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City of Redwood City Residential Water Meter Replacement Program Phase 1

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1. Executive Summary

Applicant Information

Submittal Date: February 17, 2011
Applicant: Mr. Robert Bell, Interim City Manager
City of Redwood City
San Mateo County, California

This application for funding by the Bureau of Reclamation's WaterSMART: Water and Energy Efficiency Grants for FY2011 Funding Opportunity Announcement No. R11SF80303 (FOA) is submitted for consideration on February 17, 2011, by the City of Redwood City for Federal Funding Category 1. This application is seeking federal funding assistance of \$300,000 for implementation of the City's Residential Water Meter Replacement Program Phase 1. Operation of this Phase 1 project is not dependent upon future phases; project benefits will be realized immediately.

Project Summary

The City of Redwood City's (City) Residential Water Meter Replacement Program (RWMRP) will install new Automated Metering Infrastructure at single family residences to increase water conservation and water use efficiency. This Project will replace existing residential water meters with modernized technology that provides near real-time water consumption data to customers, enabling customers to alter use patterns resulting in more water conserved and better managed (Task Area A). The Project is expected to conserve 540 acre-feet annually. Conserved water will either remain in the Tuolumne River benefitting threatened and endangered species in the Tuolumne watershed, such as the Chinook Salmon and Steelhead Trout (Task Area C), or may be diverted to the Hetch Hetchy water system and marketed to its wholesale customers (Task Area D). Many energy efficiency benefits can be realized through the implementation of this project (Task Area B). Water consumption at user end-points will be decreased by the identification of user inefficiencies (too long showers, over-irrigation, etc.) and leaks (leaky toilets, faucets, indoor/outdoor plumbing, etc.). As a result, less energy will be used for treating and distributing potable water, treating and discharging wastewater, and reduced water heating and circulation in user homes.

Project Schedule

Installation of the new metering infrastructure will occur over a 24-month period. The Project is planned to bid in May 2011 with installation of meters to occur begin in August 2011 and be completed by August 2013.

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2. Background Data

Project Location

The City of Redwood City is located in San Mateo County in California, approximately 25 miles south of San Francisco (Figure 1).



Figure 1. Location Map

Water Supply Source

The City is 100% reliant on the Hetch Hetchy water system which is owned by the City and County of San Francisco. This regional system is operated by the San Francisco Public Utilities Commission (SFPUC) and supplies water to San Francisco as well as twenty-four cities and water districts, and two private utilities in Alameda, Santa Clara and San Mateo counties. The system delivers about 260 million gallons of drinking water per day to 2.4 million customers.

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Eighty-five percent of the water in the Hetch Hetchy system comes from Sierra Nevada snowmelt that is stored in the Hetch Hetchy reservoir. The Hetch Hetchy reservoir is situated on the Tuolumne River in Yosemite National Park. Water from the reservoir travels approximately 160 miles by gravity through a complex system of tunnels and pipelines from Yosemite to the San Francisco Bay Area.

The Hetch Hetchy potable water 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 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. On the San Francisco Peninsula, the SFPUC utilizes Crystal Springs Reservoir, San Andreas Reservoir, and Pilarcitos Reservoir to capture local watershed runoff. In addition to capturing runoff, these facilities also provide storage for Hetch Hetchy diversions, and serve as an emergency water supply in the event of an interruption to Hetch Hetchy diversions.

The City's water supply portfolio is comprised of Hetch Hetchy potable water and recycled water for non-potable uses. In 2007, the City began delivering recycled water through its Recycled Water Project. **Table 1** summarizes the City's planned water supplies as identified in the City's 2005 Urban Water Management Plan.

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Table 1. Projected Water Supplies (AFY)

Water Supply Sources	Forecast Year				
	2010	2015	2020	2025	2030
SFPUC Potable Water ^a	12,243	12,243	12,243	12,243	12,243
Redwood City Recycled Water ^b	922	1,178	1,398	1,695	1,995
Transfers/Exchanges in or out ^b	0	0	0	0	0
Desalination ^b	0	0	0	0	0
Redwood City Groundwater ^{b,c}	0	0	0	0	0
Total	13,165	13,421	13,641	13,938	14,238

Notes:

- a) Redwood City's contracted Supply Assurance is 12,243 AFY.
- b) Table 3-1 of the City's 2005 Urban Water Management Plan
- c) Defined as municipal potable source only. Does not include existing or future private wells.

The City is preparing its 2010/11 Urban Water Management Plan that is due to the California Department of Water Resources by July 1, 2011. The updated Plan will address the water supply and demand projections reflecting the projected growth identified in the City's recently adopted General Plan. The General Plan references water supply and demand data established in the 2005 UWMP, however, the 2030 General Plan also projects a higher rate of population growth than assumed in the 2005 UWMP. The 2030 General Plan projections result in a water supply shortfall. However, the General Plan acknowledges that the projections are overly conservative and do not reflect the anticipated decreased potable demand as a result of the City's conservation program, in particular with regards to achieving the State mandated goal of 20% reduction in urban per capita use by 2020. Additionally, throughout implementation of the General Plan, the City will be closely monitoring actual population growth versus projected population growth and the actual water demand. By closely monitoring these factors, the City will ensure that it has adequate supply to meet demand. The forthcoming updated Urban Water Management Plan will be the best representation of planned supply and demand, therefore, the purpose of this grant application the 2005 Urban Water Management Plan continues to be the best reference for supply and demand.

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Water Rights

The business relationship between San Francisco and its wholesale customers is largely defined by the Settlement Agreement and Master Water Sales Contract (Master Contract) executed in 1984. The Master Contract primarily addresses the rate-making methodology used by San Francisco in setting wholesale water rates for its wholesale customers in addition to addressing water supply and water shortages for the regional water system.

In terms of water supply, the Master Contract provides for a 184 million gallon per day (mgd, expressed on an annual average basis) "Supply Assurance" to the SFPUC's wholesale customers, subject to reduction in the event of drought, water shortage, earthquake, other acts of God, or rehabilitation and maintenance of the system. The Master Contract 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 184 mgd Supply Assurance among themselves, with each entity's share of the Supply Assurance set forth on a schedule adopted in 1993. This Supply Assurance survives the termination of the Master Contract in 2009.

The SFPUC can meet the water demands of its retail and wholesale customers in wet and average years. The Master Contract allows the SFPUC to reduce water deliveries during droughts, emergencies, and for scheduled maintenance activities. The SFPUC and all wholesale customers adopted an Interim Water Shortage Allocation Plan (IWSAP) in 2000 to address the allocation of water between San Francisco and wholesale customers in aggregate and among individual wholesale customers during water shortages of up to 20 percent of average system-wide use.

Redwood City and the other wholesale customers obtaining water from the SFPUC are also members of the Bay Area Water Supply and Conservation Agency (BAWSCA). BAWSCA represents the interests of its members to ensure that customers have a reliable water supply, receive high quality water, and purchase water at a fair price. 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 it's own to carry out the agency's purposes.

Current Water Uses and Users

In Redwood City, there are a total of 23,217 water connections. This includes all commercial, industrial, municipal, residential and irrigation accounts. Of the total accounts, 18,688 of the accounts are for Single Family Residential.

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The primary types of water customers are: residential (both single and multiple family), commercial, and industrial. Single family residential use accounts for the majority of the City's water demand.

Current and Projected Demand

Table 2 summarizes the City's projected water demand by customer type as described in Chapter 5 of the City's Urban Water Management Plan. Note that the data provided accounts for "passive conservation," that is reduced water use resulting from the adoption of State and Federal plumbing codes and legislation mandating the sale of high efficiency toilets and clothes washers. These are the two largest end uses of indoor residential water use, making up about half of total indoor use. Passive conservation occurs without any City action or expense.

Table 2. Projected Demand with Passive Conservation (AFY)

Customer Type Description	Forecast Year				
	2010	2015	2020	2025	2030
Single Family	5,804	5,701	5,632	5,590	5,571
Multiple Family	2,437	2,589	2,735	246	2,994
Commercial	2,187	2,196	2,303	2,443	2,614
Commercial - Irrigation	1,110	1,110	1,176	1,253	1,342
Residential - Irrigation	682	738	789	828	876
Other	135	135	135	135	135
Total	12,355	12,496	12,770	13,095	13,532

Source: 2005 Urban Water Management Plan, Table 5-1

Historically, the City's demand has exceeded its supply as shown in **Table 3**. Through increased conservation and water recycling, and as a result of a down economy and reduced occupation in the City, the City's potable demands are decreasing to within the City's contractual supply limits.

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Table 3. Redwood City Potable Water Purchase History^(a)

Fiscal Year	Potable Water Purchase in Excess of Supply Assurance (AFY)^(b)
1999/2000	1,028
2000/2001	950
2001/2002	794
2002/2003	524
2003/2004	1,410
2004/2005	207
2005/2006	(55) ^(c)
2006/2007	829
2007/2008	93
2008/2009	(650) ^(c)

^(a) Source: Redwood City New General Plan, Draft Environmental Impact Report, May 2010.

^(b) Based on the SFPUC Supply Assurance of 12,243 AFY from the Hetch Hetchy Regional Water System.

^(c) In 2005/06 and in 2008/09, the City purchased less than its supply assurance.

Table 4 compares the projected potable water supply with the projected potable water demand through 2030. The projected potable water demands identified reflects a reduction in projected water use as a result of the City's Water Conservation Program (referred to by the City as "active" conservation), "passive" conservation (reduced water use resulting from the adoption of State and Federal plumbing codes and legislation mandating the sale of high efficiency toilets and clothes washers) and projected recycled water deliveries. With the expansion of recycled water use and continued conservation efforts, including implementation of this Project, the City's water supply is projected to exceed its demand over the next twenty years.

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Table 4. Projected Water Supply and Demand

Customer Type Description	Forecast Year				
	2010	2015	2020	2025	2030
Projected Potable Water Supply ^a	12,243	12,243	12,243	12,243	12,243
Projected Potable Water Demand ^b	11,271	11,283	11,453	11,537	11,724
Difference	972	960	790	706	519

Notes:

- a) Projected Total Water Supply shown reflects projected potable water supply to be the City's maximum contractual amount with the SFPUC. If needed, the City may be able to purchase additional supply from other SFPUC wholesale customers that have not fulfilled their allotment.
- b) Source: Table ES-1, 2005 Urban Water Management Plan

Current Demand Supply and Projection Analysis Update

In the fall of 2010, the City Council adopted the City's New General Plan which estimates a water supply shortfall as a result of new population projections. However, the Plan also recognizes that the shortfall projections are conservative. The projected shortfall may not occur due to a slower than estimated population growth and or as a result of the City's conservation efforts and increase in water recycling.

In a comment letter from the City's Public Works Superintendent to the City's Planning, Housing and Economic Development Director regarding the Water Demand Projections in the New General Plan, the conservative nature of the projections is addressed along with the City's Plan to mitigate the potential water supply shortfall is detailed. In the letter it is noted that to meet the 2030 demands, the City continues to explore new water supply sources such as transfers and exchanges, groundwater and expanded recycled water use. These sources, combined with aggressive water conservation programs will be evaluated in the 2010/11 Urban Water Management Plan. In particular, the memo notes that the Residential Meter Replacement Program, with implementation of both phases, has the potential to result in more than 1,400 AFY of water savings, which accounts for 91% of the 2030 water demand deficit noted in the New General Plan.

A copy of the relevant pages of the City's New General Plan and the referenced comment letter are provided in **Attachment 1**.

At this time, the 2005 Urban Water Management Plan supply and demand projections are the most appropriate reference for this funding application.

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Redwood City Water Delivery System (number of connections and/or water users)

In Redwood City, there are a total of 23,217 water connections. This includes all commercial, industrial, municipal, residential and irrigation accounts. Of the total accounts, 18,688 of the accounts are for Single Family Residential.

The City water system delivers water within the limits of the City of Redwood City and to portions outside the corporate limits, including Cañada College and the Emerald Lake Hills area. The City's service area covers approximately 14 square miles. There are 13 metered connections to four SFPUC pipelines located in Redwood City. There are also 10 emergency interties with California Water Service Company, Belmont County Water District, and the City of Menlo Park. The Project will occur within the City's water service area as shown in the Supplemental Documentation **Attachment 2**.

The potable water system has 262 miles of distribution mains, 12 storage reservoirs that vary in size from 100,000 gallons to four million gallons (with a combined storage capacity of 21.24 million gallons), 10 pump stations, 2,385 fire hydrants, and 26 pressure reducing valve stations. Of the ten pump stations, four have permanent stand-by generators; two portable generators are available for emergency use. The distribution mains are fabricated mostly of ductile iron; approximately five percent of the mains are either two-inch galvanized iron pipe, six-inch polyvinyl chloride (PVC) pipe, and some asbestos-cement pipe.

Past Working Relationships with Reclamation

The City is currently working with Reclamation for funding of Recycled Water Project – Seaport Area Distribution Pipelines through Reclamation's Title XVI program for water recycling grants. The project is authorized and has been appropriated for the total requested amount of \$1.1 million. In May 2010, the City executed a Cooperative Agreement with the Bureau (Agreement R10AP2002).

3. TECHNICAL PROJECT DESCRIPTION

New Technology Will Increase Water Conservation and Improve Water Management in Redwood City

The City's Residential Water Meter Replacement Program Phase 1 will replace 7,500 Single Family Residence water meters throughout the City with new Automated Metering Infrastructure (AMI). A subsequent phase of the program will replace the remainder of the residential meters in the City with the improved technology meters. Operation of Phase 1 is independent of completion of the second phase of the Program. Benefits from this Phase 1 effort will be immediate. AMI is new metering technology that will increase conservation by improving water management throughout the City. Phase 1 of the Residential Water Meter Replacement Program (Project) is the Project proposed for Bureau funding.

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The Phase 1 Project involves replacement of 7,500 meters; the estimated annual water savings to be achieved from Phase 1 is 540 acre-feet per year (AFY). The estimated cost of the Phase 1 Project is approximately \$3 million.

The new water meters will use radio waves to send hourly meter readings directly to an antenna; water use is then transmitted to City offices via an Internet connection. Automated email notifications are sent to customers to notify them of water use in excess of more than 5% of their allotment. Additionally, automatic alerts are sent to customers and City staff in near real-time in the event of a water leak.

From the twenty year water use projection data by user presented in **Table 2**, it can be seen that Single Family Residence water consumption represents on average about 44% of the City's water demand.

This technology will significantly increase communications with customers and allow them to view water use in near real-time over the internet. By having near real-time access to water consumption information, customers can compare their actual use to their budgeted use and make adjustments in their use patterns to decrease consumption. This technology will improve water management within the City and increase conservation and water use efficiency.

Proven Results

This Project is similar to the City's Budget Based Rates Program, one of the City's newest conservations programs implemented in 2009. The Budget Based Rates Program utilizes the same Automated Metering Infrastructure planned for this Project and provides landscape irrigation customers with near real time consumption data. Landscape irrigation customers can then compare actual use to their water budget and adjust irrigation patterns as necessary to stay within their budget. The results of Redwood City's Budget Based Rates Program have been overwhelmingly positive. In calendar year 2009, Redwood City reduced irrigation usage by 15% over calendar year 2008. This was equivalent to 246 acre-feet, or 80 million gallons. In calendar year 2010, irrigation usage was reduced by an additional 10%, or 134 acre-feet. The program has resulted in annual savings of 380 acre-feet (124 million gallons) since its implementation. The City's desire is to roll the same water-saving program out to its residential customers for significant additional water savings.

The Budget Based Rates Program allocates a water budget for each dedicated irrigation account based on each customer's irrigated area using real-time weather data and charges them using a three-tiered rate system.

The City developed a web-based tool which determines how much water customer landscapes need in any given day and the City uses this information to create a "water

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budget.” In turn, if customer’s water use stays within their budget, they pay the lowest tier for water. If they go over their budget by as much as 101%, they pay the second rate tier for water (the second rate tier is double the lowest tier). If they exceed 200% of their water budget, the excess water they use is charged at three times the rate of the lowest tier.

As a part of the Budget Based Rates Project, irrigation meters were converted to Automated Metering Infrastructure. This means that meter reads are now being collected via radio waves instead of the conventional walk/read method. The new irrigation meters allow customers to view hourly water use information through the City’s new web-tool. This enables the City to provide customers with daily water budget and consumption information in near real-time.

Because irrigation meter readings are being collected hourly, the City is also able to provide automated email notifications to customers as a part of the new program. A daily email alert is sent to any customer who has a continuous water leak, allowing the customer to locate and repair the leak as soon as possible. In addition, a weekly “over budget alert” is sent to customers who have exceeded their water allocation by at least 5%. This allows customers to reset irrigation timers or address inefficiencies within their irrigation systems before going over their budgeted amount. In addition to the daily and weekly alerts, a customer “My Water Use” report is sent to customers every fourteen days. An example of the My Water Use report is provided as **Attachment 3**. The report summarizes current and projected water use for the customer billing period and provides estimated savings or loss information based on current trends. This information promotes improved water management that will result in increased water savings.

4. EVALUATION CRITERIA

Evaluation Criterion A: Water Conservation

Subcriterion No. 1-Water Conservation:

Subcriteria No. 1(a)—Quantifiable Water Savings:

Describe the amount of water saved. For projects that conserve water, state the estimated amount of water conserved in acre-feet per year (include direct water savings only).

This Project will conserve an estimated 540 acre-feet per year of water. This estimated was calculated based on data gathered in a water use efficiency study. In 2009 the City was one of ten participants in the California Single Family Water Use Efficiency Study. As a result of the study, indoor and outdoor use efficiency was calculated and estimates were derived of the potential water savings that could result from improved water

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management. The following paragraphs describe the study and the calculations made to estimate water savings.

Redwood City was one of 10 participants in the 2009 California Single Family Water Use Efficiency Study conducted by Aquacraft, Inc. The goal of the study was to obtain a detailed analysis on the indoor and outdoor water use patterns of a random sample of single family homes in each of the participating agencies. Information from the study was intended to show how much water was used in the homes for each of the major domestic end-uses. In addition, several types of efficiency data were obtained for indoor use such as the average gallons per flush for toilets, the flow rates for showers and faucets, and the gallons per load for clothes washers.

Outdoor water use for the study homes was characterized with respect to the total annual outdoor use, the actual application rate to the landscape in inches and the theoretical irrigation requirement for the home based on the irrigated area by plant type, the local net ET and reasonable irrigation efficiencies based on the type of irrigation system. The ratio of the actual application to the theoretical requirement was used as the main efficiency parameter. Homes with ratios greater than 1 were applying more than their theoretical requirements, and homes with ratios less than 1 were applying less than the theoretical requirements.

Several sources of data were used during the study to characterize the water use patterns and efficiency levels of the single family water customers in the Redwood City's service area. A total of 120 homes were sampled in Redwood City and valid data were obtained from 102 homes. Using the event database created from the flow traces the study made it possible to segregate indoor and outdoor water use in the sample homes and examine each type of use separately. Leakage was included among indoor uses but it should be kept in mind that many of the leaks may be due to faulty irrigation systems and it is often impossible to distinguish these from indoor leaks. The analyses was based on total household use (rather than per-capita use) since it was not desirable to normalize the data on a per-capita basis separately from the other important explanatory variables.

When examining how the indoor water use was broken down in the study homes, it was found that five categories: leaks, faucets, showers, clothes washers and toilets encompassed the bulk of indoor use. The leakage rate in these homes, however, accounted for as much as 14% of all indoor use at 26 gpd. This is a potential water savings of 26 gpd x 15,777 (the number of single family customers in the system at the time) when identifying and repairing customer leaks. This is equivalent to 150 million gallons, or 460 acre feet of potential water savings per year from leak identification and repair.

Irrigation use was estimated by taking the total annual water use for each home from the billing data and subtracting the projected indoor use based on the flow trace data or the average winter use. The GIS analysis for each lot provided information on the total lot

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sizes (verified against site visits and plat information), and the irrigated areas. Out of the 59 homes in the logging group a total of 49 homes were included in the outdoor analysis because all of the data necessary to analyze their irrigation use was accounted for.

It was found that the annual total potential savings in Redwood City from improved residential irrigation management was 14 kgal x 15,777 (the number of single family customers in the system at the time). This is equivalent to 220 million gallons, or 678 acre feet of potential water savings per year from improving irrigation applications. It is important to keep in mind that only 33% of the homes are over-irrigating, so that any conservation measures must be targeted at just these homes.

The data analyzed for the Redwood City study show that the combined irrigation management and leak savings potential from single family homes is 1,138 acre feet per year (based on the number of single family customers connected during the time of the study). This is a minimum conservation value that could be included as a tangible goal for California's water conservation planning.

What is the applicant's average annual acre-feet of water supply?

The City's 10-year average annual water supply is 12,505 acre-feet¹. Historically on average the City has exceeded its water supply allotment. The City has been able to meet its demand by purchasing water from other SFPUC wholesale customers that did not use their entire allotments. Over recent years, as a result of the City's aggressive conservation programs and implementation of a recycled water project, the City has been reducing its water demand. In 2009, the City's demand was 11,589 acre-feet. The majority of the City's water supply is used to meet the demands of the single family residential use. Implementation of the Residential Water Meter Replacement Program will provide water savings to the community and will help to maintain the City within its contractual water supply limits.

Where is that water currently going (i.e., back to the stream, spilled at the end of the ditch, seeping into the ground, etc.)?

Water that is used for non-irrigation undergoes high level treatment at the South Bayside System Authority Sub-Regional Wastewater Treatment Plant. The treated water is discharged to the San Francisco Bay. A small portion of the treated wastewater is diverted for additional treatment to meet California regulated standards for disinfected tertiary recycled water for unrestricted use. Recycled water is used distributed by the City to its customers for landscape irrigation and a variety of non-potable uses. Potable water that is used for landscape irrigation seeps into the ground or runs-off landscapes into adjacent storm drains.

¹ Ten-year average based on Fiscal Years 2000/01 - 2009/10; Personal Communications Justin Ezell

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Where will the conserved water go?

The conserved water will either remain in the Tuolumne River instead of being diverted to the Hetch Hetchy water system, or it will remain in the Hetch Hetchy reservoir and will be available to the City under terms of their water supply agreement, or it will be marketed to another SFPUC wholesale customer under terms of the Water Supply Agreement.

Subcriterion No. 1(b)-Improved Water Management:

Describe the amount of water better managed. State the amount of water expected to be better managed, in acre-feet per year and as a percentage of the average annual water supply.

Estimated Amount of Water Better Managed
Average Annual Water Supply

This Project improves the City's water management by replacing existing meters at single family residences with new advanced technology meters that automate meter reads and provide near real-time water use data. Customers will be able to track their actual water consumption and adjust their use to better manage their water use. This will result in increased water conservation and improved water efficiency. Water use at single family residences accounts for the majority of the City's overall potable water use.

The City's ten-year average annual water supply (2000/01 - 2009/10) is 12,505 AFY. As previously noted, this is higher than the City's current Water Supply Agreement allotment and has only been possible due to other SFPUC wholesale customers not using their entire allotment. Over the last five years, the City has significantly reduced its water demand through aggressive conservation efforts and implementation of a recycled water project. In 2009, the City's demand was 11,589 acre-feet.

The automation and data availability provided by this Project will enable customers and the City to increase efficient water use and avoid water wasted by incidents such as pipe leaks and faulty valves leaking water. Based on the City's 2005 Urban Water Management Plan, the average Single Family Residential water use projected over 2005-2030 is approximately 5,660 AFY (data provided in **Table 2** of this application). With implementation of this project the Single Family Residential water use will be effected, resulting in better management of about 45% of the City's average annual water supply.

$$\frac{\text{Estimated Amount of Water Better Managed}}{\text{Average Annual Water Supply}} = \frac{5,660}{12,505} = 45\%$$

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Subcriterion No. 2- Percentage of Total Supply:

Describe the percentage of total water supply conserved. State the applicant's total average annual water supply in acre-feet. Explain how this calculation was made.

The City's ten-year average annual water supply (2000/01 - 2009/10) is 12,505 AFY. Implementation of this project will result in 540 AFY of water better managed, or 4.3% of the average annual water supply.

$$\frac{\text{Estimated Amount of Water Better Managed}}{\text{Average Annual Water Supply}} = \frac{540}{12,505} = 4.3\%$$

Subcriterion No. 3-Reasonableness of Costs:

Information related to the total project cost, annual acre-feet conserved (or better managed), and the expected life of the improvement.

$$\frac{\text{Total Project Cost}}{\text{Acre-Feet Conserved, or Better Managed x Improvement Life}}$$

Project Cost Data:

Total Project Cost (rounded) = \$3,000,000
Acre-Feet Better Managed = 5,660 (average Single Family Residential use over 30 year projection; data provided in **Table 2**)
Improvement Life (years)* = 20

**Expected useful life of AMI is 20 years.*

Calculation:

$$\$3,000,000 / (5,660*20) = \$26.50/AF$$

Result:

The estimated Project cost over the 20-year life of the project is \$26.50 per AF.

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Evaluation Criterion B: Energy-Water Nexus

Subcriterion No. 1-Implementing Renewable Energy Projects Related to Water Management and Delivery:

Describe the amount of energy capacity.

This is not applicable to this Project.

Describe the amount of energy generated.

This is not applicable to this Project.

Describe any other benefits of the renewable energy project

This is not applicable to this Project.

Subcriterion No. 2-Increasing Energy Efficiency in Water Management:

Describe any energy efficiencies that are expected to result from implementation of the water conservation or water management project (e.g., reduced pumping).

Include support for the calculation of any energy savings expected to result from water conservation improvements.

This Project will increase energy efficiency within the City's water delivery system, at the user endpoint, and at the wastewater treatment plant. The City's water supply flows by gravity through the Hetch Hetchy water system to the City's delivery point. Redwood City receives its water supply through 13 turnouts from the SFPUC. Water is conveyed through a series of distribution lines, pump stations, and storage tanks. In some cases, water is distributed to City customers using pressure from the SFPUC water system. In others, however, water is pressurized and distributed through Redwood City owned and operated pumping stations. The City has 17 pressure zones.

Because this Project will result in less indoor residential water use, less energy will be consumed for pumping to meet demand. Additionally, less water will be conveyed for wastewater treatment. Redwood City's wastewater is treated at the South Bayside System Sub-Regional Wastewater Treatment Plant. The City's wastewater is pumped to the treatment plant then undergoes conventional secondary treatment prior to being discharged to the San Francisco Bay. Less water pumped and treated results in less energy used at the pump station and treatment plant.

Describe any renewable energy components that will result in nominal energy savings/production (e.g., installing small-scale solar as part of a SCADA system).

This Project will not implement a renewable energy system.

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Subcriteria No. 2—Increasing Energy Efficiency from Enhanced Water Management or Water Conservation:

This Project will reduce potable water use by 540 AFY. Reduced potable water use results in decreased wastewater production, and therefore less wastewater that is pumped and treated at the City's wastewater treatment plant. Less water pumped and treated results in less energy used at the pump station and treatment plant.

Evaluation Criterion C: Benefits to Endangered Species

The City's water supply from the Hetch Hetchy water system originates from diversions from the Tuolumne River. The Tuolumne River flows nearly 150 miles from the central Sierra Nevada to the San Joaquin River in the Central Valley.

The Tuolumne Watershed is abundant with wildlife and is home to a diverse array of mammals, birds, amphibians, reptiles, fish and invertebrates. The Watershed is also home to several sensitive, rare and endangered species: fall-run Chinook salmon (species of concern), steelhead trout (threatened), Riparian Brush Rabbit (Federally endangered), Riparian Wood Rat (Federally endangered), Valley Elderberry Longhorn Beetle (Federally threatened), Least Bell's Vireo (threatened), and Swainson's Hawk (species of concern)².

This Project will benefit the federally endangered and threatened species noted by reducing demands on Hetch Hetchy, which in turn result in less diversion from the Tuolumne River. Reduced demands on the Tuolumne will result in increased flows in the River to support a sustainable habitat for all species, including threatened and endangered species, in the watershed.

Evaluation Criterion D: Water Marketing

Briefly describe any water marketing elements included in the proposed project.

(1) Estimated amount of water to be marketed

As a result of this project, about 540 AFY will be available to be marketed (transferred) in according to the terms of 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 (Water Supply Agreement).

The Water Supply Agreement, revised July 2009, includes a Water Shortage Allocation Plan (Plan) with provisions to allow for transfers, banking, and excess use charges during

² www.tuolumne.org/content/article.php/wildlife

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water shortages caused by drought. The Plan applies only when the SFPUC determines that a system-wide water shortage due to drought exists.

Under the Plan, the SFPUC will create a water bank account for each of the Wholesale Customers during shortages to account for amounts of water that are either saved or used in excess of the shortage allocation for each agency. Wholesale customers that have banked water are permitted to transfer banked water to other Wholesale customers. A copy of the Water Shortage Allocation Plan that describes the provisions for banking and transferring of water is provided as Supplemental Documentation **Attachment 4**.

(2) A Detailed description of the mechanism through which water will be marketed (e.g., individual sale, contribution to an existing market, the creation of a new water market, or construction of a recharge facility)

Under the terms of the Water Shortage Allocation Plan, the SFPUC will create a water bank account for each of the Wholesale Customers during shortages to account for amounts of water that are either saved or used in excess of the shortage allocation for each agency. Wholesale customers that have banked water are permitted to transfer banked water to other Wholesale customers.

(3) Number of users, types of water use, etc. in the water market

Any water banked by the City during shortages due to drought can be transferred to any of the other Wholesale Customers included in the Water Supply Agreement. Typical uses within other these wholesale areas are similar to Redwood City – that is landscape irrigation use, domestic, municipal, commercial and industrial.

(4) A description of any legal issues pertaining to water marketing (e.g., restrictions under reclamation law or contracts, individual project authorities, or State water laws)

Redwood City receives drinking water in accordance with the provisions of 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 (Water Supply Agreement). The Water Supply Agreement includes provisions for water marketing (or transferring) to other wholesale agencies on a temporary and emergency basis.

Additionally, the Water Supply Agreement permits the permanent transfer of a portion of a wholesale customer's individual supply guarantee to one or more other Wholesale Customers (Water Supply Agreement Section 3.04) under conditions stipulated in the Agreement. Such transfers are subject to the approval of the SFPUC.

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Wholesale customers are not permitted to resell any water purchased from San Francisco to a private party for resale by the private party to others in violation of the Raker Act (the Raker Act is the Act of Congress enacted in 1913 that authorized the construction of the Hetch Hetchy system on federal lands).

Additionally, the Water Supply Agreement includes special provisions for water marketing (or transferring) and banking under the terms of the Water Shortage Allocation Plan. During shortages, the SFPUC creates a water bank account for itself and each of its customers. The accounts will track the amounts of water that are either saved or used in excess of the shortage allocation specific to that customer. Any water banked can be transferred between the SFPUC and any Wholesale Customer and among the Wholesale Customers. Transfer amounts are limited to the total accumulated balance in the transferring customer's bank.

(5) Estimated duration of the water market

The Water Supply Agreement permits water marketing (or transfers) between existing wholesale customers under the following conditions: on an emergency interim basis, and during times of shortage caused by drought as determined by the SFPUC that a system-wide water shortage due to drought exists. Additionally, if a wholesale customer has a higher demand than it does supply, then it may purchase additional water from SFPUC if other wholesale customers have not used their entire allotment.

Evaluation Criterion E: Other Contributions to Water Supply Sustainability

Provide sufficient explanation of the expected benefits and their significance, including any information about water supply conditions within the basin (e.g., is the river, aquifer or other source of supply over-allocated?) Are there endangered species within the basin or other factors that may lead to heightened competition for available water supplies among multiple water uses?

This project contributes to a sustainable water supply for the community of Redwood City and provides overarching benefits to the watershed that provides the City's drinking water.

Historically the City has exceeded its allotted contractual water supply limit and has met its demand by purchasing water from other SFPUC wholesale customers that did not use their entire allotment. Additionally, the City's New General Plan projects an increased water supply deficit as a result of projected population growth. Implementation of the Residential Water Meter Replacement Program to reduce water use is a critical aspect of the City's water management plan that will help the City meet the demands of the projected population and stay within its contractual water supply limits. And lastly, this

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project will help the City to meet the California state mandate of SBx7_7 that requires a 20% reduction in urban potable water use by 2020.

The City's Residential Water Meter Replacement Program will benefit the Tuolumne River watershed. The City's water supply originates from snow melt in the Sierra Nevada that flows through the Tuolumne River and is diverted to the Hetch Hetchy water system. The Tuolumne River is home to a diverse array of flora and fauna, including a number of species found on the federal list of endangered and threatened species. Reduced diversion from the Tuolumne will improve flows through the River, resulting in a more sustainable habitat within the watershed.

Additional benefits may include, but are not limited to, the following:

(1) Will the project make water available to address a specific concern?

This project makes water available to address the City's water supply concerns. As previously noted, on average the City has exceeded its Water Supply Assurance over the last ten years. Water demands in the City have decreased over recent years due to aggressive implementation of aggressive conservation efforts, a new recycled water project, and as a result in reduced occupancy in the City due to the economy. This project further reduces the City's demand on its potable supply, helping to maintain the City's demands within its contractual water supply allotment. Additionally, this project helps the City to meet the California state mandate of SBx7_7 that requires a 20% reduction in urban potable water use by 2020.

Will the project address water supply shortages due to climate variability and/or heightened competition for finite water supplies (e.g. population growth or drought)?

This project makes water available to address the City's water supply concerns. As previously noted, on average the City has exceeded its Water Supply Assurance over the last ten years. Water demands in the City have decreased over recent years due to aggressive implementation of aggressive conservation efforts, a new recycled water project, and as a result in reduced occupancy in the City due to the economy. This project further reduces the City's demand on its potable supply, helping to maintain the City's demands within its contractual water supply allotment.

Will the project market water to other users? If so, what is the significance of this (e.g., does this help stretch water supplies in a water-short basin)?

The project will not actively market water to other users, however, within the limits of the City's Water Supply Agreement, the City may market (or transfer) water to another SFPUC wholesale customer. Water marketing is further described in response to FOA

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Evaluation Criteria D 1 and 2.

Will the project make additional water available for Indian tribes?

No, this project will not make additional water available for Indian tribes.

Will the project help to address an issue that could potentially result in an interruption to the water supply if unresolved? (e.g., will the project benefit endangered species to maintain an adequate water supply)?

This project helps to address the City's water supply issue. This project will conserve about 540 AFY, thereby reducing the City's water demand and bringing the City closer to its contractual water supply allotment.

Will the project generally make more water available in the water basin where the proposed work is located?

Yes, in general the project will make more water available in the water basin from which the City received its water supply. The City's reduced demand on the Hetch Hetchy system will result in less diversion from Tuolumne River.

(2) Does the project promote and encourage collaboration among parties?

This Project will promote and encourage collaboration primarily amongst the City and its water customers. With the near-real time water use data that the City will provide through this project, customers will be able to monitor their actual water use and see how it compares to the ideal amount of water that they should be using. If a customer notices that their use exceeds their baseline use, customers will be encouraged to further investigate water use on their site and collaborate with the City for suggestions on ways to decrease water use.

Is there widespread support for the project?

The City has gained widespread support from neighboring communities on this Project. In 2009, the City received an award from the Silicon Valley Water Conservation Council for its Budget Based Rates Project. The City has also received recognition from the State Assembly for the Budget Based Rates Project, a project featuring the same technology and approach as the Residential Water Meter Replacement Program.

The City is also actively engaged with the Tuolumne River Trust. A letter of support from the Tuolumne River Trust for this project is provided as **Attachment 5**.

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What is the significance of the collaboration/support?

The significance of the increased collaboration between the City and its water customers is that customers will increase awareness of water conservation efforts and the City's conservation programs. Support of this program by neighboring communities is also significant as it demonstrates acknowledgement of the City's progressive approach to increasing conservation through improved water management and success of the City's overall conservation program.

Will the project help to prevent a water-related crisis or conflict?

This Program may serve as a model to other communities that are looking for ways to conserve water and meet the requirements of SBx7_7, California state legislation that requires 20% reduction in urban potable use by 2020. In addition, this project will provide drought reliability and decreased diversions from the Tuolumne River.

(3) Will the project increase awareness of water and/or energy conservation and efficiency efforts?

Yes, the City's Residential Water Meter Replacement Program will increase awareness of water conservation and efficiency efforts. This project enables residential customers to have real time data of their water use and empowers them to change habits to reduce use and conserve water. Overall results of this Program will be widely broadcast throughout the Redwood City community through newsletters and the City's website, promoting water conservation and efficiency efforts.

Will the project serve as an example of water and/or energy conservation and efficiency within a community?

Yes, the Project will serve as an example of water conservation and efficiency. Overall results of this Program will be widely broadcast throughout the Redwood City community through newsletters and the City's website, promoting water conservation and efficiency efforts. Additionally, neighboring communities will be interested in this project as a model for improving water management and water use efficiency to increase conservation.

Will the project increase the capability of future water conservation or energy efficiency efforts for use by others?

Yes, the project will increase the capability of future water conservation for use by others. The City's project will serve as a model to other agencies. With the City's demonstrated success, other agencies will likely consider implementation of a similar program.

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Does the project integrate water and energy components?

The Residential Water Meter Replacement Program is primarily a water project, but does have a reduced energy demand component. With reduced potable water demand, there will be less water required for pumping within the City's delivery distribution system resulting in less energy demand for pumping. Additionally, there will be less indoor water use, resulting in less water being pumped for treatment and less water requiring treatment at the wastewater treatment plant. Reduced pumping and treatment for disposal also results in less energy demand.

Evaluation Criterion F: Implementation and Results

Subcriterion No. 1-Project Planning:

Does the project have a Water Conservation Plan, System Optimization Review (SOR), and/or district or geographic area drought contingency plans in place?

This City has in place a Water Shortage Contingency Plan as discussed in the following paragraphs.

- (1) Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, SOR, or other planning efforts done to determine the priority of this project in relation to other potential projects.**

Redwood City has an aggressive Water Conservation Program in place as described in the City's 2005 Urban Water Management Plan. A copy of the UWMP chapter on conservation is provided as Supplemental Documentation **Attachment 6**.

Additionally, as a member of BAWSCA, the City is included in BAWSCA's Water Conservation Implementation Plan (WCIP). As previously noted, BAWSCA has the authority to implement water conservation programs. BAWSCA's WCIP was finalized in September 2009. The WCIP established two goals: 1) Develop an implementation plan for BAWSCA and its member agencies to attain the water efficiency goals that the agencies committed to achieving in 2004 as part of the Program Environmental Impact Report for the Water System Improvement Program; and 2) Identify 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 184 MGD Interim Supply Limitation.

Pursuant to these goals, four specific objectives of WCIP were identified. The fourth objective is directly applicable to the project proposed for funding.

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"Develop a coordinated, regional plan for implementing water conservation which serves as a guideline for the BAWSCA member agencies to implement specific, new water conservation measures to meet both the water conservation savings they committed to in 2004, as well as up to an additional 10 MGD of savings. Under the assumption that a specific suite of water conservation measures are implemented, the WCIP provides information as to who (i.e., BAWSCA, the member agencies, or Santa Clara Valley Water District (SCVWD), etc.) should implement what conservation measure or program, and when they should implement each measure or program in order to achieve the specified water savings goals."

The City is a long-time member of the California Urban Water Conservation Council (CUWCC), an association of water agencies and public advocacy/special interest groups, concerned with California's water supply and conservation of natural resources. The CUWCC developed "Best Management Practices" for optimum water conservation, and for monitoring conservation program implementation by participating agencies. Since 1992, Redwood City has been progressively implementing all the water conservation BMPs, with the support of the City Council for an aggressive conservation program to accelerate full compliance.

The City is a signatory to the CUWCC Memorandum of Understanding (MOU). The CUWCC MOU was most recently revised in December 2008, creating a new compliance and reporting format that impacts its members. The amount of water purchased by those BAWSCA member agencies whose conservation activities must be reported to the CUWCC as part of the MOU represents the majority of the total SFPUC water purchases by BAWSCA member agencies. Based on this fact, the WCIP has been designed to align, where appropriate, with the new CUWCC MOU. This will enable BAWSCA and its member agencies to better track conservation results against the new CUWCC MOU.

Drought contingency plan are discussed with the City's water shortage contingency plan described in the 2005 Urban Water Management Plan and in Water Supply Agreement.

The Urban Water Management Planning Act requires that the water shortage contingency plan addresses six steps:

- Step One: Stages of Action
- Step Two: Estimate of Minimum Supply for the Next Three Years
- Step Three: Catastrophic Supply Interruption Plan
- Step Four: Prohibitions, Penalties, and Consumption Reduction Methods
- Step Five: Analysis of Revenue Impacts of Reduced Sales During Shortages

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Step Six: Draft Ordinances and Use Monitoring Procedure

Chapter 5 of the UWMP describes the City's water shortage contingency plan and addresses each of the above steps.

A copy of the water shortage contingency plan is provided as **Attachment 7**.

(2) Identify and describe any engineering or design work performed specifically in support of the proposed project.

This Project involves removal of existing water meters and replacing the meters with new technology; no engineering or design work is involved. Planning for the Project included a pilot project implemented in 2008. The City conducted a pilot project to test the effectiveness of replacing old water meters with new technology. The pilot project entailed replacing irrigation meters to a technology called Automated Metering Infrastructure (AMI), a technology that allows the City to collect readings automatically using a desktop computer. Data is automatically transmitted to City computers through radio waves and the use of an internet connection. This Project will further improve meter reading technology by providing hourly meter read data for any given day at any time. Water customers have on-line access to this real time water use data. Customers are able to view how much water has been used during the month so that they can adjust water use on their site to meet their established water use targets and stay within budget. Additionally, the automatic meter data will be monitored by the City's RNI. If the system begins to record an abnormal increase in water use, it will send an automatic email alert ("leak alert") to the customer, as well as an alert to City Operation and Maintenance crew. A City O&M staff member will be dispatched to the site upon alert to investigate the situation.

(3) Describe how the project conforms to and meets the goals of any applicable State or regional water plans, and identify any aspect of the project that implements a feature of an existing water plan(s).

City is included in the Bay Area Integrated Regional Water Management Plan and is a member of the CUWCC. As a member of the CUWCC, this project will help to meet the CUWCC conservation goals. This Project also helps the City to meet the statewide goal of 20% per capita reduction in urban water use by 2020, as mandated by SBx7_7.

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Subcriterion No. 2-Readiness to Proceed:

Are all necessary plans/designs complete? Are there any delays expected to result from environmental compliance?

This Project is a water meter replacement project and does not require engineering plans and designs. There are no delays anticipated from environmental compliance. This project will not involve any ground disturbing activities. There will be no work at places identified as being of historical significance; no work will occur where endangered or threatened species are known to live.

Describe the implementation plan of the proposed project. Include an estimated project schedule.

Implementation of this Project will begin with consultation for NEPA compliance in April 2011. The project is anticipated to bid in late May of 2011 and construction to begin in August 2011. Installation of all meters and completion of this program is anticipated to be complete within two years.

Estimated Phase 1 Project Schedule

Task	Estimated Start Date	Estimated Completion Date
NEPA Compliance	4/01/11	6/15/11
Advertise for Bids	5/23/11	6/21/11
Receive Bids	6/21/11	6/21/11
Review Bids	6/22/11	7/15/11
Award Bid and Execute Purchasing Agreement (City Council Meeting)	7/25/11	7/25/11
Replace Existing Meters with new AMI meters	8/08/11	7/30/13

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Describe any permits that will be required, along with the process for obtaining such permits.

This Project does not require any permits. The Project entails of replacing existing water meters and meter boxes with in-kind materials. All work will be done within public access areas.

Subcriterion No. 3-Performance Measures:

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (i.e., water saved, marketed, or better managed, or energy saved)

Recording of water consumption data will be used to track project performance. The City will compare the monthly consumption data to previous year's monthly data to determine water savings resulting from the project as was done for the City's 2009 Budget Based Rates Program previously described (i.e., 380 acre-feet of annual water savings over calendar year 2008).

Evaluation Criterion G: Connection to Reclamation Project Activities

(1) How is the proposed project connected to Reclamation project activities?

The City's Water Meter Replacement Program will reduce demand on the Tuolumne River.

(2) Does the applicant receive Reclamation project water?

No, the City of Redwood City does not receive Reclamation project water.

(3) Is the project on Reclamation project lands or involving Reclamation facilities?

No, the project is not on Reclamation project lands. It does not involve Reclamation facilities.

(4) Is the project in the same basin as a Reclamation project or activity?

The project is in the same basin as a project to be funded by Reclamation. As earlier described, the City is receiving funds from the Bureau of Reclamation's Title XVI program for its Recycled Water Project.

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(5) Will the proposed work contribute water to a basin where a Reclamation project is located?

This project will indirectly contribute water to the Central Valley Water Project by reducing demand on the Hetch Hetchy Reservoir, thereby reducing demand on the Mokelumne River.

F. Performance Measure for Quantifying Post-Project Benefits

The expected benefit of this Project is reduced potable water use by existing residential customers. Water savings is quantifiable by comparing historic water consumption data with current use; this will be the Performance Measure for this project. The City's residential water bills contain information on historic water use compared to the current water use reflected on the bill. On a city-wide basis, the City summarizes overall water use annually by customer category and makes comparison of actual use to budgeted use.

Additionally, this Project will produce a measurable energy efficiency as a result of reduced pumping and reduced wastewater treatment.

G. Environmental Compliance

- (1) Will the project impact the surrounding environment (i.e., soil [dust], air, water [quality and quantity], animal habitat, etc.)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.**

The Project involves replacement of existing residential water meters only. There will be no impact to the surrounding environment as a result of the project. There is no earth-disturbing work involved with this project.

- (2) Are you aware of any species listed or proposed to be listed as a Federal endangered or threatened species, or designated Critical Habitat in the project area? If so, would they be affected by the activities associated with the proposed project?**

This project involves replacement of existing residential water meters in developed, existing urban neighborhoods. There are no known endangered or threatened species in the project area.

- (3) Are there wetlands or other surface waters inside the project boundaries that potentially fall under Federal Clean Water Act jurisdiction as "waters of the United States"? If so, please describe and estimate any impacts the project may have.**

This project involves replacement of existing residential water meters in developed,

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existing urban neighborhoods. There are no wetlands inside of the project boundaries.

(4) When was the delivery system constructed?

The City receives its potable water from the San Francisco Public Utilities Commission through the Hetch Hetchy regional water system. The regional water system was originally constructed in the early 1900's. In 2002 the SFPUC approved a \$4.4 billion Capital Improvement Program known as the Water System Improvement Program (WSIP) to repair and upgrade the Hetch Hetchy water system. The WSIP includes the repair, replacement, and seismic upgrades of the system's deteriorating pipelines, tunnels, reservoirs, pump stations, storage tanks and dams. The Program is anticipated to be complete by 2015.

The City's local water delivery pipelines vary in age with some segments constructed as far back as the early 1900's and newer segments constructed as recently as 2010. Through the City's Water System Capital Improvement Program, the City annually replaces aging and undersized pipes, rehabilitates storage water tanks and reservoirs, rebuilds pump stations and pressure reducing valve stations, installs emergency generators, performs system seismic improvements, and conducts master and emergency planning efforts. Older pipes are typically replaced with polyvinyl chloride (PVC), and replacement pipe is designed with consideration to new technologies and sizing for future uses. Despite the aged infrastructure, the City realizes a low rate of unaccounted for water. On average, only 7% of the City's water demand is unaccounted for. This low percentage is a result of the City's metering program, and proactive approach to operation and maintenance of the system.

(5) Will the project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

This project will not result in any modification of or effects to individual features of an irrigation system.

(6) Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.

There are some historic sites that are either listed or may be listed on the National Register of Historic Places that are within the Project area. These sites will not be disturbed nor affected during the course of this Project, but their water meters, if present, will be replaced.

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(7) Are there any known archeological sites in the proposed project area?

There are no known archeological sites in the proposed project area. No archaeological sites are anticipated to be encountered during the course of this Project as it does not involve excavation or construction.

(8) Will the project have a disproportionately high and adverse effect on low income or minority populations?

This project has the potential to provide positive monetary benefits to both low income and minority populations by identifying water inefficiencies so that they can be resolved in a timely manner.

(9) Will the project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

This Project will not limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands.

(10) Will the project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

No, this Project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native species known to occur in the area. This project involves replacement of existing residential water meters in developed, existing urban neighborhoods.

H. Required Permits or Approvals

Approval from the City Council of a Purchasing Agreement for acquisition of project equipment (i.e., water meters, registers, boxes, and lids) is required. City staff anticipates presenting the Purchase Agreement for authorization at its July 25, 2011 Council meeting.

Additionally, BOR requires environmental compliance prior to beginning work on this project. The City will seek the appropriate environmental consultation, however, since there is not ground breaking activities, nor work on any environmentally sensitive sites, the City does not anticipate a lengthy environmental review process.

No permits are required for this project.

I. Funding Plan and Letters of Commitment

Describe how the non-Reclamation share of project costs will be obtained.

City funds made available through the Water Enterprise Fund and through Inter-Fund transfers within the City will be used to pay for the non-Federal funded project costs. The City's source of funding is further described in Budget Narrative section of this Technical Report.

The non-Reclamation portion of project costs will be funded by the applicant only. There are no additional funding sources.

Project Costs

(1) How will you make your contribution to the cost share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant (e.g., reserve account, tax revenue, and/or assessments).

This Project will be paid for by City funds and anticipated Federal funding. City funds will come from dedicated Water Conservation Capital Improvement Project (CIP) funds from the Water Enterprise Fund, and funding to be made available by an Inter-Loan transfer. The 2010 Water Financing Plan shows \$1 million in funds earmarked for the Project (**Attachment 8**). Additionally, City administrative policy permits Inter-Loan transfers between funds. Loans are re-paid with interest per terms defined in the City's Administrative Policy #38; a copy of the policy is included as **Attachment 9**. The City is financially committed to funding the Project through Water Enterprise funds and inter-fund loan transfers as documented by the City Finance Director by letter dated February 14, 2011. A copy of the letter is provided as **Attachment 10**. The letter reflects commitment to funding both Phase 1 and Phase 2 of the Program.

Note that the table provided from the City Water Financing Plan as **Attachment 8** identifies the Water Meter Replacement Program and will be revised to reflect the actual years in which the Project will be implemented.

(2) Describe any in-kind costs incurred before the anticipated project start date that you seek to include as project costs. Include:

(a) What project expenses have been incurred

There are not projects costs incurred to date that will be included as project costs.

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(b) How they benefitted the project

This is not applicable. No project costs have been incurred.

(c) The amount of the expense

This is not applicable. No project costs have been incurred.

(d) The date of cost incurrence

This is not applicable. No project costs have been incurred.

(3) Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment.

This project will be solely funded by City funds and potentially federal funding.

(4) Describe any funding requested or received from other Federal partners.

There are no pending funding requests related to this project.

(5) Describe any pending funding requests that have not yet been approved, and explain how the project will be affected if such funding is denied.

There are no other pending funding requests besides this proposal.

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Table 5 identifies the funding sources.

Table 5. Summary of Non-Federal and Federal Funding Sources

Funding Sources	Funding Amount
Non-Federal Entities	
1. City of Redwood City	
<i>Non-Federal Subtotal:</i>	\$2,700,000
Other Federal Entities	
	\$0
<i>Other Federal Subtotal:</i>	\$0
<i>Requested Reclamation Funding:</i>	\$300,000
<i>Total Project Funding:</i>	\$3,000,000

J. Official Resolution

An official resolution authorizing the City Manager to commit the City to the financial and legal obligations associated with receipt of WaterSMART Grant financial assistance will be adopted by the City Council at its meeting of March 7, 2011. The resolution will verify the following:

- The identity of the official with legal authority to enter into agreement
- The board of directors, governing body, or appropriate official who has reviewed and supports the application submitted

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- The capability of the applicant to provide the amount of funding and/or in-kind contributions specified in the funding plan
- That the applicant will work with Reclamation to meet established deadlines for entering into a cooperative agreement

K. Budget Proposal

(1) Estimated Annual Project Budget. A Project budget is provided as **Table 6**. The budget identifies anticipated City and Reclamation funds to implement the Project, and estimated annual O&M costs resulting from the Project. With implementation of this Project, the City will realize a decrease in O&M costs related to water meter readings. The overall Program savings estimated is \$250,000 per year. The estimated O&M savings for the Residential Water Meter Replacement Program is \$100,000. This Project provides automatic remote reading and recording of water meters, eliminating the need for manual reading of the water meters as is currently practiced.

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Table 6. Estimated Project Cost

(Note: Installation of the new technology meters will be complete within two years of initiation. This budget reflects budgetary needs by Fiscal Year for all work related to the project, including environmental consultation)

PROJECT INCOME					
	Total	FY 10/11	FY 11/12	FY 12/13	FY 13/14
Operating Fund	0				
CIP	1,000,000	30,000	400,000	400,000	170,000
Inter-Fund Loan 1	855,000		500,000	355,000	
Inter-Fund Loan 2	855,000			455,000	400,000
Reclamation Grant	300,000		300,000		
Total Income	3,010,000	30,000	1,200,000	1,210,000	570,000
PROJECT EXPENSES					
	Total	FY 10/11	FY 11/12	FY 12/13	FY 13/14
Implementation					
Labor Costs	264,233		100,000	100,000	64,233
Materials	2,436,168		1,005,000	1,015,000	416,168
Implementation Sub-Total	2,700,401		1,105,000	1,115,000	480,401
Contingency ^a	270,000		90,000	90,000	90,000
Environmental Compliance ^b	30,000	30,000			
Reporting ^c	8,000		3,000	3,000	2,000
Total Implementation Costs	3,008,401	30,000	1,198,000	1,208,000	572,401
Beginning Balance		0	0	2,000	4,000
FY Income Less Expenses		0	2,000	2,000	-2,401
Ending Balance		0	2,000	4,000	1,599

a) Contingency estimated at 5% of Implementation Costs, where Implementation includes labor and material costs only.

b) Environmental compliance is estimated at roughly 1% of the total Project implementation costs (labor and materials only).

c) Required reporting includes completion of SF-425, semi-annual reports, and a final report.

FY = Fiscal Year July 1 - June 30

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Budget Narrative

This Project will be paid for by City funds and anticipated Federal funding. City funds will come from dedicated Water Conservation CIP funds from the Water Enterprise Fund, and funding to be made available by two Inter-Loan transfers. Table 9 of the City's 2010 Water Financing Plan shows \$1 million in funds earmarked for the Project. Additionally, City administrative policy permits Inter-Loan transfers between funds. Loans are re-paid with interest per terms defined in the City's Administrative Policy #38; a copy of the policy is included as **Attachment 9**. The City is financially committed to funding the Project through Water Enterprise funds and inter-fund loan transfers as documented by the City Finance Director by letter dated February 14, 2011. A copy of the letter is provided as **Attachment 10**.

Project related costs include the purchase of the AMI water meters and related appurtenances, City's labor to remove existing meters and install new meters, and the cost of a consultant to prepare a Request for Proposal for competitive bid of the meter equipment and appurtenances. Additional detail of each project cost component is provided in the following paragraphs and summarized in **Table 7**.

Salaries and Wages

This Project will be managed by the City's Public Works Superintendents and Public Works Supervisor. The meter replacements will be performed by City staff.

Fringe Benefits

Fringe benefits shown are fixed rates for Fiscal Year 10/11 (no change from FY 09/10) and specific to the City's Water Fund and Water Customer Services Department. The Fringe Benefits total provided in **Table 7** includes: vacation, sick leave, disability, overtime, safety, retirement, and insurance (specifically medical, vision, life and disability).

Travel

There are no travel related costs associated with this Project. City staff will replace meters during routine meter readings, therefore, there are no additional travel related costs.

Equipment

There is no special equipment required for this Project. The removal of existing meters and installation of new meters and appurtenances will be performed with existing City equipment.

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Materials and Supplies

The materials needed to complete this Project are: water meters ranging in size from 5/8” to 8”; meter boxes; meter box lids; registers (instrumentation that “counts” water usage); and endpoints (communication link for sending and receiving data). A detail breakdown of the material needed, including size and quantity, is provided in **Table 7**. At some sites, the new AMI meters were installed without appurtenances during the 2008 Pilot Project. At these sites, only new appurtenances are required. In some instances, only new meters without appurtenances are required. The materials needed for this Project were identified by City staff based on City records.

Contractual

There are no contractual activities that will be considered as part of the City's match contribution.

Environmental and Regulatory Compliance Costs

For purposes of this Budget Proposal, environmental and regulatory compliance costs are estimated at 1% of the total Project cost. The City anticipates minimal environmental and regulatory compliance costs. The Project involves replacement of existing water meters in developed areas; there are no construction related or earthwork activities associated with this Project. The total budgeted amount for environmental and regulatory compliance costs for the Residential Water Meter Replacement Program is \$30,000.

It is anticipated that any environmental costs incurred would be related to the City's or City's consultant time and Reclamation time to: determine level of environmental compliance required for the Project; cost to prepare any necessary environmental compliance documents or reports; review of any environmental compliance documents; and cost of any required approvals or permits.

Reporting

In accordance with the FOA requirements, the following reports will be prepared by the City and submitted to Reclamation: SF-425 Federal Financial Report, semi-annual reports (2 reports per year) and a final report.

Other

There are no other known costs to be incurred. Any additional project costs that may be incurred will not be included as the eligible City's cost share.

Indirect Costs

Any indirect costs incurred will not be included as the City's eligible cost share, and therefore are not included in this budget proposal.

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Contingency Costs

A 10% contingency factor is included in the cost estimate. The contingency is estimated as 10% of the estimated labor and materials cost. Contingency is included to account for an unforeseen increase in materials cost and unanticipated additional labor fees that may occur during the course of the project.

Total Cost

The estimated total Phase 1 Project cost is approximately \$3,000,000. The requested Federal share is \$300,000; the total non-Federal share is \$2,700,000.

Budget Form

A copy of the completed SF 424C. Budget Information - Construction Programs is provided as **Attachment 11** with the Supplemental Documents.

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Table 7. Budget Proposal

BUDGET ITEM DESCRIPTION	COMPUTATION		RECIPIENT FUNDING	RECLAMATION FUNDING	TOTAL COST
	\$/Unit and Unit	Quantity			
SALARIES AND WAGES					
PW Superintendent	\$57.46/hr	50	\$2,873.00		\$2,873.00
PW Supervisor	\$47.84/hr	50	\$11,960.00		\$11,960.00
PW Specialist	\$39.97/hr	250	\$18,785.90		\$18,785.90
CS Technician	\$31.38/hr	470	\$29,654.10		\$29,654.10
CS Technician	\$31.38/hr	945	\$29,654.10		\$29,654.10
CS Technician	\$31.38/hr	945	\$29,654.10		\$29,654.10
CS Technician	\$31.38/hr	945	\$29,654.10		\$29,654.10
CS Technician	\$31.38/hr	945	\$29,654.10		\$29,654.10
FRINGE BENEFITS					
PW Superintendent	\$24.14/hr	50	\$1,207.00		\$1,207.00
PW Supervisor	\$22.06/hr	250	\$5,515.00		\$5,515.00
PW Specialist	\$15.93/hr	470	\$7,487.10		\$7,487.10
CS Technician	\$14.42/hr	945	\$13,626.90		\$13,626.90
CS Technician	\$14.42/hr	945	\$13,626.90		\$13,626.90
CS Technician	\$14.42/hr	945	\$13,626.90		\$13,626.90
CS Technician	\$14.42/hr	945	\$13,626.90		\$13,626.90
CS Technician	\$14.42/hr	945	\$13,626.90		\$13,626.90
TRAVEL					
None					
EQUIPMENT					
SUPPLIES/MATERIALS					
5/8" Meters	111.49	7,000	480,430	300,000	780,430
5/8" Registers	65.00	1200	78,000		78,000
5/8" Lids	38.95	2000	77,900		77,900
5/8" Boxes	45.32	2000	90,640		90,640
3/4" Meters	137.23	500	68,615		68,615
3/4" Registers	65.00	100	6,500		6,500
3/4" Lids	38.95	600	23,370		23,370
3/4" Boxes	45.32	400	18,128		18,128

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1" Meters	168.87	200	33,774		33,774
1" Registers	65.00	150	9,750		9,750
1" Lids	38.95	300	11,685		11,685
1" Boxes	45.32		0		0
1-1/2" Meters	316.10	50	15,805		15,805
1-1/2" Registers	165.00	30	4,950		4,950
1-1/2" Lids	37.88		0		0
1-1/2" Boxes	35.13		0		0
2" Meters	533.21	100	53,321		53,321
2" Registers	165.00	20	3,300		3,300
2" Lids	45.88		0		0
2" Boxes	35.13		0		0
3" Meters	1615.00	0	0		0
3" Registers	165.00	0	0		0
3" Lids		0	0		0
3" Boxes		0	0		0
4" Meters	2805.00	0	0		0
4" Registers	165.00	0	0		0
4" Lids		0	0		0
4" Boxes		0	0		0
6" Register	165.00	0	0		0
8" Meters	10,742.49	0	0		0
8" Registers	165.00	0	0		0
8" Lids		0	0		0
8" Boxes		0	0		0
Endpoints	145.00	8000	1,160,000		1,160,000
CONTRACTUAL/ CONSTRUCTION					
None					
ENVIRONMENTAL AND REGULATORY COMPLIANCE	155.00	193	30,000		30,000
OTHER					
Reporting	155.00	52	8000		8,000

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TOTAL DIRECT COSTS			2,438,401	300,000	2,738,401
INDIRECT COSTS					
CONTINGENCY (@ 10% of Labor + Materials)			270,000		
TOTAL PROJECT COSTS			2,708,401	300,000	3,008,401
					Round To \$3,000,000

ATTACHMENT 1

**PUBLIC WORKS SERVICES DEPARTMENT
M E M O R A N D U M**

Date: September 24, 2010
To: Jill Ekas, Planning, Housing & Economic Development Director
From: Justin Ezell, Public Works Superintendent
Subject: Water Demand Projects in the New General Plan

Redwood City receives 100% of its potable drinking water from the San Francisco Public Utilities Commission (SFPUC). The SFPUC has a contractual obligation to provide 12,243 acre-feet per year of potable water to the City. Potable water demand projections in the New General Plan (NGP) are anticipated to exceed SFPUC supply by an estimated 1,585 acre-feet per year by 2030; this amount is 13% greater than SFPUC's contractual obligation. These assumptions are somewhat higher than those made in the City's 2005 Urban Water Management Plan (UWMP). The 2005 UWMP projections are based on the City's 1990 General Plan, exclusive of newly identified changes in land use patterns and designations.

Water demand projections for growth under the NGP have been prepared using the same methodologies used in the 2005 UWMP (i.e. demand by customer type, including assumptions for water conservation and recycling). These new projections are inclusive of the newly identified changes in land use patterns and designations that are assumed under the NGP (i.e. growth expected within the City's water service area, to include the City limits and some portions of the Sphere of Influence). Also of note is that the growth projections prepared by the land use planners for the NGP were established to allow for a conservative analysis of the impacts of the NGP. Thus, the projections assumed significant reuse of already developed properties (up to 30% of the land area in the higher density and intensity land use designations). The potential for this much change over the plan's twenty year horizon is very unlikely, however, making these high growth assumptions was considered prudent in that it resulted in a conservative evaluation of the impacts of the plan, including elevated water demand projections.

The City's 2010-2011 UWMP (currently under development) will further refine demand projection methodologies above and beyond those used for the NGP; they will encompass new regulations such as Senate Bill x 7 - 7 which requires the State of California as a whole to achieve a 20% reduction in per capita water use by 2020. Therefore, projected water demands as expressed in the NGP are expected to be higher and more conservative than demands as will be expressed in the 2010-2011 UWMP.

Despite the conservative nature of the NGP projections, staff continues to develop strategies which account for potential shortfalls in water supply. Among these, is the Long-term Reliable Water Supply Strategy (LTRWSS) that Redwood City is working on in

conjunction with the Bay Area Water Supply and Conservation Agency (BAWSCA). The LTRWSS investigates options to increase supply reliability under both normal and drought conditions.

In addition to the LTRWSS, the City continues to study, develop, and implement additional water conservation programs, expanded recycled water use, transfers and exchanges (securing water from willing sellers inside and outside of the Hetch Hetchy water system), and development of groundwater and desalination to meet projected water needs and potential shortfalls through 2030.

An example of a Redwood City conservation program under development is the City's Residential Water Meter Replacement Program. The program will replace all single family residential water meters within the City with Automated Metering Infrastructure (AMI). AMI is new metering technology that will increase conservation by improved water management; already in use by irrigation accounts in Redwood City (mostly apartment complexes, home owner associations, and commercial developments). AMI allows for hourly meter updates transmitted via radio waves to an internet connection allowing the City to evaluate real time water use based on a customer's "water budget." Leaks, overwatering, and other problems can be detected and corrected with great efficiency. This program resulted in 246-acre feet (or 80 million gallons) of water saved by irrigation customers in 2009. Over 20,000 new meters with AMI are scheduled to be installed through the Residential Water Meter Replacement Program for single family development over a five-year period beginning in 2011. Two studies validated the potential for significant water savings that could result from this expanded AMI project¹:

- 1) Conversion of City's Landscape Meters to AMI
- 2) 2009 California Single Family Water Use Efficiency Study

The data analyzed from the Redwood City studies show that the combined irrigation management and leak savings potential from existing single family homes that can be achieved through implementation of AMI is 1,443 acre feet per year (based on the number of single family accounts in the City). This accounts for 91% of the year 2030 water demand deficit projected for the NGP, and it serves as a tangible goal for Redwood City water conservation planning.

Offsetting potable water demand through the Residential Meter Replacement Program is just one of many future opportunities the City continues to study. The City is also working to identify and implement potential new water supply sources to include the expanded use of recycled water, above and beyond uses previously identified and already accounted for in the NGP. Projections and timelines for the expanded use of recycled water have not yet developed but will be included in the 2010-2011 UWMP.

When new water supply sources – transfers and exchanges, groundwater, and expanded recycled water use – are combined with aggressive water conservation programs, as to be

¹These documents will be provided to the City Council for their consideration of the AMI Residential Water Meter Replacement Program in late 2010; they're currently available for review at Public Works Services municipal corporation yard

evaluated and considered in the pending 2010-2011 UWMP, there provides clear potential and opportunity for the City's water supply to meet the demand of the 2030 NGP

ATTACHMENT 2

CITY OF REDWOOD CITY WATER SERVICE AREA MAP

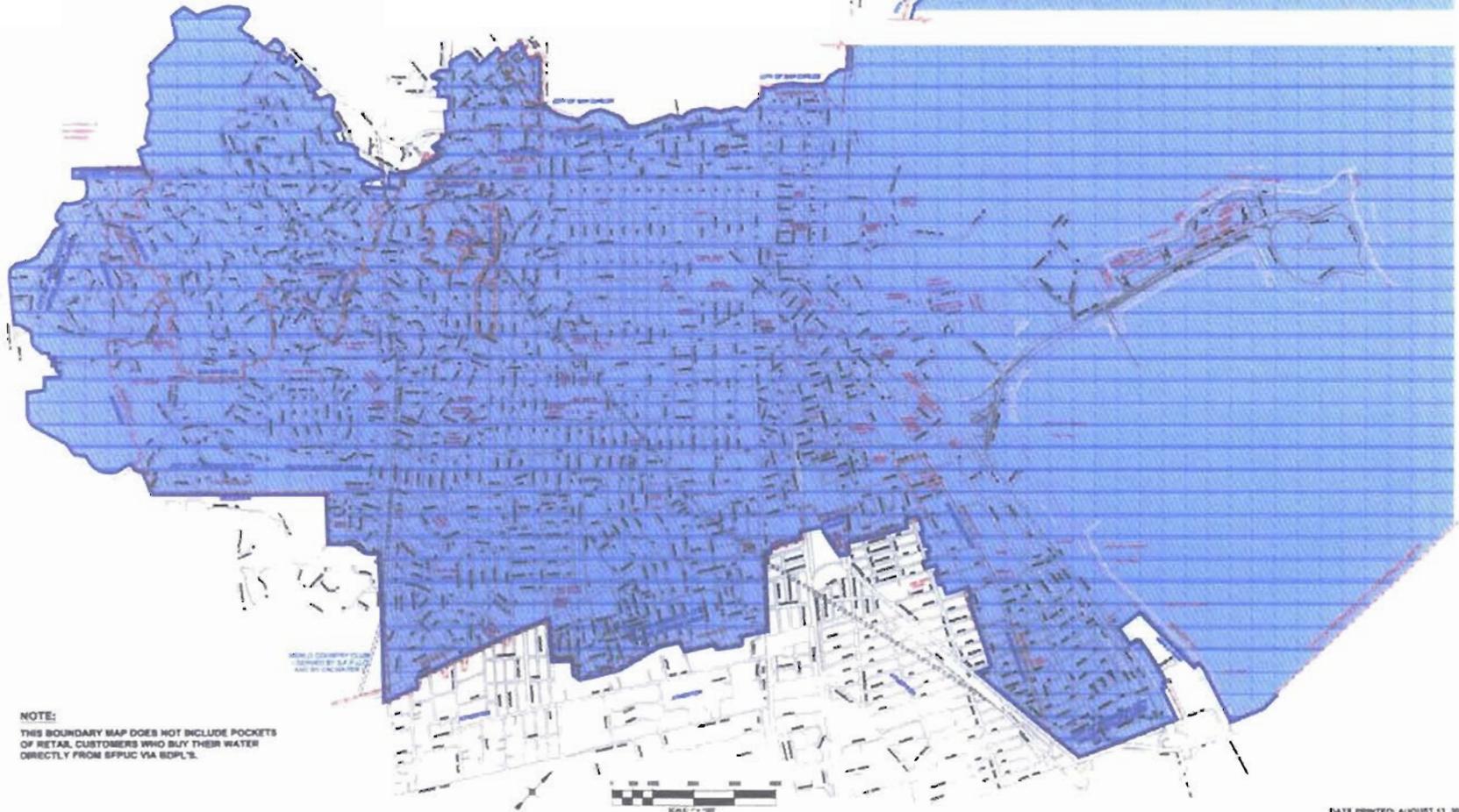
LEGEND:



CITY OF REDWOOD CITY
CORPORATE LIMITS



CITY OF REDWOOD CITY
WATER SERVICE AREA BOUNDARY



NOTE:

THIS BOUNDARY MAP DOES NOT INCLUDE POCKETS
OF RETAIL CUSTOMERS WHO BUY THEIR WATER
DIRECTLY FROM EFFUC VIA SDPL'S.



City of Redwood City
Building a Great Community Together

My Water Use

This personalized report is for:

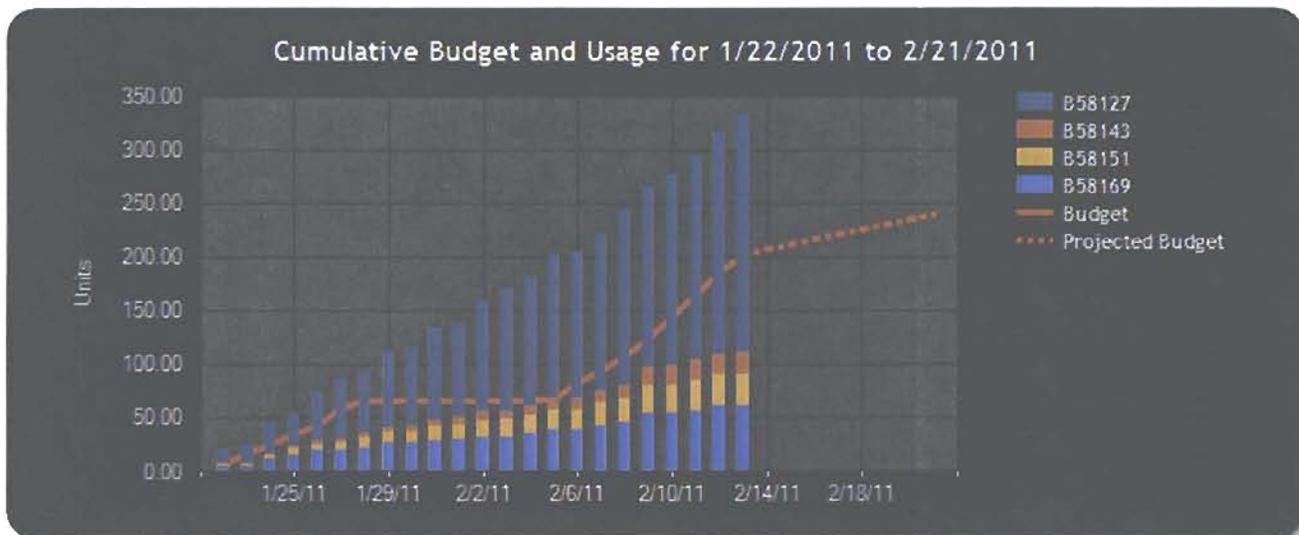
SAMPLE REPORT
345678 BROADWAY
REDWOOD CITY, CA 94063

Subsite Number: 102880-3

As of Sunday, February 13, 2011

Total consumption to date: 332.3 units
Total water budget to date: 202.6 units

Percent of Water Budget: 164.0%



Estimated Water Charges for the Current Billing Period	Fixed Service Charge	Estimated Water Consumption Charge*	Gallons per Day	Estimated Period Total
Based on your current water use trend	\$545.54	\$2,352.33	10,807.0	\$2,897.87
Based on the projected budget	\$545.54	\$864.00	5,791.5	\$1,409.54
This is your estimated (loss)			(5,015.5)	(\$1,488.33)

*The City does not charge customers for water consumption less than one unit.

[Login](#) to the City's Water Use Portal to view your account details including hourly water use, estimated water costs, weather information, and more

ATTACHMENT 4

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

1. SFPUC delivers list of annual purchases by each Wholesale Customer during the immediately preceding Supply Year
2. SFPUC meets with the Wholesale Customers and presents water supply forecast for the following Supply Year
3. SFPUC issues initial estimate of available water supply
4. SFPUC announces potential first year of drought (if applicable)
5. SFPUC and Wholesale Customers meet upon request to exchange information concerning water availability and projected system-wide purchases
6. SFPUC issues revised estimate of available water supply, and confirms continued potential shortage conditions, if applicable
7. SFPUC issues final estimate of available water supply

8. SFPUC determines amount of water available to Wholesale Customers collectively

Target Dates

- November 1
- February
- February 1
- February 1
- February 1-May 31
-
- March 1
- 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.
- 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

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.
10. SFPUC declares the need for a voluntary or mandatory response
11. BAWSCA submits calculation to SFPUC of individual Wholesale Customers' percentage shares of water allocated to Wholesale Customers collectively
12. SFPUC determines individual shortage allocations, based on BAWSCA's submittal of individual agency percentage shares to SFPUC, and monthly water budgets (Default Schedule)
13. Wholesale Customers submit alternative monthly water budgets (optional)
14. Final drought shortage allocations are issued for the Supply Year beginning July 1 through June 30
15. Monthly water budgets become effective

16. Excess use charges indicated on monthly Suburban bills

17. Excess use charges paid by Wholesale Customers for prior year

Target Dates

- April 15-31
- April 15-31
- April 15- 31
-
- April 25—May 10
-
- May 8-May 24
-
- June 1
-
- July 1
-
- August 1 (of the beginning year) through June 30 (of the succeeding year)
- August of the succeeding year

ATTACHMENT 5

Tuolumne River Trust

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John Woolard

February 14, 2011

Michelle Maher
Grants Officer
Bureau of Reclamation

Dear Ms. Maher:

It is my pleasure to submit this letter of support for the City of Redwood City's grant application for its residential water meter program. Redwood City has long been a leader in water conservation and recycling, and now they are poised to do even more. Their residential per capita water use last year was 85 gallons per person per day, far below the California average.

Water conservation is extremely important to our region. In 2008, the San Francisco Public Utilities Commission (SFPUC), which provides water for 2.5 million Bay Area residents, agreed to cap its water sales until 2018. 85% of SFPUC water comes from the "wild and scenic" Tuolumne River in Yosemite National Park. To stay under the cap, the SFPUC committed itself and its 26 wholesale customers, including Redwood City, to conserve and/or recycle an additional 20 million gallons of water per day on top of what was already planned.

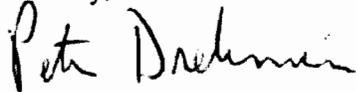
The Tuolumne River Trust (TRT) – founded in 1981 – celebrated the SFPUC's commitment as a major victory for the River and the wildlife that depends on it. We are concerned that the Chinook salmon population is on the verge of collapse, with only 800 fish returning last year, down from historic highs of 130,000 salmon. By diverting less water from the Tuolumne, we can help restore the fishery.

In 2009, TRT convened a network of two water agencies, two business networks and eight conservation organizations to initiate the Silicon Valley Water Conservation Awards program aimed at recognizing and promoting model practices. Redwood City received an inaugural Award for the successful implementation of their water budget program.

Redwood City now has an opportunity to continue its leadership role in water conservation. By replacing approximately 18,000 residential water meters, they could save up to 1,400 acre-feet of water per year by detecting leaks and identifying inefficiencies. The new meters will allow the City to send automated notifications to customers regarding leaks or when they exceed their water budgets. Customers also will be able to access up-to-date water consumption and budget information online, including hourly water use.

Once again, Redwood City is poised to serve as a model for other communities, and believe me, we're all watching. I enthusiastically recommend support for this program from the Bureau of Reclamation.

Sincerely,



Peter Drekmeier
Bay Area Program Director

ATTACHMENT 6

Chapter 6 – Water Conservation

6.1 Introduction

This chapter describes Redwood City's water conservation programs, also known as water efficiency or water demand management programs. Redwood City is implementing all the relevant programs described in the Act, among others. These proactive, City-managed water conservation programs are referred to as "active" conservation programs.

Before addressing active conservation programs, it is necessary to quantify passive conservation associated with high-efficiency toilets and clothes washers. These two fixtures, that account for about half of total residential indoor water use, are somewhat unique in that California state and Federal laws have mandated that only high-efficiency toilets be sold as of 1992 and high-efficiency clothes washers be sold starting in 2007. Passive conservation will occur over time without any City action or expense. Because some of the active conservation programs are associated with toilets and clothes washers, it is necessary to first quantify passive water conservation from these uses so as to not double count water savings.

Redwood City has been and continues to be a strong promoter of water conservation programs that improve water supply reliability and environmental benefits to the community. Beyond the standard types of conservation programs defined by the Act, the City also has an innovative program that creates detailed water use information on water bills to help customers better understand and budget water use for their customized situation. As identified by the Redwood City Recycled Water Task Force, the City is also now or is planning to implement conservation programs related to the distribution of pre-rinse flow valves, installation of artificial turf to replace turfgrass, use of evapotranspiration controllers to improve irrigation, and use of hot-water recirculating systems. The expected water savings from both passive and active conservation are summarized in this chapter.

6.2 Passive Water Conservation

Passive conservation is defined as water savings from the adoption of State and Federal plumbing codes and legislation mandating the sale of high-efficiency toilets and clothes washers. These are the two largest end uses of indoor residential water use, making up about half of total indoor use.

In 1989, toilet manufacturers began producing ultra-low flush toilets or ULFTs (1.6 gallons per flush) in 1989. Toilets before this used 3.5 gallons or more per flush. In January 1992, a California Plumbing Code change required all new toilets to be ULFTs. Many older, less-efficient toilets were still being sold. A Federal plumbing code change effective January 1994 mandated use of ULFTs in all new construction as part of the Energy Policy Act of 1992. Older high-volume toilets were no longer manufactured on a national level after 1994 and ULFT market penetration has been increasing since.

Engineering changes have also improved the water and energy efficiency associated with clothes washers. In February 2004, the California Energy Commission adopted

water efficiency standards for clothes washers.¹ The standard states that by 2007 washers can use a maximum of 8.5 gallons per cubic foot of wash load. By 2010 the maximum will be 6.0 gallons per cubic foot.

As shown in Table 6-1, post-2000 passive water savings grow over time and will reach 1,038 af/yr by 2030.

Table 6-1 Passive Water Savings, Post-Year 2000 (in af/yr)							
Customer Type	2000	2005	2010	2015	2020	2025	2030
Single Family	0	145	293	401	481	540	584
Multiple Family	0	59	114	155	185	208	225
Commercial	0	66	117	156	187	210	229
Total	0	269	523	712	853	959	1,038

6.3 Active Conservation Program Descriptions

This section describes each of the 14 urban water conservation programs defined in the Act. Redwood City actively implements each of the relevant programs. Section 6.4 describes other active conservation programs being implemented.

6.3.1 Water Survey Programs for Single- and Multiple-Family Residential Customers

Since 1994, the City has offered free residential water use surveys. Surveys are conducted by City staff and include checking toilets, showers, and faucets for leaks and distributing free showerheads and faucet aerators as needed. The survey also provides advice on outdoor irrigation efficiency by measuring landscape areas, testing sprinkler systems for irrigation efficiency, teaching customers how to set the irrigation controller, developing a monthly irrigation schedule (based on soil type, evapotranspiration, and irrigation system characteristics), recommending sprinkler system repairs or improvements, and providing brochures on water efficient landscaping, design, and plants.

6.3.2 Residential Plumbing Retrofit

Since 2000, the City mails and distributes kits that include showerheads, aerators, and toilet tank leak detection tablets at community events, fairs, and during Water Awareness Month. At these events, the City also distributes water use surveys and conservation educational materials.

6.3.3 System Water Audits, Leak Detection, and Repair

The City's unaccounted-for water rate of around four percent is significantly below the ten percent limit set forth by the California Urban Water Conservation Council (CUWCC) in its *Memorandum of Understanding Regarding Urban Water Conservation Best Management Practices* (MOU) in 1992. The City has always monitored its unaccounted-

¹ Federal approval will still be required, as the Federal Energy Policy Act of 1992 allows only the Federal Government to regulate residential clothes washers unless a state exemption is approved. California has already been instructed by the Legislature to apply for that exemption as part of AB 1561.

for water and repairs system leaks immediately when found. The City owns an electronic leak detector unit and City personnel have participated in leak detection trainings sponsored by the AWWA, surveying at least 15 miles of main and service lines per year on an ongoing basis.

6.3.4 Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections

Since the 1980s, the City meters water use for all of its customers and uses a conservation promoting multi-block rate structure. The City requires separate irrigation meters for customers with large landscaped areas, to distinguish outside water use from interior water use, and to facilitate potential recycled water conversions. Commercial/industrial/institutional customers are required to have fire sprinkler systems. Since 1999, the City has required residential fire sprinklers in all new single- and multi-family construction. Separate meters are required for fire sprinkler systems, with associated monthly service charges. The City will continue to install and read meters on all new services, and will continue to conduct its large meter testing, calibration and replacement program.

6.3.5 Large Landscape Conservation Programs and Incentives

In 2002, the City Council authorized participation in a regional program administered by BAWSCA, providing service to all of its dedicated irrigation meter customers. This service includes providing customers with customized water budgets each billing period based on weather conditions and site characteristics. The program also provides site surveys in which an irrigation expert visits selected sites to collect information and provide advice to improve irrigation efficiency and scheduling.

6.3.6 High-Efficiency Washing Machine Rebate Programs

The City has been participating in a regional program administered by BAWSCA since August 2001, providing \$150 rebates to customers who buy high-efficiency clothes washers for single-family residences. Redwood City leads all BAWSCA agencies in clothes washer rebates since the regional program began. The City also participates in a regional program with a private firm to distribute high-efficiency washers to multiple-family and commercial customers using \$250 rebates.

6.3.7 Public Information Programs

The City promotes water conservation through a variety of outreach efforts. Since May 2001, the City has produced a bimonthly newsletter distributed with the water bill that includes water conservation as a primary topic. The City also participates in several public fairs and events distributing water conservation brochures, water saving devices, and information regarding appropriate plantings, irrigation, and ways to conserve water. City water bills were redesigned in 1996 to show gallons used per day and water use for the previous 12 months. The City has developed customized water use budgets shown on the water bill for all single-family homes based on its Water Allocation Program. The City's award-winning website is available at any time and helps customers understand what conservation programs are available and how they can participate.

6.3.8 School Education Programs

Since 1994, the City has continued to work with public and private schools in Redwood City to promote water conservation at school facilities and to educate students about

water issues. The City provides educational materials for several grade levels including Hetch Hetchy water system maps, posters, activity books, teacher's guides, and videos. The City also sponsors an annual Water Conservation Poster Contest for grades in four categories (1-3, 4-6, 7-8, and high school) and awards prizes for the best three entries in each category. The best posters are submitted to the regional Bay Area Water Users Association annual poster contest. City staff has provided school presentations for all grades, including water conservation stories such as "Peter and the Water Story," "Water Fun" and "The California Water Story." The Peninsula Conservation Center Foundation awarded the City the 1995 Business Environmental Award for its Water Conservation and Education Program.

6.3.9 Conservation Programs for Commercial, Industrial, and Institutional Accounts

The City provides landscape irrigation conservation programs to the commercial, industrial, and institutional customer class per Section 6.3.5 above. The City also encourages its commercial customers to participate in its toilet replacement programs. In the future, the City plans to participate in a regional program to be administered by BAWSCA that will provide complex water surveys to commercial customers based on their specific water uses (e.g., cooling towers). It also plans to implement a low-flush urinal program.

6.3.10 Wholesale Agency Programs

The City does not provide wholesale potable water to any other retail agencies; thus, this program is not applicable to Redwood City.

6.3.11 Conservation Pricing

Since the 1980s, the City has an increasing block rate structure where the per unit price of water increases with increasing increments of water use. Regarding sewer service charges, the City uses a single price rate structure based on water use for non-residential customers; this price varies with customer sector depending on wastewater flow characteristics. For residential customers, the City uses a flat rate that is unrelated to an individual customer's water use.

6.3.12 Water Conservation Coordinator

Since 1992, the Water Public Works Superintendent serves as the City's Conservation Coordinator. Tasks include oversight and implementation of the conservation programs, program reporting, and communication of water conservation issues within the City organization and to the public.

6.3.13 Water Waste Prohibition

The City established a "No-Waste" ordinance that includes numerous water use restrictions and prohibitions, including prohibitions against use of defective irrigation equipment, flooding of gutters, streets or drainage systems, and use of water hoses without a shut-off valve. This ordinance took effect 1992. The City intends to update this in 2006.

6.3.14 Residential Ultra-Low Flush Toilet Replacement Programs

The City has designed a variety of high-efficiency toilet replacement programs. In September 2004, the City implemented a "Toilet Give-Away" event providing 1,000 free

high-efficiency dual-flush toilets and also 308 pressure-assist toilets in exchange for old toilets (the old toilets were recycled by the City). The City also approved two other programs to help replace old less-efficient toilets, including: 1) Free Direct Install Program – this program provides residential and commercial customers with free toilets, free installation, and hauling away the old toilets; and 2) Toilet Rebate Program – this program is offered for those people that would rather select and install their own qualifying high-efficiency toilet. The rebate amounts range from \$75 to \$175, depending on the type of toilet purchased.

The City boosts its water savings by installing toilets that use less than the standard 1.6 gallons per flush rating. Programs are also designed to minimize “free-riders” (e.g., program participants that would have replaced their toilets even without the program).

6.4 Additional Water Conservation Measures

In addition to the active conservation measures described above, the City has created an innovative program to help customers better understand and budget their water use. Also, the Redwood City Recycled Water Task Force recommended the implementation of additional water conservation programs as part of the Recycled Water Project Alternative TF (see Chapter 3). These additional programs are also described in this section.

6.4.1 Residential Water Allocation Program

Since 2001, the City has used its Water Allocation Program (WAP) to produce a water budget for each individual single-family customer each billing period. The water budget reflects what each household should use if common water efficient technologies and practices are employed. The water budget is printed on each customer’s water bill. The purpose of the water budget is to provide customers with relevant information to help them conserve water and lower their water bills. The water budget is based on number of occupants, landscape type and area, weather, and whether or not the property has a swimming pool. The WAP targets and serves a function much like the residential water surveys in informing and educating people how to conserve water. The program also provides customer service benefits.

In 2001, the City sent out surveys to all single-family homes to collect the basic information needed to calculate a water budget. The response rate to the survey was 50 percent. For those not replying to the survey, default assumptions on household characteristics were used. The data are continually being updated via contact with customers. Data collected by the residential water survey program for a home, for example, are utilized by the WAP to improve the relevance of the water budget.

6.4.2 Pre-Rinse Spray Nozzle Replacement Program

The statewide “Rinse and Save” program is co-founded by the California Public Utilities Commission (CPUC) and participating water agencies, and administered by the CUWCC. This program consists of the installation of water-efficient pre-rinse spray nozzles in dishwashing facilities of restaurants, cafeterias, and other food service providers. Redwood City provides funding in the amount of \$50 per installed valve and CPUC funding of \$131 per valve. The valves (1.6 gallons per minute) are installed at restaurants and other eating establishments to replace high-volume pre-rinse spray nozzles. The City had 77 and 139 valves installed in FY 2003-04 and 2004-05, respectively.

6.4.3 Artificial Turf Replacement Program

One of the recommendations of the Recycled Water Task Force was to reduce potable water demand by converting natural grass playing fields to synthetic turf at several parks and schools in Redwood City. Several playing fields (Sequoia High School, Hoover Park, Canada College) have been converted to synthetic turf beginning in 2002. In July 2005, the City initiated the design of three synthetic turf fields in the City-owned Red Morton Park complex. Turf replacement at Sandpiper Park, Marlin Park, and Hawes Park will be done in the next phase.

6.4.4 Evapotranspiration Controllers Program

This conservation program consists of the installation of evapotranspiration (ET) controllers on landscape irrigation systems for irrigation-only water customers. Although this recommendation has not yet been implemented, the City plans to implement a pilot program for residential sites in FY 2005/06. The City's approach to implementing the Large Landscape Irrigation Efficiency Program (see Section 6.3.5 above) is to first focus site owners and managers on seasonally adjusted irrigation scheduling, based on a monthly water budget unique to each site and its conditions. Equal emphasis is placed on basic system inspection and repair, so that water is not being wasted due to broken spray heads and/or leaking pipes. As part of the pilot program, ET controllers will be installed on five large residential landscape systems, which are anticipated to result in a total estimated potable water demand reduction of five af/yr. User evaluations and performance results will be tracked for future decision-making.

6.4.5 Hot Water Recirculation Pumps Program

This conservation program consists of promoting the installation of hot water recirculation pumps on residential water systems. The City is currently studying this program, and anticipates implementation of a pilot effort in FY 2006/07.

6.5 Water Conservation Program Implementation Plan

Redwood City is implementing all of the relevant conservation programs identified by the Act, as well as five other programs. The schedule, level of activity, costs, and water savings associated with each program are presented in Appendix F. This implementation plan will be updated over time with the refinement of assumptions and identification of new opportunities. Redwood City seeks to implement the most cost-effective programs, but also considers customer service and community benefits in the process.

Water savings for the active conservation programs are only calculated for a select group of programs; they include residential water surveys, residential plumbing retrofits, large landscape efficiency, clothes washers, commercial programs, toilet replacement, pre-rinse spray nozzles, artificial turf replacement, hot water recirculation, and ET controllers. For the other programs, water savings are difficult to quantify. This does not imply that water savings are not significant, but rather that they are difficult to quantify with a reasonable level of certainty. The City implements these programs on the premise that they are good business practices.

Table 6-2 and Figure 6-1 show the water savings associated with the programs where they are quantified. Water savings increase and decrease over time depending on conservation program activity and the limited lifetime associated with savings from some

programs (e.g., pre-rinse spray nozzles are assumed to have an effective life of five years). For toilets and clothes washers programs, only the incremental water savings over and above expected future water savings associated with passive (natural) replacement of these fixtures are included. Outdoor water savings of potable water supplies also diminish as irrigation customers convert from SFPUC water to recycled water.

**Table 6-2
Water Conservation Program Savings (af/yr)**

Program	\$/AF	2005	2010	2015	2020	2025	2030
Pre Rinse Spray Nozzles	\$57	38	26	0	0	0	0
Plumbing Retrofit	\$181	2	19	14	14	14	14
Landscape	\$247	186	104	98	98	98	98
ET Controller	\$403	2	12	0	0	0	0
Residential Toilets	\$553	27	281	217	168	130	101
Clothes Washers	\$639	18	19	12	8	6	4
Residential Surveys	\$1,167	6	56	56	56	56	56
Commercial Programs	\$1,207	0	43	25	4	4	4
Hot water Recirculation	\$1,633	0	6	0	0	0	0
Artificial Turf	\$3,113	15	65	65	65	65	65
Active Conservation							
Totals		294	632	488	413	373	341
Passive Conservation	\$0	269	523	712	853	959	1,038
Total Conservation		563	1,155	1,200	1,266	1,331	1,379

Also shown are the costs per af/yr of water saved from the water agency perspective. The City uses this cost metric in comparing alternative programs, knowing that other parties are impacted by additional benefits and costs. For example, the artificial turf program results in lower maintenance costs and fields that can be used in more intensive ways by the community.

The pre-rinse spray nozzles, residential retrofit, and landscape programs, including ET controllers, tend to be the most cost effective programs. The toilet and clothes washer programs are also relatively cost effective. The other programs are less cost-effective from the Water Utility's perspective, but each provides a unique set of additional benefits to the Utility and the community.

6.6 Evaluation of Programs not Implemented

With the exception of the wholesaler program that is not applicable, the City is implementing all of the conservation programs listed in the Act.

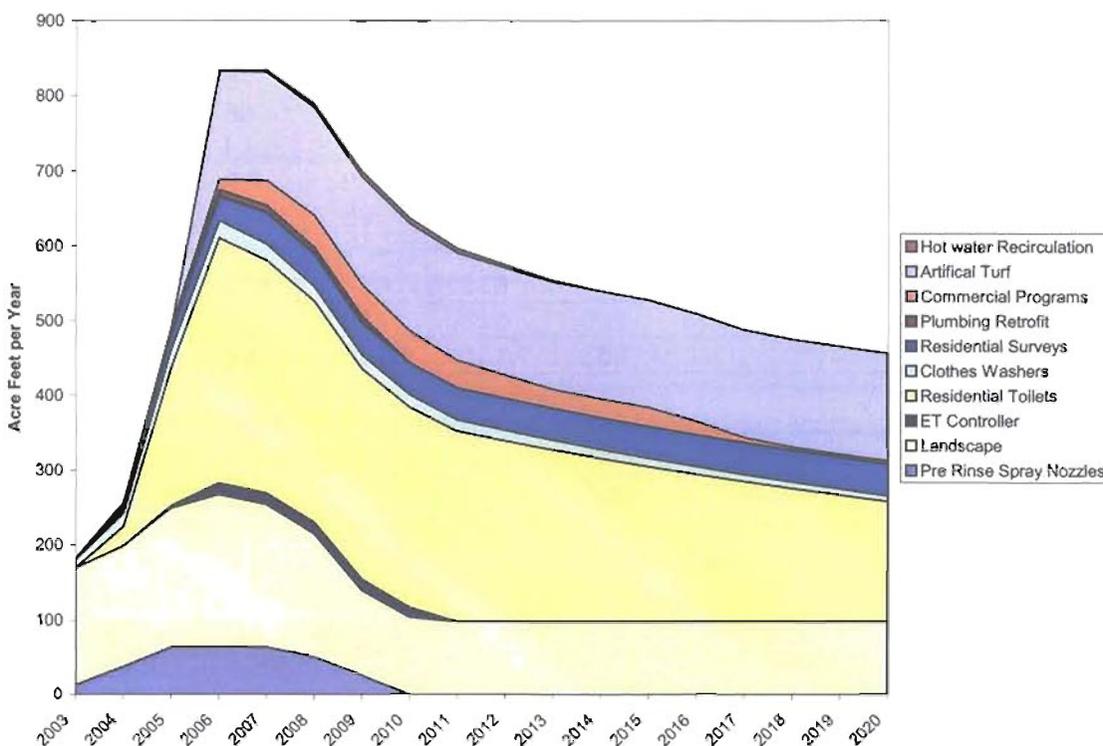
6.7 Regional Coordination on Demand Management

BAWSCA and its member agencies look for opportunities to work with other water agencies, including the SFPUC and SCVWD, and leverage available resources in implementing water use efficiency projects. For example, in 2005, the SFPUC and BAWSCA entered into a Memorandum of Understanding (MOU) regarding the administration of a Spray Valve Installation Program. Through this MOU, SFPUC and

BAWSCA will work cooperatively to offer and coordinate installation of water conserving spray valves to food service providers in BAWSCA member service areas. Recently the Bay Area Efficient Clothes Washer Rebate Program, a single rebate program offered by all major water agencies in the greater Bay Area including BAWSCA and the SFPUC, was recipient of \$1.5M in Proposition 50 grant funds for implementation as early as FY 2006/2007.

BAWSCA and its member agencies will continue to look to partner with other agencies to develop regional water conservation efforts that look beyond local issues of supply and cost-effectiveness 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.

Figure 6-1. Water Savings from Active Conservation Programs



ATTACHMENT 7

Irrigation water use is expected to see modest growth. This growth represents total irrigation demand and does not differentiate between irrigation with potable or recycled water. With commercial irrigation, no growth is projected until after 2015 as existing vacant commercial space is sufficient to accommodate commercial growth. After 2015, commercial irrigation is expected to grow with projected employment growth by 21.0 percent. Residential irrigation use is expected to grow by 40.0 percent.

Water use associated with the "Other" class is not projected to change. It is difficult to project how water use for this group would change; however, because it only makes up one percent of total use, its impact is not significant.

In summary, base water use is projected to modestly increase between 2000 and 2030. The increase in water use associated with growth (1,974 af/yr) is somewhat offset by decreases in water use driven by passive conservation with toilets and clothes washers (1,038 AFY). The net increase in water use, therefore, would be 936 af/yr or 7.4 percent.

5.5 Water Shortage Contingency Plan

5.5.1 Introduction

Hydrologic water shortages, such as the 1976-77 and 1987-92 droughts, can span months and years. When City water demands exceed SFPUC water supplies, the City must intervene to moderate its customers' demands or acquire supplemental supplies. Although purchasing supplemental supplies is conceptually possible, neighboring water agencies will likely be in similar water shortage conditions, and finding willing sellers may be impossible. Hence, the water shortage contingency plan focuses on mechanisms necessary to reduce internal water demands to balance the demand/supply situation. The Urban Water Management Planning Act requires that the water shortage contingency plan address the following six steps:

- Step One: Stages of Action
- Step Two: Estimate of Minimum Supply for the Next Three Years
- Step Three: Catastrophic Supply Interruption Plan
- Step Four: Prohibitions, Penalties, and Consumption Reduction Methods
- Step Five: Analysis of Revenue Impacts of Reduced Sales During Shortages
- Step Six: Draft Ordinance and Use Monitoring Procedure.

This section describes the City's water shortage contingency plan, and addresses each of the above steps. The water shortage contingency plan has two guiding principles:

- Water cutbacks are in proportion to outdoor water use. Outdoor water use is an important, but relatively discretionary end use in comparison to indoor water uses related to drinking, cooking, and sanitary activities.
- Water cutbacks are to be based on water needs, not historical water use whenever possible. If customers expect water shortage allocations to be based on historic water use, they may tend to overuse water during non-drought periods to increase their allocation during a shortage. Expressed in a different way, customers who adopt and sustain water conservation practices in their home and businesses

(“demand hardened”) should not be penalized by receiving the same percentage cutback as non-conserving customers.

5.5.2 Stages of Action

Table 5-2 identifies the stages of action that Redwood City will take in response to a water supply shortage. There are five stages that successively address cutbacks of greater magnitude. The City will largely rely on its Water Allocation Program (described in Chapter 6) to allocate maximum water use for its customers during shortages. Customers exceeding their water allocations will face higher water rates, especially during the higher stages of the plan.

Table 5-2 Water Shortage Stages of Action		
Stage	Water Reduction	City Actions
1	0 to 10%	<ul style="list-style-type: none"> <input type="checkbox"/> Public education and voluntary cutback request. <input type="checkbox"/> Purchase limited amounts of San Francisco water from as needed at perhaps increased prices. <input type="checkbox"/> Cutback flushing of water distribution mains for water quality purposes.
2	10 to 20%	<ul style="list-style-type: none"> <input type="checkbox"/> Aggressive public conservation education and voluntary cutback request. <input type="checkbox"/> Acceleration of conservation BMP implementation. <input type="checkbox"/> Water Allocation Program combined with moderate water rate incentives. <input type="checkbox"/> Landscapes using potable water cutback up to 60%. <input type="checkbox"/> Moratorium on new water connections. <input type="checkbox"/> Cutback flushing of water distribution mains for water quality purposes.
3	20 to 30%	<ul style="list-style-type: none"> <input type="checkbox"/> Aggressive public conservation education and voluntary cutback request. <input type="checkbox"/> Acceleration of BMP implementation. <input type="checkbox"/> Water Allocation Program combined with significant water rate incentives. <input type="checkbox"/> Landscapes using potable water cutback up to 90%. <input type="checkbox"/> Moratorium on new water connections. <input type="checkbox"/> Cutback flushing of water distribution mains for water quality purposes.
4	30 to 50%	<ul style="list-style-type: none"> <input type="checkbox"/> Aggressive public conservation education and voluntary cutback request. <input type="checkbox"/> Acceleration of BMP implementation. <input type="checkbox"/> Water Allocation Program combined with severe water rate incentives. <input type="checkbox"/> Ban potable water used for irrigation of turf grass or all outdoor uses. <input type="checkbox"/> Moratorium on new water connections. <input type="checkbox"/> Cutback flushing of water distribution mains for water quality purposes.
5	50% or greater	<ul style="list-style-type: none"> <input type="checkbox"/> If system is operational, prohibit all but water used for basic drinking, cooking, and necessary human hygiene. <input type="checkbox"/> If system is not operational, establish basic water distribution stations/nodes for essential living conditions. <input type="checkbox"/> Moratorium on new water connections.

Based on the first guiding principle described above, Table 5-3 shows the anticipated water cutbacks by customer type associated with 10, 15, and 20 percent cutback scenarios. The irrigation customers would be burdened with the largest percentage reductions. Single-family residential customers would have cutbacks roughly equaling the total percentage reduction. Commercial customers would have smaller cutbacks. Multiple-family residential customers would experience the smallest percentage cutbacks because their water uses are largely related to indoor purposes.

Table 5-3 Water Cutbacks by Customer Type ⁽¹⁾			
Customer Type	10% Total Cutback	15% Total Cutback	20% Total Cutback
Single Family	10-12%	15-18%	19-24%
Multiple Family	3-4%	4-6%	6-8%
Commercial	7-9%	10-13%	14-17%
Irrigation	26-34%	40-51%	53-68%
Other	12-15%	17-23%	23-30%

(1) The percentage cutbacks shown are averages for customer types. Individual customer cutbacks will vary depending on the proportion of their water use associated with outdoor water use.

5.5.3 Estimate of Minimum Supply for Next Three Years

The minimum water supply for the next three years is shown in Table 4-2 in Section 4.4 of this UWMP.

5.5.4 Catastrophic Supply Interruption Plan

The Potable Water Emergency Plan was developed to prepare cities and towns and the San Mateo County/Operational Area for a planned response to emergency situations that affect water utilities, i.e., natural disasters, technological incidents, and national security/terrorism emergencies. The plan is not designed for responding to every conceivable contingency, but it addresses the major known hazards and general response/recovery considerations. Catastrophic interruption to the regional water system from earthquakes is one scenario that could occur. The City is also vulnerable to local failures in its water distribution system from such occurrences.

The plan serves to guide the City's emergency management and Water Coordinator in an organized response to water treatment and distribution emergencies, which affect the Redwood City (Office of Emergency Services, 2004). Detailed information is provided on personnel roles, responsibilities, emergency services, communication, recovery, and reporting procedures. Specifically, the plan describes the following:

- ❑ San Mateo County/Operational Area emergency management organization to assist in mitigating any significant emergency or disaster.
- ❑ Authorities, policies, responsibilities, and procedures required, protecting the health and safety of San Mateo County.

- Operational concepts and procedures associated with field response to emergencies, Emergency Operations Center (EOC) activity, and the recovery process.
- Standardized Emergency Management System (SEMS) for use within the City of Redwood City, San Mateo County/Operational Area, State Office of Emergency Services (OES) Coastal Region and state systems.
- Multi-agency and multi-jurisdictional coordination, particularly between local government (Redwood City) and San Mateo County; San Francisco Water Department and local, state, and federal agencies during emergency operations.
- Pre-event emergency planning as well as emergency operations procedures. This plan has been designed for conformance with SEMS (Government Code Section 8607) and should be used in conjunction with the State Emergency Plan and local emergency plans.

The procedures are designed to facilitate the acquisition and distribution of alternative potable water to Redwood City in the event of a local, Operational Area and/or Regional water emergency. These procedures require the support of public, private, and volunteer agencies.

5.5.5 Water Shortage Ordinance and Use Monitoring Procedure

Redwood City's use monitoring procedure and water shortage contingency ordinance are illustrated in the City's Water Shortage Contingency Ordinance adopted in 1990, and attached to this UWMP as Appendix E.

5.5.6 Mandatory Prohibitions and Penalties for Excessive Use

Redwood City's mandatory prohibitions and penalties for excessive water use are illustrated in the City's Water Shortage Contingency Ordinance adopted in 1990, and attached to this UWMP as Appendix E.

5.5.7 Revenue and Expenditure Impacts

The City Council adjusts water rates and charges each fiscal year as necessary to sustain balanced Water Enterprise Fund revenues and expenditures. The City's *Water Financing Plan* is substantially driven by the policies described in this UWMP.

ATTACHMENT 8

Option 1: Redwood City Water Enterprise Cash Flow Projections
9% Rate Increase in 2010/11, Fund Meter Replacement Program with Interfund Loan & Future Debt

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Rate Adjustment	9%	9%	11%	11%	9%	9%	9%	3%	3%	3%
Avg Monthly Residential Bil (12 hcf)	\$47.13	\$51.37	\$57.03	\$63.27	\$69.00	\$75.22	\$82.00	\$84.46	\$87.00	\$89.64
Growth in Service Connections	0%	0%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%
Annual % Change in Water Sales	-7.0%	-0.5%	-0.5%	-0.5%	-0.5%	0.0%	0.0%	0.0%	0.0%	0.0%
Interest Earnings Rate	0.75%	1.0%	1.5%	2.0%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Balances	\$7,500,000	\$6,635,000	\$6,354,000	\$6,677,000	\$6,327,000	\$7,359,000	\$8,047,000	\$8,327,000	\$8,448,000	\$8,810,000
REVENUES										
Water Meter Charges incl fire svc	8,130,000	8,862,000	9,859,000	10,968,000	11,983,000	13,091,000	14,302,000	14,767,000	15,247,000	15,743,000
Water Sales	15,200,000	16,732,000	18,489,000	20,430,000	22,167,000	24,162,000	26,337,000	27,127,000	27,941,000	28,779,000
Less 25% Recycled Wtr Discount	(175,000)	(327,000)	(404,000)	(474,000)	(517,000)	(561,000)	(747,000)	(771,000)	(832,000)	(894,000)
Subtotal	23,155,000	25,267,000	27,944,000	30,924,000	33,633,000	36,692,000	39,892,000	41,123,000	42,356,000	43,628,000
Facilities/Conn/Capacity Fees	200,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000
Interest Income on Reserves	56,000	66,000	95,000	134,000	158,000	184,000	201,000	208,000	211,000	220,000
Interest from Trustee Accounts	165,000	165,000	165,000	165,000	165,000	165,000	165,000	165,000	165,000	165,000
Miscellaneous/Other	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Revenue Svcs Reimbursement	649,000	675,000	702,000	730,000	759,000	789,000	821,000	854,000	888,000	924,000
Sewer Fund Loan Repayment	850,000	420,000	0	0	0	0	0	0	0	0
Total Revenues	25,125,000	26,893,000	29,206,000	32,253,000	35,015,000	38,130,000	41,379,000	42,650,000	43,920,000	45,237,000
Mtr Repl Prog: Interfund Loan (Int Only)	1,000,000	1,625,000	(2,625,000)							
Mtr Repl Prog: Debt Proceeds			4,250,000	1,625,000	1,625,000					
EXPENSES										
<u>Operating & Maintenance</u>										
Employee Costs	5,124,000	4,979,000	5,178,000	5,385,000	5,600,000	5,824,000	5,707,000	5,935,000	6,172,000	6,419,000
Less Vacancy & Future Attrition	(400,000)	(350,000)	0	0	0	0	(350,000)	0	0	0
Supplies & Services	3,905,000	4,061,000	4,223,000	4,392,000	4,568,000	4,751,000	4,941,000	5,139,000	5,345,000	5,559,000
SFWD Water Purchases	7,974,000	8,851,000	9,597,000	12,264,000	12,827,000	14,427,000	17,016,000	17,529,000	17,968,000	18,417,000
Recycled Water Purchases	168,000	226,000	251,000	272,000	286,000	301,000	356,000	374,000	404,000	436,000
Capital Outlay/Other	49,000	50,000	52,000	54,000	56,000	58,000	60,000	62,000	64,000	67,000
Subtotal	16,820,000	17,817,000	19,301,000	22,367,000	23,337,000	25,361,000	27,730,000	29,039,000	29,953,000	30,898,000
<u>Debt Service</u>										
2005 Bonds	2,146,000	2,145,000	2,147,000	2,148,000	2,148,000	2,146,000	2,144,000	2,144,000	2,147,000	2,147,000
2006 Bonds	1,570,000	1,570,000	1,570,000	1,574,000	1,572,000	1,569,000	1,570,000	1,574,000	1,571,000	1,572,000
2007 Bonds	950,000	946,000	947,000	946,000	950,000	949,000	946,000	948,000	949,000	946,000
Interfund Loan, Interest Only	4,000	26,000	39,000	0	0	0	0	0	0	0
Mtr Repl Program Loan	0	0	0	415,000	575,000	735,000	735,000	735,000	735,000	735,000
Subtotal	4,670,000	4,687,000	4,703,000	5,083,000	5,245,000	5,399,000	5,395,000	5,401,000	5,402,000	5,400,000
<u>Non-Operating</u>										
Capital Improvements	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	3,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Meter Replacement Program	1,000,000	1,625,000	1,625,000	1,625,000	1,625,000	0	0	0	0	0
Right-of-Way Transfer	2,250,000	2,420,000	2,629,000	2,903,000	3,151,000	3,432,000	3,724,000	3,839,000	3,953,000	4,071,000
Conservation Program Capital	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000
Subtotal	5,500,000	6,295,000	6,504,000	6,778,000	7,026,000	6,682,000	7,974,000	8,089,000	8,203,000	8,321,000
Total Expenses	26,990,000	28,799,000	30,508,000	34,228,000	35,608,000	37,442,000	41,099,000	42,529,000	43,558,000	44,619,000
Revenues Less Expenses	(865,000)	(281,000)	323,000	(350,000)	1,032,000	688,000	280,000	121,000	362,000	618,000
Ending Fund Balances	6,635,000	6,354,000	6,677,000	6,327,000	7,359,000	8,047,000	8,327,000	8,448,000	8,810,000	9,428,000
Fund Rsrv Target (25%O&M+\$2M)	6,210,000	6,450,000	6,830,000	7,590,000	7,830,000	8,340,000	8,930,000	9,260,000	9,490,000	9,720,000
Debt Svc Coverage (Min>1.20)	1.78	1.94	2.11	1.94	2.23	2.37	2.53	2.52	2.59	2.66

ATTACHMENT 9

ADMINISTRATIVE POLICY



NUMBER: 38
EFFECTIVE: March 26, 2007

SUBJECT: Debt Management Policy

I. Purpose

The purpose of this policy is to establish parameters and provide guidance governing the issuance, management, continuing evaluation of, and reporting on all debt obligations issued by the City of Redwood City, the Redwood City Public Financing Authority, and the City of Redwood City Redevelopment Agency, and to provide for the preparation and implementation necessary to assure compliance and conformity with this policy. This policy specifically excludes the Port of Redwood City.

II. Policy Statement

Under the governance and guidance of federal and state laws and the City's charter, ordinances, and resolutions, the City may periodically enter into debt obligations that finance the construction or acquisition of infrastructure and other assets or to refinance existing debt for the purpose of meeting its governmental obligation to its residents. It is the City's desire and direction to assure that such debt obligations are issued and administered in such a fashion as to obtain the best long-term financial advantage to the City and its residents, while making every effort to maintain and improve the City's bond ratings and reputation in the capital markets.

The City may also issue conduit debt obligations on behalf of private enterprise, or non-city agencies or authorities for the purpose of constructing facilities or assets which further the goals and objectives of City government. In such case, the City shall take reasonable steps to confirm the financial feasibility of the project and the financial solvency of the borrower and take reasonable precautions to ensure the public purpose and financial viability of such transactions.

The City will not use short-term borrowing to finance operating needs except in the case of an extreme financial emergency which is beyond its control or reasonable ability to forecast. Recognizing that bond issuance costs add to the total interest costs of financing, bond financing should not be used if the aggregate cost of projects to be financed by the bond issue does not exceed \$1,000,000.

III. General Debt Governing Policies

The City hereby establishes the following policies concerning the issuance and administration of debt:

- A. The City will utilize debt obligations only for acquisition, construction, or remodeling of capital improvement projects only after giving due consideration to all available funding sources, including available cash reserves, available current revenue sources, potential future revenue sources, potential grants and all other financial resources legally available for such projects.

IV. General Debt Guidelines

The following guidelines shall govern the issuance and administration of debt obligations:

- A. Purposes of Issuance - Expenditure of bond proceeds should be limited to major, non-recurring expenditures/expenses including but not limited to the financing of costs related to capital project planning and design, land acquisition, real property and equipment acquisition, the construction or renovation of buildings and permanent structures and the equipping thereof, financing costs related to the issuance of securities, capitalized interest, necessary or financially prudent debt service reserves, or other costs as permitted by law. Refunding bond issues designed to restructure currently outstanding debt are an acceptable use of bond proceeds.
- B. Maximum Maturity - All debt obligations shall have a maximum maturity of the earlier of: i) the estimated useful life of the capital improvements being financed, ii) 35 years or, iii) in the event they are being issued to refinance outstanding debt obligations, the final maturity of the debt obligations being refinanced unless a longer term is approved by the City Council.
- C. Capitalized Interest (Funded Interest) - Subject to federal and state law, interest may be capitalized from date of issuance of debt obligations through the completion of construction. Interest may also be capitalized for projects in which the revenue designated to pay the debt service on the bonds will be collected at a future date, not to exceed six months from the estimated completion of construction and offset by earnings in the construction fund.
- D. Bond Covenants and Laws - The City shall comply with all covenants and requirements of applicable bond resolutions, indentures, trust agreements and other financing documents, as well as applicable state and federal laws authorizing and governing the issuance and administration of debt obligations.

- E. Method of Sale - Bonds will be sold on a competitive basis unless it is in the best interest of the City to conduct a negotiated sale or private placement. Negotiated sales may occur when selling bonds to refund existing debt, for land secured debt, for variable interest rate debt, for conduit debt or for other appropriate reasons. Private placements may occur for conduit debt, for capital requirements too small to bear the costs of a public debt issuance, or for other valid reasons. Staff shall evaluate the cost-effectiveness of alternative financing methods before the City shall conduct a private placement of debt. The City Council should seek the advice of its professional managers, special legal counsel or qualified public finance consultants in making the determination of the appropriate method of sale.
- F. Enterprise Funds - It is the policy that each utility or enterprise should provide adequate debt service coverage. Projected operating revenues in excess of operating expenses, less capital expenditures, depreciation, and amortization in the operating fund, should be at least 1.20 times the annual debt service costs.
- G. Refundings - The City shall review its outstanding debt for the purpose of determining if the financial marketplace will afford the City the opportunity to refund an issue and lessen its debt service costs. For refundings undertaken to achieve debt service savings, the sum total of all savings (net of expenses and funds contributed by the issuer at the time of closing), discounted to the present at the bond true interest cost, should at a minimum produce net present value savings equal to at least 3% of the par amount of refunding bonds to be sold. Refundings may be undertaken for reasons other than to achieve debt service savings, such as to remove restrictive covenants or restructure debt payments. Such restructuring refundings do not need to achieve 3% net present value savings.
- H. Conduit Debt - When appropriate the City will use special assessment debt (such as 1915 Act bonds), special tax debt (such as Mello-Roos bonds), or mortgage revenue bonds so that those benefiting from the improvements will absorb all or part of the cost of the project financed. Those responsible for the repayment of such debt will also be responsible for paying all ongoing administrative costs including credit enhancement fees, trustee fees and the cost of City staff and consultants deemed necessary for the proper administration of the debt.
- I. City Charter and State and Federal Laws - All debt issued must be in conformance with applicable sections of the City Charter along with state and federal laws in effect at the time of issuance.
- J. Use of Public Financing Authorities - Depending upon the nature of the debt being issued the City may elect to use an existing public financing authority (or may elect to create a new public financing authority) should doing so be to the City's advantage.

- K. Interfund Borrowing - From time to time, there may be advantages for the City to enter into loans between funds or between the City and the Redevelopment Agency. Unless otherwise approved by the respective governing bodies, the interest rates on such loans will not be lower than the rate that the fund providing the loan is able to earn in the County Pool or Local Agency Investment Fund (whichever rate is higher) when the loan is approved.

- L. Arbitrage Rebate Monitoring - Staff will comply with the arbitrage rebate and monitoring requirements as set forth by the U.S. Treasury Department. Should staff determine that it is advisable to do so, arbitrage rebate analysis reports may be performed more frequently than once every five years as is required by the U.S. Treasury Department.

- M. Investment of Bond Proceeds - Bond proceeds will be invested only in investments as permitted by the applicable governing document of the bond issue. When placing such investments, staff will ensure that there is sufficient liquidity to meet the underlying needs (i.e. construction funds or debt service reserve funds) of the funds being invested. Staff will give due consideration to credit risk and counterparty risk when investing such funds.

ATTACHMENT 10

Office of Director of Finance



1017 Middlefield Road
Redwood City, California 94063
Telephone: (650) 780-7070
Fax: (650) 366-2447
www.redwoodcity.org

February 14, 2011

Bureau of Reclamation
Attn: Michelle Maher
Mail Code: 84-27810
P.O. Box 25007
Denver, CO 80225

RE: APPLICANT FUNDING FOR THE PROPOSED METER REPLACEMENT PROJECT

Dear Mrs. Bartlett:

This letter is to certify that the City of Redwood City is making an \$8 million financial commitment for the installation of water meters subject to the availability of federal assistance through the WaterSmart Water and Energy Efficiency Grants for fiscal year 2011.

The source of applicant funding for the proposed meter replacement project is a combination of Water Enterprise reserves and inter-fund loans from the City's Traffic Impact Fee and Self Insurance funds. Authority to use such funds has been established in Redwood City Administrative Policy #38 which states:

Interfund Borrowing – From time to time, there may be advantages for the City to enter into loans between funds or between the City and the Redevelopment Agency. Unless otherwise approved by the respective governing bodies, the interest rates on such loans will not be lower than the rate that the fund providing the loan is able to earn in the County Pool or Local Agency Investment Fund (whichever rate is higher) when the loan is approved.

At minimum, \$1 million of project funding will derive from the City's Water Enterprise fund, while \$7 million will be from inter-fund loans from the Traffic Impact Fee Fund (\$3.5 million) and City's Self Insurance Fund (\$3.5 million). Debt service payments for the inter-fund loans will be disbursed throughout Fiscal Years 2012 – 2021 as defined in Redwood City's 2010 Water Financial Plan and Rate Update.

For questions regarding this statement, please contact me at bponty@redwoodcity.org.

Sincerely,

A handwritten signature in black ink, appearing to read "BPonty", is written over a white background.

Brian Ponty
Director of Finance

ATTACHMENT 11

BUDGET INFORMATION - Construction Programs

NOTE: Certain federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case you will be notified.

COST CLASSIFICATION	a. Total Cost	b. Costs Not Allowable for Participation	c. Total Allowable Costs (Column a-b)
1. Administrative and legal expenses	\$ 0	\$ 0	\$ 0
2. Land, structures, rights-of-way, appraisals, etc.	\$ 0	\$ 0	\$ 0
3. Relocation expenses and payments	\$ 0	\$ 0	\$ 0
4. Architectural and engineering fees	\$ 0	\$ 0	\$ 0
5. Other architectural and engineering fees	\$ 0	\$ 0	\$ 0
6. Project inspection fees	\$ 0	\$ 0	\$ 0
7. Site work	\$ 0	\$ 0	\$ 0
8. Demolition and removal	\$ 0	\$ 0	\$ 0
9. Construction	\$ 0	\$ 0	\$ 0
10. Equipment	\$ 2,436,168	\$ 0	\$ 2,436,168
11. Miscellaneous (labor, reporting and environmental compliance)	\$ 302,233	\$ 0	\$ 302,233
12. SUBTOTAL (sum of lines 1-11)	\$ 2,738,401	\$ 0	\$ 2,738,401
13. Contingencies	\$ 270,000	\$ 0	\$ 270,000
14. SUBTOTAL	\$ 3,008,401	\$ 0	\$ 3,008,401
15. Project (program) income	\$ 0	\$ 0	\$ 0
16. TOTAL PROJECT COSTS (subtract # 15 from # 14)	\$ 3,008,401	\$ 0	\$ 3,008,401
FEDERAL FUNDING			
17. Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share). Enter the resulting Federal share.		Enter eligible costs from line 16c Multiply %	\$300,000