcoming Supply Year (defined as the period from July 1 through June 30). When a shortage condition exists, SFPUC will determine whether voluntary or mandatory actions will be required to reduce purchases of SFPUC water to required levels.

1.3.1 Voluntary Response. If the SFPUC determines that voluntary actions will be sufficient to accomplish the necessary reduction in water use throughout its service area, the SFPUC and the Wholesale Customers will make good faith efforts to reduce their water purchases to stay within their annual shortage allocations and associated monthly water use budgets. The SFPUC will not impose excess use charges during periods of voluntary rationing, but may suspend the prospective accumulation of water bank credits, or impose a ceiling on further accumulation of bank credits, consistent with Section 3.2.1 of this Plan.

1.3.2 Mandatory Response. If the SFPUC determines that mandatory actions will be required to accomplish the necessary reduction in water use in the SFPUC service area, the SFPUC may implement excess use charges as set forth in Section 4 of this Plan.

1.4. Period of Shortage. A shortage period commences when the SFPUC determines that a water shortage exists, as set forth in a declaration of water shortage emergency issued by the SFPUC pursuant to California Water Code Sections 350 et seq. Termination of the water shortage emergency will be declared by resolution of the SFPUC.

SECTION 2. SHORTAGE ALLOCATIONS

2.1. Annual Allocations between the SFPUC and the Wholesale Customers. The annual water supply available during shortages will be allocated between the SFPUC and the collective Wholesale Customers as follows:

Level of System Wide Reduction in Water Use Required	Share of Available Water	
	SFPUC Share	Wholesale Customers Share
5% or less	35.5%	64.5%
6% through 10%	36.0%	64.0%
11% through 15%	37.0%	63.0%
16% through 20%	37.5%	62.5%

The water allocated to the SFPUC shall correspond to the total allocation for all Retail Customers.

2.2 Annual Allocations among the Wholesale Customers. The annual water supply allocated to the Wholesale Customers collectively during system wide shortages of 20 percent or less will be apportioned among them based on a methodology adopted by all of the Wholesale Customers, as described in Section 3.11(C) of the Agreement. In any year for which the methodology must be applied, the Bay Area Water Supply and Conservation Agency ("BAWSCA") will calculate each Wholesale Customer's individual percentage share of the amount of water allocated to the Wholesale Customers collectively pursuant to Section 2.1. Following the declaration or reconfirmation of a water shortage emergency by the SFPUC, BAWSCA will deliver to the SFPUC General Manager a list, signed by the President of BAWSCA's Board of Directors and its General Manager, showing each Wholesale Customer together with its percentage share and stating that the list has been prepared in accordance with the methodology adopted by the Wholesale Customers. The SFPUC shall allocate water to each Wholesale Customer, as specified in the list. The shortage allocations so established may be transferred as provided in Section 2.5 of this Plan. If BAWSCA or all Wholesale Customers do not provide the SFPUC with individual allocations, the SFPUC may make a final allocation decision after first meeting and discussing allocations with BAWSCA and the Wholesale Customers.

The methodology adopted by the Wholesale Customers utilizes the rolling average of each individual Wholesale Customer's purchases from the SFPUC during the three immediately

preceding Supply Years. The SFPUC agrees to provide BAWSCA by November 1 of each year a list showing the amount of water purchased by each Wholesale Customer during the immediately preceding Supply Year. The list will be prepared using Customer Service Bureau report MGT440 (or comparable official record in use at the time), adjusted as required for any reporting errors or omissions, and will be transmitted by the SFPUC General Manager or his designee.

2.3. Limited Applicability of Plan to System Wide Shortages Greater Than Twenty Percent. The allocations of water between the SFPUC and the Wholesale Customers collectively, provided for in Section 2.1, apply only to shortages of 20 percent or less. The SFPUC and Wholesale Customers recognize the possibility of a drought occurring which could create system-wide shortages greater than 20 percent despite actions taken by the SFPUC aimed at reducing the probability and severity of water shortages in the SFPUC service area. If the SFPUC determines that a system wide water shortage greater than 20 percent exists, the SFPUC and the Wholesale Customers agree to meet within 10 days and discuss whether a change is required to the allocation set forth in Section 2.1 in order to mitigate undue hardships that might otherwise be experienced by individual Wholesale Customers or Retail Customers. Following these discussions, the Tier 1 water allocations set forth in Section 2.1 of this Plan, or a modified version thereof, may be adopted by mutual written consent of the SFPUC and the Wholesale Customers. If the SFPUC and Wholesale Customers meet and cannot agree on an appropriate Tier 1 allocation within 30 days of the SFPUC's determination of water shortage greater than 20 percent, then (1) the provisions of Section 3.11(C) of the Agreement will apply, unless (2) all of the Wholesale Customers direct in writing that a Tier 2 allocation methodology agreed to by them be used to apportion the water to be made available to the Wholesale Customers collectively, in lieu of the provisions of Section 3.11(C).

The provisions of this Plan relating to transfers (in Section 2.5), banking (in Section 3), and excess use charges (in Section 4) shall continue to apply during system-wide shortages greater than 20 percent.

2.4. Monthly Water Budgets. Within 10 days after adopting a declaration of water shortage emergency, the SFPUC will determine the amount of Tier 1 water allocated to the Wholesale Customers collectively pursuant to Section 2.1. The SFPUC General Manager, using the Tier 2 allocation percentages shown on the list delivered by BAWSCA pursuant to Section 2.2, will calculate each Wholesale Customer's individual annual allocation. The SFPUC General Manager, or his designee, will then provide each Wholesale Customer with a proposed schedule of monthly water budgets based on the pattern of monthly water purchases during the Supply Year immediately preceding the declaration of shortage (the "Default Schedule"). Each Wholesale Customer may, within two weeks of receiving its Default Schedule, provide the SFPUC with an alternative monthly water budget that reschedules its annual Tier 2 shortage allocation over the course of the succeeding Supply Year. If a Wholesale Customer does not deliver an alternative monthly water budget to the SFPUC within two weeks of its receipt of the Default Schedule, then its monthly budget for the ensuing Supply Year shall be the Default Schedule proposed by the SFPUC.

Monthly Wholesale Customer water budgets will be derived from annual Tier 2 allocations for purposes of accounting for excess use. Monthly Wholesale Customer water budgets shall be adjusted during the year to account for transfers of shortage allocation under Section 2.5 and

transfers of banked water under Section 3.4.

2.5. Transfers of Shortage Allocations. Voluntary transfers of shortage allocations between the SFPUC and any Wholesale Customers, and between any Wholesale Customers, will be permitted using the same procedure as that for transfers of banked water set forth in Section 3.4. The SFPUC and BAWSCA shall be notified of each transfer. Transfers of shortage allocations shall be deemed to be an emergency transfer and shall become effective on the third business day after notice of the transfer has been delivered to the SFPUC. Transfers of shortage allocations shall be in compliance with Section 3.05 of the Agreement. The transferring parties will meet with the SFPUC, if requested, to discuss any effect the transfer may have on its operations.

SECTION 3. SHORTAGE WATER BANKING

3.1. Water Bank Accounts. The SFPUC shall create a water bank account for itself and each Wholesale Customer during shortages in conjunction with its resale customer billing process. Bank accounts will account for amounts of water that are either saved or used in excess of the shortage allocation for each agency; the accounts are not used for tracking billings and payments. When a shortage period is in effect (as defined in Section 1.4), the following provisions for bank credits, debits, and transfers shall be in force. A statement of bank balance for each Wholesale Customer will be included with the SFPUC's monthly water bills.

3.2. Bank Account Credits. Each month, monthly purchases will be compared to the monthly budget for that month. Any unused shortage allocation by an agency will be credited to that agency's water bank account. Credits will accumulate during the entire shortage period, subject to potential restrictions imposed pursuant to Section 3.2.1. Credits remaining at the end of the shortage period will be zeroed out; no financial or other credit shall be granted for banked water.

3.2.1. Maximum Balances. The SFPUC may suspend the prospective accumulation of credits in all accounts. Alternatively, the SFPUC may impose a ceiling on further accumulation of credits in water bank balances based on a uniform ratio of the bank balance to the annual water allocation. In making a decision to suspend the prospective accumulation of water bank credits, the SFPUC shall consider the available water supply as set forth in Section 1.1 of this Plan and other reasonable, relevant factors.

3.3. Account Debits. Each month, monthly purchases will be compared to the budget for that month. Purchases in excess of monthly budgets will be debited against an agency's water bank account. Bank debits remaining at the end of the fiscal year will be subject to excess use charges (see Section 4).

3.4. Transfers of Banked Water. In addition to the transfers of shortage allocations provided for in Section 2.5, voluntary transfers of banked water will also be permitted between the SFPUC and any Wholesale Customer, and among the Wholesale Customers. The volume of transferred water will be credited to the transferee's water bank account and debited against the transferor's water bank account. The transferring parties must notify the SFPUC and BAWSCA of each transfer in writing (so that adjustments can be made to bank accounts), and will meet with the SFPUC, if requested, to discuss any affect the transfer may have on SFPUC operations. Transfers of banked water shall be deemed to be an emergency transfer and shall become effective on the third business day after notice of the transfer has been delivered to the SFPUC.

If the SFPUC incurs extraordinary costs in implementing transfers, it will give written notice to the transferring parties within ten (10) business days after receipt of notice of the transfer. Extraordinary costs means additional costs directly attributable to accommodating transfers and which are not incurred in non-drought years nor simply as a result of the shortage condition itself. Extraordinary costs shall be calculated in accordance with the procedures in the Agreement and shall be subject to the disclosure and auditing requirements in the Agreement. In the case of transfers between Wholesale Customers, such extraordinary costs shall be considered to be expenses chargeable solely to individual Wholesale Customers and shall be borne equally by the parties to the transfer. In the case of transfers between the SFPUC and a Wholesale Customer, the SFPUC's share of any extraordinary transfer costs shall not be added to the Wholesale Revenue Requirement.

3.4.1. Transfer Limitations. The agency transferring banked water will be allowed to transfer no more than the accumulated balance in its bank. Transfers of estimated prospective banked credits and the "overdrafting" of accounts shall not be permitted. The price of transfer water originally derived from the SFPUC system is to be determined by the transferring parties and is not specified herein. Transfers of banked water shall be in compliance with Section 3.05 of the Agreement.

SECTION 4. WHOLESALE EXCESS USE CHARGES

4.1. Amount of Excess Use Charges. Monthly excess use charges shall be determined by the SFPUC at the time of the declared water shortage consistent with the calendar in Section 6 and in accordance with Section 6.03 of the Agreement. The excess use charges will be in the form of multipliers applied to the rate in effect at the time the excess use occurs. The same excess use charge multipliers shall apply to the Wholesale Customers and all Retail Customers. The excess use charge multipliers apply only to the charges for water delivered at the rate in effect at the time the excess use occurred.

4.2 Monitoring Suburban Water Use. During periods of voluntary rationing, water usage greater than a customer's allocation (as determined in Section 2) will be indicated on each SFPUC monthly water bill. During periods of mandatory rationing, monthly and cumulative water usage greater than a Wholesale Customer's shortage allocation and the associated excess use charges will be indicated on each SFPUC monthly water bill.

4.3. Suburban Excess Use Charge Payments. An annual reconciliation will be made of monthly excess use charges according to the calendar in Section 6. Annual excess use charges will be calculated by comparing total annual purchases for each Wholesale Customer with its annual shortage allocation (as adjusted for transfers of shortage allocations and banked water, if any). Excess use charge payments by those Wholesale Customers with net excess use will be paid according to the calendar in Section 6. The SFPUC may dedicate excess use charges paid by Wholesale Customers toward the purchase of water from the State Drought Water Bank or other willing sellers in order to provide additional water to the Wholesale Customers. Excess use charges paid by the Wholesale Customers constitute Wholesale Customer revenue and shall be included within the SFPUC's annual Wholesale Revenue Requirement calculation.

SECTION 5. GENERAL PROVISIONS GOVERNING WATER SHORTAGE ALLOCATION PLAN

5.1. Construction of Terms. This Plan is for the sole benefit of the parties and shall not be construed as granting rights to any person other than the parties or imposing obligations on a party to any person other than another party.

5.2. Governing Law. This Plan is made under and shall be governed by the laws of the State of California.

5.3. Effect on Agreement. This Plan describes the method for allocating water between the SFPUC and the collective Wholesale Customers during system-wide water shortages of 20 percent or less. This Plan also provides for the SFPUC to allocate water among the Wholesale Customers in accordance with directions provided by the Wholesale Customers through BAWSCA under Section 2.2, and to implement a program by which such allocations may be voluntarily transferred among the Wholesale Customers. The provisions of this Plan are intended to implement Section 3.11(C) of the Agreement and do not affect, change or modify any other section, term or condition of the Agreement.

5.4. Inapplicability of Plan to Allocation of SFPUC System Water During Non-Shortage Periods. The SFPUC's agreement in this Plan to a respective share of SFPUC system water during years of shortage shall not be construed to provide a basis for the allocation of water between the SFPUC and the Wholesale Customers when no water shortage emergency exists.

5.5. Termination. This Plan shall expire at the end of the Term of the Agreement.. The SFPUC and the Wholesale Customers can mutually agree to revise or terminate this Plan prior to that date due to changes in the water delivery capability of the SFPUC system, the acquisition of new water supplies, and other factors affecting the availability of water from the SFPUC system during times of shortage.

SECTION 6. ALLOCATION CALENDAR

6.1. Annual Schedule. The annual schedule for the shortage allocation process is shown below. This schedule may be changed by the SFPUC to facilitate implementation.

6.1.1

In All Years	Target Dates
1. SFPUC delivers list of annual purchases by each Wholesale Customer during the immediately preceding Supply Year	November 1
2. SFPUC meets with the Wholesale Customers and presents water supply forecast for the following Supply Year	February
3. SFPUC issues initial estimate of available water supply	February 1
4. SFPUC announces potential first year of drought (if applicable)	February 1
5. SFPUC and Wholesale Customers meet upon request to exchange information concerning water availability and projected system-wide purchases	February 1-May 31
6. SFPUC issues revised estimate of available water supply, and confirms continued potential shortage conditions, if applicable	March 1
7. SFPUC issues final estimate of available water supply	April 15th or sooner if adequate snow course measurement data is available to form a robust estimate on available water supply for the coming year.
8. SFPUC determines amount of water available to Wholesale Customers collectively	April 15th or sooner if adequate snow course measurement data is available to form a robust estimate on available water supply for the coming year.

In Drought Years	Target Dates
9. SFPUC formally declares the existence of water shortage emergency (or end of water shortage emergency, if applicable) under Water Code Sections 350 et. seq.	April 15-31
10. SFPUC declares the need for a voluntary or mandatory response	April 15-31
11. BAWSCA submits calculation to SFPUC of individual Wholesale Customers' percentage shares of water allocated to Wholesale Customers collectively	April 15- 31
12. SFPUC determines individual shortage allocations, based on BAWSCA's submittal of individual agency percentage shares to SFPUC, and monthly water budgets (Default Schedule)	April 25—May 10
13. Wholesale Customers submit alternative monthly water budgets (optional)	May 8-May 24
14. Final drought shortage allocations are issued for the Supply Year beginning July 1 through June 30	June 1
15. Monthly water budgets become effective	July 1
16. Excess use charges indicated on monthly Suburban bills	August 1 (of the beginning year) through June 30 (of the succeeding year)
17. Excess use charges paid by Wholesale Customers for prior year	August of the succeeding year

APPENDIX G

Letter from SFPUC to BAWSCA Regarding Regional Water System Supply Reliability, March 31, 2011

SFPUC
WATER
WASTEWATER
POWER

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

1145 Market St., 4th Floor, San Francisco, CA 94103 • Tel. (415) 554-3271 • Fax (415) 554-3161 • TTY (415) 934-5770

EDWIN M. LEE
MAYOR

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PRESIDENT

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VICE PRESIDENT

ANN MOLLER CAEN
COMMISSIONER

ART TORRES
COMMISSIONER

VINCE COURTNEY
COMMISSIONER

ED HARRINGTON
GENERAL MANAGER

March 31, 2011

Nicole Sandkulla
Senior Water Resources Engineer
Bay Area Water Supply and Conservation Agency
155 Bovet Road, Suite 302
San Mateo, CA 94402

Dear Nicole,

Attached please find additional information through 2035 on the Regional Water System's supply reliability for use in the Wholesale Customer's 2010 Urban Water Management Plan updates. The SFPUC has assessed the water supply reliability under the following planning scenarios:

- Projected Single dry-year supply for 2010
- Projected Multiple dry-year supply beginning 2010; and
- Projected supply reliability for years 2010-2035.

Table 1 summarizes deliveries to the Wholesale Customers for projected single dry-year supply for 2010 and projected multiple dry-year supply beginning 2010.

With regards to future demands, the SFPUC proposes to expand their water supply portfolio by increasing the types of water supply resources. Table 2 summarizes the water supply resources assumed to be available by 2035.

Concerning allocation of supply during dry years, the Water Shortage Allocation Plan ("Plan") was utilized to allocate shortages between the SFPUC and the Wholesale Customers collectively. The Plan implements a method for allocating water among the individual Wholesale Customers which has been adopted by the Wholesale Customers. The Plan was adopted pursuant to Section 7.03(a) of the 1984 Settlement Agreement and Master Water Sales Contract and has been updated to correspond to the terminology used in the June 2009 Water Supply Agreement between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County.

Finally, the SFPUC estimated the frequency and severity of anticipated shortages for the period 2010 though 2035. For this analysis, we assumed that the historical hydrologic period is indicative of future events and evaluated the supply reliability assuming a repeat of the actual historic hydrologic period 1920 through 2002. The results of this analysis are summarized in Table 3.

It is our understanding that you will pass this information on to the Wholesale Customers. If you have any questions or need additional information, please do not hesitate to contact me at (415) 554-0792.

Sincerely,

Paula Kehoe

Paula Kehoe
Director of Water Resources

Table 1
Projected Deliveries for Three Multiple Dry Years

	2010	One Critical Dry Year	Deliveries during Multiple Dry Years in mgd		
			Year 1	Year 2	Year 3
System-Wide Shortage in Percent	0%	10%	10%	20%	20%
Wholesale Allocation (mgd)	184.0	152.6	152.6	132.5	132.5

Table 2

UWMP Studies: Water Supply Reliability **Water Supply Options for Years 2010 through 2030**						
	2010	2015	2020	2025	2030	2035
Crystal Springs Reservoir (20.28bg)		x	x	x	x	x
Westside Basin Groundwater afa		8,100	8,100	8,100	8,100	8,100
Calaveras Reservoir Recovery (31.5 bg)		x	x	x	x	x
Districts' Transfer afa		2240	2240	2240	2240	2240

Table 3: Projected System Supply Reliability Based on Historical Hydrologic Period

Allocation by Year	Wholesale Demand in mgd					
	184.0	184.0	184.0	184.0	184.0	184.0
	Projected Wholesale Allocation in mgd					
Delivery for Fiscal Year	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
1920	184.0	184.0	184.0	184.0	184.0	184.0
1921	184.0	184.0	184.0	184.0	184.0	184.0
1922	184.0	184.0	184.0	184.0	184.0	184.0
1923	184.0	184.0	184.0	184.0	184.0	184.0
1924	184.0	184.0	184.0	184.0	184.0	184.0
1925	154.6	184.0	184.0	184.0	184.0	184.0
1926	184.0	184.0	184.0	184.0	184.0	184.0
1927	184.0	184.0	184.0	184.0	184.0	184.0
1928	184.0	184.0	184.0	184.0	184.0	184.0
1929	184.0	184.0	184.0	184.0	184.0	184.0
1930	184.0	184.0	184.0	184.0	184.0	184.0
1931	184.0	184.0	184.0	184.0	184.0	184.0
1932	132.5	152.6	152.6	152.6	152.6	152.6
1933	184.0	184.0	184.0	184.0	184.0	184.0
1934	184.0	184.0	184.0	184.0	184.0	184.0
1935	154.6	184.0	184.0	184.0	184.0	184.0
1936	184.0	184.0	184.0	184.0	184.0	184.0
1937	184.0	184.0	184.0	184.0	184.0	184.0
1938	184.0	184.0	184.0	184.0	184.0	184.0
1939	184.0	184.0	184.0	184.0	184.0	184.0
1940	184.0	184.0	184.0	184.0	184.0	184.0
1941	184.0	184.0	184.0	184.0	184.0	184.0
1942	184.0	184.0	184.0	184.0	184.0	184.0
1943	184.0	184.0	184.0	184.0	184.0	184.0
1944	184.0	184.0	184.0	184.0	184.0	184.0
1945	184.0	184.0	184.0	184.0	184.0	184.0
1946	184.0	184.0	184.0	184.0	184.0	184.0
1947	184.0	184.0	184.0	184.0	184.0	184.0
1948	184.0	184.0	184.0	184.0	184.0	184.0
1949	184.0	184.0	184.0	184.0	184.0	184.0
1950	184.0	184.0	184.0	184.0	184.0	184.0
1951	184.0	184.0	184.0	184.0	184.0	184.0
1952	184.0	184.0	184.0	184.0	184.0	184.0
1953	184.0	184.0	184.0	184.0	184.0	184.0
1954	184.0	184.0	184.0	184.0	184.0	184.0
1955	184.0	184.0	184.0	184.0	184.0	184.0
1956	184.0	184.0	184.0	184.0	184.0	184.0
1957	184.0	184.0	184.0	184.0	184.0	184.0
1958	184.0	184.0	184.0	184.0	184.0	184.0
1959	184.0	184.0	184.0	184.0	184.0	184.0

Delivery for Fiscal Year	2010	2015	2020	2025	2030	2035
1960	184.0	184.0	184.0	184.0	184.0	184.0
1961	152.6	184.0	184.0	184.0	184.0	184.0
1962	132.5	152.6	152.6	152.6	152.6	152.6
1963	184.0	184.0	184.0	184.0	184.0	184.0
1964	184.0	184.0	184.0	184.0	184.0	184.0
1965	184.0	184.0	184.0	184.0	184.0	184.0
1966	184.0	184.0	184.0	184.0	184.0	184.0
1967	184.0	184.0	184.0	184.0	184.0	184.0
1968	184.0	184.0	184.0	184.0	184.0	184.0
1969	184.0	184.0	184.0	184.0	184.0	184.0
1970	184.0	184.0	184.0	184.0	184.0	184.0
1971	184.0	184.0	184.0	184.0	184.0	184.0
1972	184.0	184.0	184.0	184.0	184.0	184.0
1973	184.0	184.0	184.0	184.0	184.0	184.0
1974	184.0	184.0	184.0	184.0	184.0	184.0
1975	184.0	184.0	184.0	184.0	184.0	184.0
1976	184.0	184.0	184.0	184.0	184.0	184.0
1977	152.6	184.0	184.0	184.0	184.0	184.0
1978	136.2	152.6	152.6	152.6	152.6	152.6
1979	184.0	184.0	184.0	184.0	184.0	184.0
1980	184.0	184.0	184.0	184.0	184.0	184.0
1981	184.0	184.0	184.0	184.0	184.0	184.0
1982	184.0	184.0	184.0	184.0	184.0	184.0
1983	184.0	184.0	184.0	184.0	184.0	184.0
1984	184.0	184.0	184.0	184.0	184.0	184.0
1985	184.0	184.0	184.0	184.0	184.0	184.0
1986	184.0	184.0	184.0	184.0	184.0	184.0
1987	184.0	184.0	184.0	184.0	184.0	184.0
1988	152.6	184.0	184.0	184.0	184.0	184.0
1989	132.5	152.6	152.6	152.6	152.6	152.6
1990	132.5	152.6	152.6	152.6	152.6	152.6
1991	132.5	132.5	132.5	132.5	132.5	132.5
1992	132.5	152.6	152.6	152.6	152.6	152.6
1993	136.2	132.5	132.5	132.5	132.5	132.5
1994	184.0	184.0	184.0	184.0	184.0	184.0
1995	154.6	184.0	184.0	184.0	184.0	184.0
1996	184.0	184.0	184.0	184.0	184.0	184.0
1997	184.0	184.0	184.0	184.0	184.0	184.0
1998	184.0	184.0	184.0	184.0	184.0	184.0
1999	184.0	184.0	184.0	184.0	184.0	184.0
2000	184.0	184.0	184.0	184.0	184.0	184.0
2001	184.0	184.0	184.0	184.0	184.0	184.0
2002	184.0	184.0	184.0	184.0	184.0	184.0

APPENDIX H

Tier 2 Drought Implementation Plan (DRIP 2)

EXHIBIT A

TIER 2 DROUGHT IMPLEMENTATION PLAN AMONG WHOLESALE CUSTOMERS

This Tier 2 Drought Implementation (Plan) describes the method for allocating the water made available by the San Francisco Public Utilities Commission (SFPUC) among the Wholesale Customers during shortages caused by drought. This Plan is adopted pursuant to Section 3.11.C of the July 2009 Water Supply Agreement between the City and County of San Francisco and the Wholesale Customers (Agreement).

SECTION 1. APPLICABILITY AND INTEGRATION

Section 1.1 **Applicability**. This Plan applies when, and only when, the SFPUC determines that a system-wide water shortage of 20 percent or less exists, as set forth in a declaration of water shortage emergency adopted by the SFPUC pursuant to California Water Code Sections 350 *et seq.* This Plan applies only to water acquired and distributed by the SFPUC to the Wholesale Customers and has no effect on water obtained by a Wholesale Customer from any source other than the SFPUC.

Section 1.2 **Integration with Tier 1 Water Shortage Allocation Plan**. The Agreement contains, in Attachment H, a Water Shortage Allocation Plan which, among other things, (a) provides for the allocation by the SFPUC of water between Direct City Water Users (e.g., retail water customers within the City and County of San Francisco) and the Wholesale Customers collectively during system-wide water shortages of 20 percent or less, (b) contemplates the adoption by the Wholesale Customers of this Plan for allocation of the water made available to Wholesale Customers collectively among the 26 individual Wholesale Customers, (c) commits the SFPUC to implement this Plan, and (d) provides for the transfer of both banked water and shortage allocations between and among the Wholesale Customers and commits the SFPUC to implement such transfers. That plan is referred to as the Tier 1 Plan.

The Tier 1 Plan also provides the methodology for determining the Overall Average Wholesale Customer Reduction, expressed as a percentage cutback from prior year's normal SFPUC purchases, and Overall Wholesale Customer Allocation, in million gallons per day, both of which are used in determining the Final Allocation Factor for each Wholesale Customer. The Overall Average Wholesale Customer Reduction is determined by dividing the volume of water available to the Wholesale Customers (the Overall Wholesale Customer Allocation), shown as a share of available water in Section 2 of the Tier 1 Plan, by the prior year's normal total Wholesale Customers SFPUC purchases and subtracting that value from one.

This Plan is referred to in the Agreement as the Tier 2 Plan. It is intended to be integrated with the Tier 1 Plan described in the preceding paragraph. Terms used in this Plan are intended to have the same meaning as such terms have in the Tier 1 Plan.

SECTION 2. ALLOCATION OF WATER AMONG WHOLESALE CUSTOMERS

Section 2.1 Annual Allocations Among the Wholesale Customers. The annual water supply allocated by the SFPUC to the Wholesale Customers collectively during system-wide shortages of 20 percent or less shall be apportioned among them based on the methodology described in this Section.

Section 2.2 Methodology for Allocating Water Among Wholesale Customers. The water made available to the Wholesale Customers collectively will be allocated among them in proportion to each Wholesale Customer's Allocation Factor, adjusted as described in the following subsections below. The Wholesale Customer Allocation Factors will only be calculated at the onset of a drought and will remain the same until such time as the SFPUC declares the shortage condition over. The Wholesale Customer Allocation Factors will be recalculated during subsequent shortage periods for use during those specific periods.

Section 2.2.1 Step One: Determination of Base/Seasonal Purchase Cutback For Each Wholesale Customer. The first step requires calculating the Wholesale Customer's Base/Seasonal Purchase Cutback. This calculation has seven parts. An example of Steps 1b-1f is presented in Table 2. Step 1g is shown in columns 3-6 in Table 3. For steps 1b-1g, the calculation uses average monthly production values for the three years preceding the drought for all potable supply sources, expressed as a monthly value in hundred cubic feet:

- Step 1a: Each agency's total annual purchases from the SFPUC will be compared to its Individual Supply Guarantee (ISG), with any annual purchases above its ISG subtracted from that agency's total annual SFPUC purchases by subtracting the amount on a monthly basis in proportion to the agency's monthly SFPUC purchase pattern,

- Step 1b: Calculate Average Monthly and Total Production for the three fiscal years immediately preceding the drought, excluding years during which shortage allocations were in effect, based on monthly production data from the SFPUC and Wholesale Customers,

- Step 1c: Calculate Base Component which is equal to the Average Monthly Production during the base months of December, January, February and March, multiplied by 12,

- Step 1d: Calculate Seasonal Component as the difference between Total Production and Base Component,

- Step 1e: Calculate an agency's Base/Seasonal Allocation , expressed in hundred cubic feet, by multiplying the Base Component by one minus the Base Reduction Percentage, or 90%, and the Seasonal Component by the percentage needed

(Seasonal Reduction Percentage) to achieve the required Overall Average Wholesale Customer Reduction, which is expressed as a percentage,

- Step 1f: Calculate the Base/Seasonal Allocation Cutback Percentage for each agency by dividing its Base/Seasonal Allocation by the agency's Total Production, and

- Step 1g: Calculate the Base/Seasonal Purchase Cutback Percentage by multiplying the Base/Seasonal Allocation Cutback percentage times the lesser of: (a) the immediately preceding SFPUC purchases or (b) ISG, adjusting the Seasonal percentage above until the total reduction equals the Overall Average Wholesale Customer Reduction.

Additionally, adjustments to the Base Component for Stanford University will be made to remove that two week time period that the University is completely closed during the winter break per policy set by the University President as long as that policy remains in place. This adjustment will be removed at such time as the seasonal closure policy is terminated by Stanford University.

Section 2.2.2 <u>Step Two: First Adjustment for San Jose and Santa Clara</u>. The resulting Base/Seasonal Purchase Cutback Percentage in Section 2.2.1 for San Jose and Santa Clara will be compared to the highest Base/Seasonal Purchase Cutback percentage of the other Wholesale Customers. If both San Jose's and Santa Clara's percentage reductions are larger than the highest percentage reduction among any other Wholesale Customers, the Base/Seasonal Purchase Cutback percentage established under Section 2.2.1 will remain unchanged. If either San Jose's percentage cutback or Santa Clara's percentage cutback, or both, is smaller than the highest Base/Seasonal Purchase Cutback percentage of other Wholesale Customers, the Base/Seasonal Allocation (in mgd) of San Jose or Santa Clara, or both, will be reduced so that the percentage cutback of each is no smaller than that of the Wholesale Customers' otherwise highest percentage cutback. The amount of shortage allocation (in mgd) removed from San Jose and/or Santa Clara will be reallocated among the remaining Wholesale Customers in proportion to the Base/Seasonal Allocation of each.

Section 2.2.3 <u>Step Three: Determination of Weighted Purchase Cutback For Each Wholesale Customer</u>. Each agency's weighted allocation is calculated by multiplying its Adjusted Base/Seasonal Allocation in Section 2.2.2 by 66.66% and its Fixed Component by 33.33%. The Fixed Component is (i) the Wholesale Customer's ISG provided for in the Agreement, or (ii) in the case of Hayward, 25.11 mgd, or (iii) in the case of San Jose and Santa Clara, consistent with the limit on purchases from SFPUC set forth in Section 4.05 of the Agreement, e. g., 4.5 mgd each. The amount of the Fixed Component for each Wholesale Customer is shown on Table 1.

Section 2.2.4 <u>Step Four: Second Adjustment for San Jose and Santa Clara</u>. The resulting Weighted Allocations for San Jose and Santa Clara will be compared to the highest Weighted Purchase Cutback, shown as a percentage, of the other Wholesale

Customers. If both San Jose's and Santa Clara's percentage cutback is larger than the highest percentage cutback among other Wholesale Customers, the Weighted Purchase Cutbacks established under Section 2.2.3 will remain unchanged. If either San Jose's percentage cutback or Santa Clara's percentage cutback, or both, is smaller than the highest percentage cutback of any other Wholesale Customers, the Weighted Shortage Allocation (in mgd) of San Jose or Santa Clara, or both, will be reduced so that the percentage reduction of each is no smaller than that of the Wholesale Customers' otherwise highest Weighted Percentage Cutback. The amount of allocation (in mgd) removed from San Jose and/or Santa Clara will be reallocated among the remaining Wholesale Customers in proportion to the Weighted Shortage Allocation of each.

Section 2.2.5 <u>Step Five: Adjustment for Minimum and Maximum Cutbacks</u>. Using the Adjusted Weighted Purchase Cutbacks, either a 10% minimum cutback or maximum cutback, as defined below, is applied to any agency whose Adjusted Weighted Purchase Cutback falls outside this range:

- A minimum 10% cutback is applied to the individual agency Adjusted Weighted Allocation, with the reapportioned water being placed in the hardship bank for allocation to East Palo Alto.

- A maximum cutback of the average cutback plus 20% (e.g. 15% average cutback results in a maximum cutback of 15% + 20% = 35%) is applied to the individual agency Adjusted Weighted Allocation, with the water necessary to meet that level being subtracted in proportion to each Wholesale Customer's Adjusted Weighted Allocation from all remaining agencies, except those at agencies subject to the minimum cutback above.

The result is the Adjusted Minimum/Maximum Purchase Cutback, expressed as a percentage.

Section 2.2.6 <u>Step Six: Adjustment to Provide Sufficient Supply for East Palo Alto</u>. In order to provide for sufficient water supply for water customers served by the City of East Palo Alto (EPA), the maximum Final Purchase Cutback applied at any given time to EPA will be equal to 50% of the Overall Average Wholesale Customer Reduction. The water needed to accommodate the guaranteed maximum cutback to EPA will be provided in two ways:

- First, water from the hardship bank provided by the 10% minimum cutback will be first added to the EPA Adjusted Weighted Purchase Allocation, and

- Second, the balance of water needed for EPA will be deducted on a prorated basis from those agencies with a pre-drought residential per capita water use greater than 55 gallons per capita per day (as documented in the most recent BAWSCA Annual Survey) in proportion to each agency's Min./Max. Adjusted Allocation and who are not subject to the minimum and maximum reductions already applied per Section 2.2.5

The result is the Allocation with EPA Adjustment, expressed as an mgd.

Section 2.2.7 **Step Seven: Determination of Final Allocation Factor.** Each Wholesale Customer's Final Allocation Factor is the fraction expressed as a percentage, the numerator of which is the particular Wholesale Customer's "Final Allocation with EPA Adjustment" (in mgd) as calculated in Steps One through Six and the denominator of which is the Overall Wholesale Customer Allocation (in mgd), a number provided by the SFPUC during the drought period as determined by the SFPUC in the Tier 1 Plan.

Section 2.2.8 **Example Calculation**. Table 2 presents a sample of the calculations involved in Steps 1b-1f. Table 3 presents a sample of the calculations involved in Step 1g and Steps Two through Seven, using the values from Tables 1 and 2 and recent water use data for the other values. Tables 2 and 3 are presented for illustrative purposes only and do not supersede the foregoing provisions of this Section 2.2. In the event of any inconsistency between this Section 2.2 and Tables 2 and 3, the text of this section will govern.

Section 2.3 **Calculation of Individual Wholesale Customer Allocation Factors; Directions to SFPUC**. The Tier 1 Plan contemplates that in any year in which the methodology described above must be applied, the Bay Area Water Supply and Conversation Agency (BAWSCA) will calculate each Wholesale Customer's individual percentage share of the amount of water made available to the Wholesale Customers collectively, following the methodology described above and defined above as Wholesale Customer Allocation Factors. The Tier 1 Plan requires SFPUC to allocate water to each Wholesale Customer in accordance with calculations delivered to it by BAWSCA.

Each Wholesale Customer authorizes BAWSCA to perform the calculations required, using water sales data furnished to it by the SFPUC, and to deliver to SFPUC a list of individual Wholesale Customer Allocation Factors so calculated as contemplated by the Tier 1 Plan. Neither BAWSCA nor any officer or employee of BAWSCA shall be liable to any Wholesale Customer for any such calculations made in good faith, even if incorrect.

SECTION 3. GENERAL PROVISIONS

Section 3.1 **No Third-Party Beneficiaries**. This Plan is for the sole benefit of the Wholesale Customers and shall not be construed as granting rights to any person other than another Wholesale Customer.

Section 3.2 **Governing Law**. This Plan is made under and shall be governed by the laws of the State of California.

Section 3.3 **Effect on Water Supply Agreement.** This Plan describes the method for allocating water from the SFPUC among the Wholesale Customers during system-wide water shortages of 20 percent or less declared by the SFPUC. The provisions of this

Plan, and the Tier 1 Plan contained in Attachment H to the Agreement with which it is integrated, are intended to implement Section 3.11 of the Agreement. The Plans do not affect, change or modify any other section, term or condition of the Agreement or of the individual Water Sales Contracts between each Wholesale Customer and San Francisco.

Section 3.4 **Amendment**. This Plan may be amended only by the written agreement of all Wholesale Customers.

Section 3.5 **Termination**. This Plan shall expire on December 31, 2018. It may be terminated prior to that date only by the written agreement of all Wholesale Customers.

TABLE 1 - FIXED COMPONENT FOR USE IN TIER 2 ALLOCATION CALCULATION

Wholesale Customer	Fixed Component
ACWD	13.76
Brisbane/GVMID	0.98
Burlingame	5.23
Coastside	2.18
CWS Total	35.68
Daly City	4.29
East Palo Alto	1.96
Estero	5.90
Hayward	25.11
Hillsborough	4.09
Menlo Park	4.46
Mid Pen WD	3.89
Millbrae	3.15
Milpitas	9.23
Mountain View	13.46
North Coast	3.84
Palo Alto	17.07
Purissima Hills	1.62
Redwood City	10.93
San Bruno	3.25
San José	4.50
Santa Clara	4.50
Stanford	3.03
Sunnyvale	12.58
Westborough	1.32

TABLE 2 - BASE/SEASONAL CUTBACK CALCULATION FOR TIER 2 DROUGHT IMPLEMENTATION PLAN (DRIP) (Steps 1b-1f of DRIP Calculation)

BASE/SEASONAL CUTBACK CALCULATION
3 YEAR ROLLING AVERAGE OF TOTAL PRODUCTION

All Units In Hundred Cubic Feet (HCF) Except Where Otherwise Notes

Base Percentage Reduction =	10.00%
Seasonal Percentage Reduction =	65.00%
Number of Fiscal Years in Average =	1.0

Three-year averages by source

	July	August	September	October	November	December	January	February	March	April	May	June	Total
SFPUC Net	9,492,234	8,865,793	8,847,818	7,624,081	5,785,671	5,320,333	4,925,451	4,167,812	4,333,119	5,780,803	7,102,580	7,427,737	79,673,432
Groundwater	1,969,068	2,014,327	1,682,556	1,449,343	1,179,106	1,375,812	1,099,608	983,756	1,084,734	1,389,622	1,662,344	1,647,268	17,537,545
Other	2,744,449	2,669,344	2,537,606	2,418,221	1,644,468	874,833	1,391,142	1,320,782	1,606,115	2,004,769	2,517,062	2,675,045	24,403,836
Subtotal	14,205,751	13,549,464	13,067,981	11,491,646	8,609,245	7,570,977	7,416,201	6,472,350	7,023,968	9,175,195	11,281,986	11,750,050	121,614,813
SFPUC Excess	(36,886)	(33,367)	(35,125)	(28,015)	(18,394)	(11,600)	(10,843)	(11,088)	(8,721)	(16,898)	(25,409)	(27,984)	(264,330)
Net	14,168,865	13,516,097	13,032,856	11,463,631	8,590,851	7,559,378	7,405,358	6,461,262	7,015,246	9,158,297	11,256,577	11,722,066	121,350,483

Three-year rolling monthly production average by Wholesale Customer with SFPUC purchases limited to ISG on a yearly basis

	(1) July	(2) August	(3) September	(4) October	(5) November	(6) December	(7) January	(8) February	(9) March	(10) April	(11) May	(12) June	(13) Total Production	(14) Base Component	(15) Seasonal Component	(16) Base/Seasonal Allocation	(17) Base/Seasonal Cutback % (To Tab 2, Col 4)
ACWD	2,598,324	2,521,779	2,356,517	2,088,213	1,483,726	1,389,921	1,331,023	1,102,420	1,303,110	1,683,608	2,074,964	2,226,985	22,160,590	15,379,420	6,781,170	16,214,887	26.83%
Brisbane/GVMID	35,597	36,251	34,821	31,630	25,808	17,907	20,064	11,403	17,339	16,961	25,289	28,775	301,845	200,139	101,706	215,722	28.53%
Burlingame	237,426	236,780	214,046	203,879	183,921	127,936	130,576	132,703	110,995	141,580	164,657	202,117	2,086,616	1,506,630	579,986	1,558,962	25.29%
Coastside	118,409	120,160	102,807	103,917	69,291	70,976	72,928	57,246	48,396	79,714	90,816	102,112	1,036,773	748,636	288,136	774,620	25.29%
CWS	2,139,140	2,093,378	1,954,875	1,694,788	1,100,278	996,843	1,007,651	846,173	1,026,988	1,408,292	1,697,865	1,805,399	17,771,671	11,632,966	6,138,705	12,618,216	29.00%
Daly City	324,019	340,112	305,711	309,038	318,039	278,252	269,650	234,447	294,435	260,687	261,671	250,006	3,446,067	3,230,352	215,715	2,982,817	13.44%
East Palo Alto	100,845	98,204	99,301	92,276	74,634	56,388	70,278	60,063	54,918	67,468	89,886	71,174	935,435	724,941	210,494	726,120	22.38%
Estero	304,604	294,448	299,906	248,800	231,729	136,155	133,622	145,923	92,203	162,122	208,383	252,034	2,509,929	1,523,709	986,220	1,716,515	31.61%
Hayward	983,955	851,762	917,490	828,612	740,510	843,184	700,858	519,840	611,449	572,724	849,545	836,615	9,256,544	8,025,993	1,230,551	7,654,087	17.31%
Hillsborough	250,428	239,293	339,873	187,852	149,425	70,505	57,857	68,263	46,840	77,287	127,533	179,470	1,794,626	730,395	1,064,231	1,029,836	42.62%
Menlo Park	205,878	197,865	195,391	171,845	118,504	78,597	80,370	82,369	70,962	108,772	169,161	151,171	1,630,885	936,894	693,991	1,086,101	33.40%
Mid Pen WD	174,821	168,580	176,218	154,115	126,396	83,564	95,477	90,390	83,076	124,092	124,306	141,794	1,542,829	1,057,521	485,308	1,121,627	27.30%
Millbrae	132,776	130,963	122,123	112,057	102,206	73,644	74,678	70,473	68,880	78,212	89,547	112,449	1,168,008	863,025	304,983	883,467	24.36%
Milpitas	560,066	511,819	499,068	456,297	339,619	346,470	345,211	313,013	348,809	390,135	458,282	487,604	5,056,393	4,060,509	995,884	4,003,018	20.83%
Mountain View	696,607	601,089	571,691	507,741	332,245	317,851	306,054	307,473	316,164	466,737	552,409	584,813	5,560,874	3,742,626	1,818,248	4,004,750	27.98%
North Coast	175,214	142,592	149,874	131,114	136,038	107,334	115,408	100,129	70,449	138,934	123,139	96,305	1,486,530	1,179,960	306,570	1,169,264	21.34%
Palo Alto	710,992	687,471	674,410	599,590	409,114	261,926	291,888	274,558	221,426	413,454	602,470	529,719	5,677,018	3,149,394	2,527,624	3,719,123	34.49%
Purissima Hills	116,098	102,177	112,087	86,968	57,418	30,674	27,294	31,514	18,976	46,701	77,214	85,712	792,832	325,373	467,459	456,447	42.43%
Redwood City	593,464	576,449	627,527	521,009	427,638	275,051	298,520	280,891	257,786	377,386	415,099	397,489	5,048,309	3,336,744	1,711,565	3,602,117	28.65%
San Bruno	177,048	195,589	172,534	162,980	128,108	140,430	140,637	109,929	143,808	160,884	162,280	183,615	1,877,842	1,604,412	273,430	1,539,671	18.01%
Stanford	127,534	102,493	119,688	94,886	78,913	65,097	99,295	69,251	59,292	81,719	90,169	118,440	1,106,776	878,805	227,971	870,714	21.33%
Sunnyvale	1,150,141	1,043,040	991,516	862,693	653,331	669,034	578,608	502,957	578,103	757,643	906,030	960,437	9,653,533	6,986,106	2,667,427	7,221,095	25.20%
Westborough	39,266	51,302	44,708	44,615	38,399	23,623	51,170	33,520	35,133	29,513	31,342	41,224	463,815	430,338	33,477	399,021	13.97%
	11,952,651	11,343,597	11,082,182	9,694,915	7,325,290	6,461,362	6,299,117	5,444,948	5,879,536	7,644,625	9,392,057	9,845,460	102,365,739	72,254,888	30,110,851	75,568,197	26.18%
San Jose	1,166,894	1,084,954	1,005,465	846,564	569,616	484,680	495,721	417,476	510,636	726,102	910,264	999,166	9,217,538	5,725,539	3,491,999	6,375,185	30.84%
Santa Clara	1,049,320	1,087,546	945,209	922,152	695,945	613,336	610,520	598,838	625,074	787,570	954,256	877,440	9,767,206	7,343,304	2,423,902	7,457,339	23.65%
	14,168,865	13,516,097	13,032,856	11,463,631	8,590,851	7,559,378	7,405,358	6,461,262	7,015,246	9,158,297	11,256,577	11,722,066	121,350,483	157,578,619	66,137,603	89,400,721	26.33%

Column Notes

(1) thru (12)	Calculated as the net potable water supply production for all sources, three-year rolling average, by month, and by suburban purchaser, with ISG limits imposed on Annual SFPUC Purchases from Step 1a (Step 1b)
(13)	Sum of columns (1) thru (12)
(14)	Base Component: Calculated as the winter average usage (Cols 6 through 9 - December through March), multiplied by 12 (Step 1c)
(15)	Seasonal Component: Calculated as the total production (Col 13) minus the base component (Col 14) (Step 1d)
(16)	Base/Seasonal Allocations: Calculated as the Base Component minus the Base Reduction plus the Seasonal Component minus the Seasonal Reduction (Step 1e)
(17)	Base/Seasonal Cutback: Calculated as the ratio of an agency's Base/Seasonal Allocation to its Total Production, minus 1, expressed as a percent (Step 1f)

TABLE 3 - CALCULATION OF FINAL PURCHASE CUTBACK AND ALLOCATION FACTOR FOR TIER 2 DROUGHT IMPLEMENTATION PLAN (DRIP)

Overall Average Wholesale Customer Reduction: 26.84%
Reduction from purchases in: FY 08-09

Base = 10.00%
Seasonal = 65.00%

Weighted average for Column 10:
0.33 =ISG component (Col. 2)
0.67 =Base/Seas component (Col. 9)

Variable component - Base/Seasonal Allocation (with ISG cap)
Minimum (Column 19) = 10.00%
Ceiling (Col. 21) = avg. cutback + 20.00%

Minimum residential per capita use threshold (Column 29) =
55.00 gpcpd

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Agency Information		Initial Allocations Based on Weighted Fixed (ISG) and Variable (Base/Seasonal) Components Adjusting for SJ/SC												
			Base/Seasonal Allocations				1st SJ/SC Adjustment		Weighted Allocation				2nd SJ/SC Adjustment		
Wholesale Customers	FY 08-09 SFPUC Purchases	Fixed Comp.	Lesser of Purchase or ISG	Base/ Seasonal Allocation Cutback	Base/ Seasonal Allocation	Base/ Seasonal Purchase Cutback	Subtotal Allocation Factors	Adjusted Base/Seasonal Allocation	Weighted ISG-Base/ Seasonal Avg	Allocation Factors	Weighted Shortage Allocation	Weighted Purchase Cutback	Subtotal Allocation Factors	Adjusted Weighted Shortage Allocation	Adjusted Weighted Purchase Cutback
ACWD	11.24	13.76	11.24	-26.83%	8.22	-26.83%	7.19%	8.35	10.14	7.00%	8.37	-25.55%	7.26%	8.43	-24.99%
Brisbane/GVMID	0.62	0.98	0.62	-28.53%	0.44	-28.53%	0.39%	0.45	0.62	0.43%	0.52	-16.72%	0.45%	0.52	-16.10%
Burlingame	4.28	5.23	4.28	-25.29%	3.20	-25.29%	2.79%	3.25	3.90	2.70%	3.22	-24.70%	2.80%	3.24	-24.13%
Coastside	1.97	2.18	1.97	-25.29%	1.47	-25.29%	1.28%	1.49	1.72	1.19%	1.42	-27.83%	1.23%	1.43	-27.29%
CWS Total	35.84	35.68	35.68	-29.00%	25.33	-29.31%	22.15%	25.73	29.01	20.05%	23.95	-33.17%	20.79%	24.13	-32.67%
Daly City	4.10	4.29	4.10	-13.44%	3.55	-13.44%	3.11%	3.61	3.83	2.65%	3.16	-22.90%	2.75%	3.19	-22.32%
East Palo Alto	1.92	1.96	1.92	-22.38%	1.49	-22.38%	1.30%	1.51	1.66	1.15%	1.37	-28.55%	1.19%	1.38	-28.02%
Estero	5.14	5.90	5.14	-31.61%	3.52	-31.61%	3.08%	3.57	4.34	3.00%	3.58	-30.34%	3.11%	3.61	-29.82%
Hayward	18.97	25.11	18.97	-17.31%	15.69	-17.31%	13.72%	15.93	18.96	13.10%	15.65	-17.50%	13.59%	15.77	-16.88%
Hillsborough	3.68	4.09	3.68	-42.62%	2.11	-42.62%	1.85%	2.14	2.79	1.93%	2.30	-37.47%	2.00%	2.32	-37.01%
Menlo Park	3.34	4.46	3.34	-33.40%	2.23	-33.40%	1.95%	2.26	2.99	2.06%	2.47	-26.25%	2.14%	2.48	-25.69%
Mid Pen WD	3.16	3.89	3.16	-27.30%	2.30	-27.30%	2.01%	2.33	2.85	1.97%	2.35	-25.64%	2.04%	2.37	-25.08%
Millbrae	2.39	3.15	2.39	-24.36%	1.81	-24.36%	1.58%	1.84	2.27	1.57%	1.88	-21.65%	1.63%	1.89	-21.06%
Milpitas	6.91	9.23	6.91	-20.83%	5.47	-20.83%	4.79%	5.56	6.77	4.68%	5.59	-19.16%	4.85%	5.63	-18.56%
Mountain View	9.81	13.46	9.81	-27.98%	7.07	-27.98%	6.18%	7.18	9.25	6.39%	7.64	-22.19%	6.63%	7.69	-21.61%
North Coast	3.05	3.84	3.05	-21.34%	2.40	-21.34%	2.10%	2.43	2.90	2.00%	2.39	-21.50%	2.08%	2.41	-20.91%
Palo Alto	11.63	17.07	11.63	-34.49%	7.62	-34.49%	6.66%	7.74	10.82	7.48%	8.93	-23.23%	7.75%	9.00	-22.65%
Purissima Hills	2.01	1.62	1.62	-42.43%	0.94	-53.47%	0.82%	0.95	1.17	0.81%	0.97	-51.85%	0.84%	0.98	-51.49%
Redwood City	10.35	10.93	10.35	-28.65%	7.38	-28.65%	6.45%	7.50	8.63	5.96%	7.12	-31.15%	6.18%	7.18	-30.63%
San Bruno	1.94	3.25	1.94	-18.01%	1.59	-18.01%	1.39%	1.62	2.15	1.49%	1.78	-8.42%	1.54%	1.79	-7.74%
Stanford	2.27	3.03	2.27	-21.33%	1.78	-21.33%	1.56%	1.81	2.22	1.53%	1.83	-19.39%	1.59%	1.84	-18.79%
Sunnyvale	10.62	12.58	10.62	-25.20%	7.94	-25.20%	6.95%	8.07	9.56	6.60%	7.89	-25.72%	6.85%	7.95	-25.16%
Westborough	0.95	1.32	0.95	-13.97%	0.82	-13.97%	0.72%	0.83	0.99	0.69%	0.82	-13.86%	0.71%	0.82	-13.21%
Subtotal	156.19		156.19	-26.18%	114.37	-26.78%	100.00%	116.16	139.55		115.18	-26.26%	100.00%	116.05	-25.70%
San José	4.46	4.50	4.46	-30.84%	3.08	-30.84%		2.07	2.87	1.99%	2.37	-46.78%		2.15	-51.85%
Santa Clara	2.64	4.50	2.64	-23.65%	2.01	-23.65%		1.23	2.31	1.59%	1.90	-27.78%		1.27	-51.85%
Total	163.29		163.29	-26.33%	119.46	-26.84%		119.46	144.73	100.00%	119.46	-26.84%		119.46	-26.84%

	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
	Adjustment for Minimum and Maximum Cutbacks														
	Minimum Cutback Adj.		Maximum Cutback Adjustment						Adjustment for East Palo Alto						
Wholesale Customers	Adjusted for 10.00% Minimum Cutback	Add'l Cutback for Hardship Bank	Adjusted for 46.84% Maximum Cutback	Cutback Over Cap	Allocations Adjusted For Cap	Agencies To Which Cutback Over Cap Is Redistributed	Min/Max Adjusted Allocation	Adj. Min/Max Purchase Cutbacks	FY 08-09 Residential Per Capita	Agencies To Which EPA Adjustment Applies	Share of EPA Adjustment	Allocations With EPA Adjustments	Final Purchase Cutback		Final Allocation Factor
ACWD	-24.99%		-24.99%		8.43	8.43	8.40	-25.29%	91.40	8.40	-0.019	8.376	-2.860	-25.45%	7.01%
Brisbane/GVMID	-16.10%		-16.10%		0.52	0.52	0.52	-16.43%	62.89	0.52	-0.001	0.516	-0.103	-16.62%	0.43%
Burlingame	-24.13%		-24.13%		3.24	3.24	3.23	-24.43%	89.50	3.23	-0.007	3.224	-1.052	-24.60%	2.70%
Coastside	-27.29%		-27.29%		1.43	1.43	1.42	-27.58%	68.30	1.42	-0.003	1.421	-0.545	-27.74%	1.19%
CWS Total	-32.67%		-32.67%		24.13	24.13	24.03	-32.94%	107.12	24.03	-0.054	23.977	-11.858	-33.09%	20.07%
Daly City	-22.32%		-22.32%		3.19	3.19	3.18	-22.63%	50.00			3.176	-0.929	-22.63%	2.66%
East Palo Alto	-28.02%		-28.02%		1.38	1.38	1.375	-28.30%	45.30		0.241	1.660	-0.257	-13.42%	1.39%
Estero	-29.82%		-29.82%		3.61	3.61	3.60	-30.10%	85.40	3.60	-0.008	3.588	-1.556	-30.26%	3.00%
Hayward	-16.88%		-16.88%		15.77	15.77	15.71	-17.21%	64.00	15.71	-0.035	15.670	-3.301	-17.40%	13.12%
Hillsborough	-37.01%		-37.01%		2.32	2.32	2.31	-37.26%	289.50	2.31	-0.005	2.303	-1.375	-37.40%	1.93%
Menlo Park	-25.69%		-25.69%		2.48	2.48	2.47	-25.99%	104.60	2.47	-0.006	2.468	-0.874	-26.16%	2.07%
Mid Pen WD	-25.08%		-25.08%		2.37	2.37	2.36	-25.38%	83.90	2.36	-0.005	2.354	-0.808	-25.55%	1.97%
Millbrae	-21.06%		-21.06%		1.89	1.89	1.88	-21.38%	75.70	1.88	-0.004	1.878	-0.516	-21.55%	1.57%
Milpitas	-18.56%		-18.56%		5.63	5.63	5.61	-18.88%	65.10	5.61	-0.013	5.595	-1.318	-19.06%	4.68%
Mountain View	-21.61%		-21.61%		7.69	7.69	7.66	-21.92%	78.80	7.66	-0.017	7.646	-2.169	-22.10%	6.40%
North Coast	-20.91%		-20.91%		2.41	2.41	2.40	-21.23%	57.10	2.40	-0.005	2.395	-0.652	-21.40%	2.00%
Palo Alto	-22.65%		-22.65%		9.00	9.00	8.96	-22.96%	107.00	8.96	-0.020	8.943	-2.691	-23.13%	7.49%
Purissima Hills	-51.49%		-46.84%	-0.094	1.07		1.07	-46.84%	302.70			1.069	-0.942	-46.84%	0.89%
Redwood City	-30.63%		-30.63%		7.18	7.18	7.15	-30.91%	85.40	7.15	-0.016	7.132	-3.214	-31.06%	5.97%
San Bruno	-10.00%	-0.044	-10.00%		1.75		1.75	-10.00%	66.20			1.748	-0.194	-10.00%	1.46%
Stanford	-18.79%		-18.79%		1.84	1.84	1.83	-19.11%	N/A	1.83	-0.004	1.831	-0.438	-19.29%	1.53%
Sunnyvale	-25.16%		-25.16%		7.95	7.95	7.92	-25.46%	89.20	7.92	-0.018	7.898	-2.721	-25.62%	6.61%
Westborough	-13.21%		-13.21%		0.82	0.82	0.82	-13.56%	48.50			0.822	-0.129	-13.56%	0.69%
Subtotal	-25.70%		-25.70%		116.09	113.28	115.65	-25.96%		107.46		115.689	-40.503	-25.93%	
San José	-51.85%		-46.84%	-0.223	2.37		2.37	-46.84%	63.20			2.370	-2.088	-46.84%	1.98%
Santa Clara	-51.85%		-46.84%	-0.132	1.40		1.40	-46.84%	85.80			1.401	-1.235	-46.84%	1.17%
Total	-26.84%	-0.044	-26.84%	-0.449	119.87	113.28	119.42	-26.87%		107.46	0.000	119.461	-43.826	-26.84%	100.00%

First SJ/SC Adjustment

1.	Largest permanent customer cutb	-53.47%	
2a.	Adjusted SC allocation:	1.23	(Applying largest permanent customer cutback)
2b.	Santa Clara adjustment:	-0.79	(Difference between initial and adjusted alloc.)
3a.	Adjusted SJ allocation:	2.07	(Applying largest permanent customer cutback)
3b.	San José adjustment:	-1.01	(Difference between initial and adjusted alloc.)
4.	Total Adjustment:	-1.80	(2b + 3b)

Second SJ/SC Adjustment

1.	Largest permanent customer cu	-51.85%
2a.	Adjusted SC allocation:	1.27
2b.	Santa Clara adjustment:	-0.63
3a.	Adjusted SJ allocation:	2.15
3b.	San José adjustment:	-0.23
4.	Total Adjustment:	-0.86

All values in MGD unless noted otherwise

Column Notes

Agency Information

(1) SFPUC Purchases: From Tab 1.
(2) Fixed Component: Individual Supply Guarantees for most agencies from Tab 1; 4.5 mgd for SJ & SC; projected 2018 demand before conservation used as surrogate for Hayward

Base/Seasonal Allocations

(3) Lesser of Purchase or ISG: The lesser of column (1) or column (2).
(4) Base/Seasonal Allocation Cutback: From Tab 3, column (17).
(5) Base/Seasonal Allocation: column (3) reduced by the Base/Seasonal cutback in column (4).
(6) Base/Seasonal Purchase Cutback: The change between column (5) and column (1) shown as a percentage.

First San Jose/Santa Clara Adjustment: This adjustment is made so that Santa Clara's and San José's cutbacks are at least as great as the highest cutback by the permanent customers.

(7) Subtotal Allocation Factors: The ratio of each permanent agency's column (5) allocation to the column (5) subtotal.
(8) Adjusted Base/Seasonal Allocation: Redistributes "First SJ/SC Adjustment" line 4 value among the permanent customers based on the proportionate shares in column (8).

Allocations Based on Weighted ISG/Base Seasonal Average

(9) Weighted ISG/Base-Seasonal Avg: 33% of column (2) plus 67% of column (8).
(10) Allocation Factors: Each agency's proportionate share of column (9).
(11) Weighted Shortage Allocation: Column (9) times the available water supply (column (5) total).
(12) Weighted Purchase Cutback: The change between column (11) and column (1) shown as a percentage.

Second San Jose/Santa Clara Adjustment: This adjustment is made so that Santa Clara's and San José's cutbacks are at least as great as the highest cutback by the permanent customers.

(13) Subtotal Allocation Factors: The ratio of each permanent agency's column (11) allocation to the column (11) subtotal.
(14) Adjusted Weighted Shortage Allocation: Redistributes "Second SJ/SC Adjustment" line 4 value among the permanent customers based on the proportionate shares in column (13).
(15) Adjusted Weighted Purchase Cutback: The change between column (14) and column (1).

Column Notes

Adjustment for Minimum Cutback: This adjustment forces a 10% minimum cutback with the reallocated water being placed in a hardship bank for later application to East Palo Alto.

(16) Adjusted for 10% Minimum Cutback: Decreases any percentage cutback in column (15) that is less than the minimum 10% floor to equal the 10% floor.
(17) Additional Cutback for Hardship Bank: The difference between column (15) and column (16) times column (1).

Adjustment for Maximum Cutback: This adjustment is made so that the maximum cutback applied to any agency is equal to the Overall Average BAWSCA Reduction + 20%.

(18) Adjusted for Maximun Cutback: Caps the cutbacks in column (18) to no more than 20% more than the average cutback.
(19) Cutback Over Cap: The difference between column (18) and column (15) times column (1).
(20) Allocations Adjusted for Cap: Purchases in column (1) reduced by the cutbacks in column (18).
(21) Agencies to Which Cutback Over Cap is Redistributed: Agencies that are not subject to the minimum or maximum adjustments in columns (17) and (19).
(22) Minimum/Maximum Adjusted Allocation: Redistributes the excess cutback in column (19) by the proportions in column (21) to agencies shown in column (21).
(23) Adjusted Minm/Max Purchase Cutbacks: The change between column (22) and column (1) shown as a percentage.

Adjustment for East Palo Alto (Low Residential Gallons per Capita per Day Adjustment)

(24) Residential Per Capita Usage: From Tab 1.
(25) Agencies To Which EPA Adjustment Applies: Column (22) agency allocations, except those whose GPCD is less than 55 GPCD & those who are impacted by the min./max. cutback .
(26) Share of EPA Adjustment: EPA value equal to difference 50% of the Overall Average Wholesale Customer Reduction and the sum of column (17) total (Hardship Bank value) and EPA allocation in column (22). Indivdiual agency proportionate shares of EPA's adjustment based on column (25).
(27) Allocation with EPA Adjustment: Column (22) plus column (26).

Final Allocations

(28) Final Purchase Cutback: Column (27) minus column (1) expressed as MGD
(29) Final Purchase Cutback: The change between column (31) and column (1) shown as a percentage.
(30) Final Allocation Factor: Each agency's allocation from Column (27) divided by the total water allocated to the wholesale agencies (total in Column (27)), shown as a percentage

APPENDIX I

DWR Checklist

Table I-2 Urban Water Management Plan checklist, organized by subject

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
PLAN PREPARATION				
4	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	10620(d)(2)		Section 1.2, 1.3
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, 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. Any city or county receiving the notice may be consulted and provide comments.	10621(b)		Section 1.2 and Appendix C
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		Section 1.4 and Appendix B
54	Provide supporting documentation that the urban water management 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 this urban water management plan.	10635(b)		Section 1.4
55	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.	10642		Section 1.3 and Appendix C
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Section 1.3 Appendix C
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642		Appendix B
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		Appendix B

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to 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. This also includes amendments or changes.	10644(a)		Section 1.4
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645		Section 1.4
SYSTEM DESCRIPTION				
8	Describe the water supplier service area.	10631(a)		Chapter 2.0
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		Section 2.14
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Section 2.1.6
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 2.1.6
12	Describe other demographic factors affecting the supplier's water management planning.	10631(a)		Section 2.1.7
SYSTEM DEMANDS				
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)		Section 3.5
2	*Wholesalers:* Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. *Retailers:* Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	N/A

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		Section 3.5
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (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, conjunctive use, and (I) agriculture.	10631(e)(1)	Consider 'past' to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Section 3.1
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Section 1.2, Table 1-1
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		Section 3.1.1
SYSTEM SUPPLIES				
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	Chapter 4
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Section 4.2
15	Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)		Section 4.2
16	Describe the groundwater basin.	10631(b)(2)		Section 4.2
17	Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.	10631(b)(2)		Section 4.2

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		Not Applicable
19	For groundwater basins that are not adjudicated, provide information as to whether DWR 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. If the basin is adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		Section 4.2
20	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	10631(b)(3)		Section 4.2.5
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	Section 4.2.5
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		Section 4.6
30	Include a detailed description of all 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, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		Chapter 4.0, Section 4.1.2, 4.1.5
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		Section 4.7
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		Section 4.4
45	Describe the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)		Section 4.4.1

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
46	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)		Section 4.4.1
47	Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)		Section 4.4.1
48	Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)		Section 4.4.1
49	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.	10633(e)		Section 4.4.1
50	Describe the actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)		Section 4.4.3
51	Provide a plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)		Section 4.4.1
WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING [b]				
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		Section 4.2, Chapter 6
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		Section 5.5
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)		Section 5.7
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage	10632(a)		Section 7.1

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
36	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.	10632(b)		Section 5.5
37	Identify actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.	10632(c)		Chapter 7
38	Identify additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.	10632(d)		Section 7.3
39	Specify consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.	10632(e)		Section 7.3
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)		Section 7.3
41	Provide an analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	10632(g)		Section 7.4
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)		Appendix E
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)		Section 7.5
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	For years 2010, 2015, 2020, 2025, and 2030	Section 5.73

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
53	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, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Section 5.6
DEMAND MANAGEMENT MEASURES				
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Chapter 6
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		Section 6.6
28	Provide an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the ability to further reduce demand.	10631(f)(4)		Section 6.6
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	Section 6.5.15
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	Not Applicable

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

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

APPENDIX J

Resolution to Adopt the Amended Urban Water Management Plan

RESOLUTION NO. 4391

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF EAST PALO ALTO APPROVING THE FIRST AMENDMENT TO THE 2010 URBAN WATER MANAGEMENT PLAN (UWMP)

WHEREAS, on May 25, 2011, the City approved the 2010 UWMP for the City of East Palo Alto; and

WHEREAS, as a requirement to be eligible for State Water Fund Grants, including Proposition 1E Stormwater Flood Management Grant, the City must have an UWMP accepted by DWR; and

WHEREAS, under State Law, DWR is mandated to conduct an audit of all mandated Water documents, including the UWMP, for any agency applying for State Water Fund grants or loans; and

WHEREAS, agencies lacking proper mandated documents are ineligible for State Water funds under State Law; and

WHEREAS, upon preliminary review, DWR requested the UWMP be amended to conform with State mandated UWMP requirements; and

WHEREAS, the requested amendments to the UWMP include more detailed analysis of the cost effectiveness of implementing some of the demand management measures (DMMs) identified in the 2010 UWMP; and

WHEREAS, the amendments designated the City Engineer as responsible for the role of Conservation Coordinator under DMM L; and

WHEREAS, the City will need to undertake more regular monitoring and enforcement of Water Waste regulations identified under DMM M as part of the UWMP, as funding becomes available; and

WHEREAS, a monitoring program will need to be implemented to evaluate the effectiveness of the City's conservation measures and estimate their conservation savings by dividing annual water demand by total number of service connections; and

WHEREAS, adoption of the 2013 amendments to the UWMP would aid in maintaining eligibility for the Proposition 1E Stormwater Flood Management Grant Round 2 for which the City applied;

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of East Palo Alto hereby adopts the First Amendment to the 2010 Urban Water Management Plan as contained in Exhibit "A" to this resolution.

PASSED AND ADOPTED this 2nd day of April 2012, by the following vote:

AYES: MOODY, WOODS, GAUTHIER
NAES: 0
ABSENT: MARTINEZ, ABRICA
ABSTAIN: 0

SIGNED:

David Woods, Mayor

ATTEST:

Nora Pimentel, Deputy City Clerk

APPROVED AS TO FORM:

, Assistant City Attorney
for Valerie J. Armento, Interim City Attorney