

Meeting Date: 3/3/2015

Report Type: Consent

Report ID: 2015-00143

Title: Application for the U.S. Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant for FY2015

Location: Citywide

Recommendation: Pass a Resolution 1) authorizing the City Manager or the City Manager's designee to: a) apply for a U.S. Bureau of Reclamation 2015 WaterSMART Water and Energy Efficiency Grant for the District Metered Areas for Water Loss Control Project, up to a grant amount of \$300,000; and b) execute the grant agreement if awarded; and 2) authorizing the Director of Utilities and designees to act as the City's agent in connection with the grant application and agreement.

Contact: Michael Malone, Operations Manager, (916) 808-6226; Julie Friedman, Program Specialist, (916) 808-7898, Department of Utilities

Presenter: None

Department: Department Of Utilities

Division: Operations & Maintenance Admin

Dept ID: 14001211

Attachments:

1-Description/Analysis

2-Background

3-Resolution

4-Grant Application

City Attorney Review

Approved as to Form

Joe Robinson

2/23/2015 6:35:24 PM

Approvals/Acknowledgements

Department Director or Designee: Mike Malone - 2/12/2015 10:09:50 AM

Description/Analysis

Issue Detail: The City of Sacramento's Water Conservation Plan adopted in 2013 and the Department of Utilities (DOU) 5-year Strategic Plan call for intensifying the City's system-wide leak detection program and reducing water losses to help achieve water use reduction goals mandated by the 2009 Water Conservation Act. To implement the Plan's recommendations, and as the next step for a medium- to long-term water loss reduction strategy, DOU is augmenting its leak detection and repair program with District Metered Area (DMA) Management. DMA's are discrete areas of the water distribution system that have a defined boundary typically encompassing 500-5,000 metered service connections, and provide leak detection resulting in water and energy savings by isolating specific portions of the system.

This report requests approval to apply for a United States Bureau of Reclamation (USBR) WaterSMART Water and Energy Efficiency Grant FY2015 to fund the DMA for Water Loss Control Project up to the amount of \$300,000, and to execute all agreements related to the grant if the grant is awarded.

This project would be a continuation of an existing Sacramento Utility District (SMUD) Customer Advanced Technologies Program Participation and Monitoring Agreement, awarded through the Regional Water and Energy Assessment Program for a Pilot DMA Study which is currently underway (reference Council Report 2014-00654).

Policy Considerations: The proposed project under this grant application is in line with the City Water Conservation Plan adopted by City Council in October 2013, which recommended intensification of the system-wide leak detection program to help achieve the 20 percent per capita water use reduction by 2020 mandated by the 2009 Water Conservation Act. The project is also in keeping with the goal to ensure the infrastructure for a safe and reliable water supply, is consistent with the City Council focus areas of public safety, economic development, sustainability and livability, and supports water use reduction efforts in response to ongoing drought conditions. It corresponds with recommended best management practices (BMP's) based on the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding and the American Water Works Association (AWWA) Water Audits and Loss Control Programs.

Economic Impacts: None.

Environmental Considerations: The Community Development Department, Environmental Planning Services has reviewed the project and has determined the project is exempt from California Environmental Quality Act (CEQA) review under CEQA Guidelines Section 15061(b)(3). The activity is covered by the general rule that CEQA applies only to projects that have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.

Sustainability: The proposed project is consistent with the City's Sustainability Master Plan goal by enabling DOU to protect sources of water and provide a safe and reliable water supply for the Sacramento region.

Commission/Committee Action: Not applicable.

Rationale for Recommendation: In order to improve the water distribution system and provide benefits to reduce water losses, energy consumption and greenhouse gas emissions, the DOU would be able to utilize the USBR WaterSMART grant to fund three to four DMA's within the City to help identify existing leaks within the system, reduce leakage levels to a technical minimum, and maintain the leakage loss reductions via continuous monitoring of the DMA's. The project will also provide funding for additional leak detection work and in funding leak repairs.

Financial Considerations: The USBR WaterSMART grant, if awarded, will provide funding for improvements to the City's water loss control and leak detection program, and provide improvements and funding for additional leak detection work and repairs. The funding program will last approximately 24 months from grant award with completion by September 30, 2017.

By participating in the USBR WaterSMART Grant Program, the DOU would receive \$300,000, and have a match requirement of \$300,000. The total USBR grant project budget would be \$600,000. If the grant is awarded, staff will return to City Council to request authority to establish the project and budget the grant and local match. Additionally, if awarded, the USBR grant could be combined with a DWR 2014 Water-Energy Grant of \$2.5 million (that has an application pending, reference Council Report 2015-00094) and could result in a total budget of \$3.1 million.

Local Business Enterprise (LBE): Any contracts funded with the grant will comply with applicable LBE requirements.

Background

In 2013, the City of Sacramento adopted a Water Conservation Plan which includes recommendations to intensify the system-wide leak detection program to help achieve the 20 percent per capita water use reduction by 2020 mandated by the 2009 Water Conservation Act.

To respond to the Water Conservation Plan recommendations and as the next step for a medium- to long-term water loss reduction strategy, the Department of Utilities (DOU) is augmenting its leak detection and repair program with District Metered Area (DMA) Management. DMAs are discrete areas of the water distribution system that have a defined boundary, typically encompassing 500-5,000 metered service connections, and are used to provide leak detection savings assessments via isolation and installation of sub-meters on specific portions of the system.

The traditional approach to leakage control is passive, whereby the leak is repaired only when it becomes visible. The development of acoustic instruments has significantly improved the efficiency of this system, allowing invisible leaks to be located as well, but the application of such instruments over the whole water network is expensive and time-consuming. The solution to this problem is a leakage control system whereby the network is divided into DMAs supplied by a limited number of key mains on which flow meters are installed. In this way, it is possible to regularly quantify the leakage level in each DMA so that the leakage location activity is consistently directed to the areas with the greatest needs.

The division of a large water network can be a delicate operation, which will be undertaken with care, as it can cause supply and quality problems. The expected benefits of implementing this project are working with smaller, more manageable areas; more focused active leakage detection and repair efforts; quicker identification of leaks; and shorter run-time of leaks. The DOU's most recent water loss data published in Fiscal Year 2012 showed losses of 135 gallons/connection/day; the DMA project could reduce those losses by 70 percent (by 95 gallons/connection/day) resulting in losses of only 40 gallons/connection/day across the distribution network. The DOU estimates that approximately 246 million gallons (MG) of water, 245,754 kilowatt-hours (kWh), and 58,113 kilograms of carbon dioxide equivalent (kg of CO_{2e}) can be saved annually as a result of this project.

To ensure adequate funding for the proper execution of the DMA program, staff identified various viable grant opportunities to assist the launch and management of the DMA program.

In September 2014, the DOU was awarded \$45,000 with a 50 percent local City match of \$45,000 through the Sacramento Utility District (SMUD) Customer Advanced Technologies Program Participation and Monitoring Agreement and the Regional Water and Energy Assessment Program to launch a pilot DMA project which is currently underway (reference Council Report 2014-00654). In addition, the California

Department of Water Resources (DWR) 2014 Water-Energy Grant program was identified as a viable source of funding and the DOU applied for \$2.5 million in December 2014. If successful, the DWR Water-Energy grant will provide funding for project areas within disadvantaged communities. This funding will also provide the greatest benefit to low-income and disadvantaged residents who have limited resources to address service-side leaks within the City (reference City Council Report ID 2015-00094).

This report requests approval to apply for a United States Bureau of Reclamation (USBR) WaterSMART: Water and Energy Efficiency Grant for FY2015 to fund the DMA for Water Loss Control Project for up to \$300,000 in grant funding, and to execute all agreements related to the grant if the grant is awarded. USBR has a 50 percent match requirement for a total USBR grant budget of \$600,000. If awarded, the USBR WaterSMART and DWR Water-Energy grant funding will be leveraged with the City's required match amount, bringing the total USBR application budget to \$3.1 million.

The proposed USBR grant project would support a continuation of the existing pilot DMA project and will help ensure the proper execution of the program. The full scope of work includes selecting DMA areas, DMA implementation and analysis, leak detection and repairs, and reporting on results. Specifically, three to four DMA's will be set up to undertake field leakage measurements to quantify leakage volume, reduce leakage volumes to optimized levels, and maintain the achieved leakage savings through ongoing DMA monitoring. Once leaks have been identified and repaired, the DMA leakage measurements will be repeated to quantify leakage/water savings achieved.

RESOLUTION NO.

Adopted by the Sacramento City Council

GRANT FUNDING APPLICATION FOR THE UNITED STATES BUREAU OF RECLAMATION (USBR) WATERSMART WATER AND ENERGY EFFICIENCY GRANT FY2015

BACKGROUND

- A. In 2013, the City adopted a Water Conservation Plan which includes recommendations to intensify the system-wide leak detection program to help achieve water use reduction goals.
- B. To implement the Water Conservation Plan recommendations and as the next step for a medium to long-term water loss reduction strategy, the City's Department of Utilities (DOU) is augmenting its leak detection and repair program with District Metered Area (DMA) Management.
- C. DMAs are discrete areas of the water distribution system that have a defined boundary encompassing 500-5,000 metered service connections. DMA Management and leak detection through isolation and submetering can reduce the volume of real water losses, saving water and energy, and reducing greenhouse gas emissions.
- D. The DMA program is eligible for federal grant funding under the United States Bureau of Reclamation (USBR) WaterSMART Water and Energy Efficiency Grant for FY2015.
- E. City staff is recommending approval of a USBR grant application for a grant amount of \$300,000. USBR has a 50 percent local match requirement of \$300,000 so the total project budget would be \$600,000.
- F. There are sufficient funds in the Water Fund (Fund 6005) for the City match requirement of \$300,000.

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE CITY COUNCIL RESOLVES AS FOLLOWS:

- Section 1. The City Manager, or the City Manager's designee, is authorized to apply for a United States Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant for FY2015 to fund the District Metered Areas for Water Loss Control Project up to the grant amount of \$300,000, and to execute all agreements related to the grant on behalf of the City if the grant is awarded.

- Section 2. The City Council has reviewed the purpose of the application and supports the application being submitted.
- Section 3. The Director of Utilities and the Director's designees are authorized as the City's agent to prepare the necessary data, conduct investigations, conduct all negotiations, and submit all documents required in connection with the grant application and, if the grant is awarded, the grant agreement, including but not limited to reporting, payment requests, and documentation of compliance with all requirements applicable to the grant and completion of the project funded by the grant.
- Section 4. The potential grant amount is \$300,000 with a \$300,000 local match required. If awarded, the staff will return to Council to request authorization for the City Manager or the City Manager's designee to establish a project and budget.

Application for Federal Assistance SF-424

Version 02

<p>* 1. Type of Submission:</p> <input type="checkbox"/> Preapplication <input checked="" type="checkbox"/> Application <input type="checkbox"/> Changed/Corrected Application	<p>* 2. Type of Application:</p> <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision	<p>* If Revision, select appropriate letter(s):</p> <input type="text"/> <p>* Other (Specify)</p> <input type="text"/>
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<p>* 3. Date Received:</p> <input type="text" value="Completed by Grants.gov upon submission."/>	<p>4. Applicant Identifier:</p> <input type="text"/>
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<p>5a. Federal Entity Identifier:</p> <input type="text"/>	<p>* 5b. Federal Award Identifier:</p> <input type="text"/>
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State Use Only:

<p>6. Date Received by State:</p> <input type="text"/>	<p>7. State Application Identifier:</p> <input type="text"/>
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8. APPLICANT INFORMATION:

<p>* a. Legal Name: <input type="text" value="City of Sacramento"/></p>	
<p>* b. Employer/Taxpayer Identification Number (EIN/TIN):</p> <input type="text" value="999999983"/>	<p>* c. Organizational DUNS:</p> <input type="text" value="029562159"/>

d. Address:

* Street1:	<input type="text" value="1395 35th Avenue"/>
Street2:	<input type="text"/>
* City:	<input type="text" value="Sacramento"/>
County:	<input type="text"/>
* State:	<input type="text" value="CA: California"/>
Province:	<input type="text"/>
* Country:	<input type="text" value="USA: UNITED STATES"/>
* Zip / Postal Code:	<input type="text" value="95822"/>

e. Organizational Unit:

<p>Department Name:</p> <input type="text" value="Department of Utilities"/>	<p>Division Name:</p> <input type="text"/>
--	--

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:	<input type="text" value="Ms."/>	* First Name:	<input type="text" value="Michele"/>
Middle Name:	<input type="text"/>		
* Last Name:	<input type="text" value="Gray-Samuel"/>		
Suffix:	<input type="text"/>		
Title:	<input type="text" value="Grant Manager"/>		
Organizational Affiliation:	<input type="text" value="City of Sacramento"/>		
* Telephone Number:	<input type="text" value="916-808-6645"/>	Fax Number:	<input type="text"/>
* Email:	<input type="text" value="mgray-samuel@cityofsacramento.org"/>		

Application for Federal Assistance SF-424

Version 02

9. Type of Applicant 1: Select Applicant Type:

C: City or Township Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Bureau of Reclamation

11. Catalog of Federal Domestic Assistance Number:

15.507

CFDA Title:

WaterSMART (Sustaining and Manage America's Resources for Tomorrow)

*** 12. Funding Opportunity Number:**

R15AS00002

* Title:

WaterSMART: Water and Energy Efficiency Grants for FY 2015

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

City of Sacramento

*** 15. Descriptive Title of Applicant's Project:**

City of Sacramento Department of Utilities District Metered Areas (DMAs) Water Loss Control

Attach supporting documents as specified in agency instructions.

Application for Federal Assistance SF-424 Version 02

16. Congressional Districts Of:
* a. Applicant * b. Program/Project

Attach an additional list of Program/Project Congressional Districts if needed.

17. Proposed Project:
* a. Start Date: * b. End Date:

18. Estimated Funding (\$):

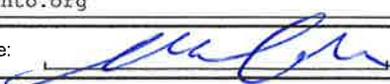
* a. Federal	<input type="text" value="300,000.00"/>
* b. Applicant	<input type="text" value="300,000.00"/>
* c. State	<input type="text" value="2,500,000.00"/>
* d. Local	<input type="text" value="0.00"/>
* e. Other	<input type="text" value="0.00"/>
* f. Program Income	<input type="text" value="0.00"/>
* g. TOTAL	<input type="text" value="3,100,000.00"/>

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**
 a. This application was made available to the State under the Executive Order 12372 Process for review on
 b. Program is subject to E.O. 12372 but has not been selected by the State for review.
 c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes", provide explanation.)**
 Yes No

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**
 ** I AGREE
** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: * First Name:
Middle Name:
* Last Name:
Suffix:
* Title:
* Telephone Number: Fax Number:
* Email:
* Signature of Authorized Representative:  Date Signed:

ASSURANCES - CONSTRUCTION PROGRAMS

OMB Number: 4040-0009
Expiration Date: 06/30/2014

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0042), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the Awarding Agency. Further, certain Federal assistance awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance, and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project costs) to ensure proper planning, management and completion of project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, the right to examine all records, books, papers, or documents related to the assistance; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will not dispose of, modify the use of, or change the terms of the real property title or other interest in the site and facilities without permission and instructions from the awarding agency. Will record the Federal awarding agency directives and will include a covenant in the title of real property acquired in whole or in part with Federal assistance funds to assure non-discrimination during the useful life of the project.
4. Will comply with the requirements of the assistance awarding agency with regard to the drafting, review and approval of construction plans and specifications.
5. Will provide and maintain competent and adequate engineering supervision at the construction site to ensure that the complete work conforms with the approved plans and specifications and will furnish progressive reports and such other information as may be required by the assistance awarding agency or State.
6. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
7. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
8. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards of merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
9. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
10. Will comply with all Federal statutes relating to non-discrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681 1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.

11. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal and federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
12. Will comply with the provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.
13. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333) regarding labor standards for federally-assisted construction subagreements.
14. Will comply with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
15. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
16. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
17. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq).
18. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
19. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.
20. Will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 U.S.C. 7104) which prohibits grant award recipients or a sub-recipient from (1) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect (2) Procuring a commercial sex act during the period of time that the award is in effect or (3) Using forced labor in the performance of the award or subawards under the award.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL 	TITLE Interim Director
APPLICANT ORGANIZATION City of Sacramento	DATE SUBMITTED 1/21/15

SF-424D (Rev. 7-97) Back

Funding Opportunity Announcement R15AS00002
WaterSMART: Water and Energy Efficiency Grants for
Fiscal Year (FY) 2015

City of Sacramento Department of Utilities District Metered Areas
(DMAs) for Water Loss Control

Sacramento, CA

City of Sacramento Department of Utilities
1395 35th Ave.
Sacramento, CA 95822

Michele Gray-Samuel, Grants Manager
mgray-samuel@cityofsacramento.org
(916)808-6645

Julie Friedman, Environmental Services Manager
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(916) 808-7898

January 23, 2015

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WaterSMART: Water and Energy Efficiency Grants for FY15 (R15AS00002)

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- A City of Sacramento Department of Utilities District Metered Areas (DMAs) for Water Loss Control project map
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- C Project Documentation
- D Annual Diversions
- E City of Sacramento Employee Fringe Benefits

TECHNICAL PROPOSAL AND EVALUATION CRITERIA

I. EXECUTIVE SUMMARY

Project: City of Sacramento Department of Utilities District Metered Areas (DMAs) for Water Loss Control

Date: January 23, 2015

Applicant: City of Sacramento, Sacramento County, California

Project Funding

FUNDING SOURCE	FUNDING AMOUNT
Non-Federal Entities:	
City of Sacramento	
In-Kind Contribution	\$0
Cash Contribution	\$300,000
DWR Water-Energy Grant	\$2,500,000
Non-Federal Subtotal:	\$2,800,000
Reclamation Funding:	\$300,000
TOTAL PROJECT FUNDING:	\$3,100,000

Project Summary

The City of Sacramento Department of Utilities (Department) is currently augmenting its leak detection and repair program with District Metered Area (DMA) Management implementation and repair for water loss control. DMA's are discrete areas of the water distribution system that have a defined boundary typically encompassing 500-5,000 metered service connections, and are set up to provide continuous monitoring of leakage levels in each DMA via isolation and installation of sub-meters on specific portions of the system. This allows for targeted leak detection and sustainable reduction of leakage losses yielding significant water and energy savings. Areas with existing residential meters with Advance Metering Infrastructure (AMI) technology are preferred as they provide the most accurate data. In order to improve the system and provide benefits to reduce water loss and energy consumption, the Department would like to fund three to four DMAs within the City to help identify existing leaks within the system, reduce leakage levels to a technical minimum and maintain the leakage loss reductions via

continuous monitoring of the DMAs. The project will also provide funding for additional leak detection work as well as assist in funding leak repairs.

Project Duration: Approximately 24 months from contract award with completion by September 30, 2017.

This project is not located on a federal facility.

II. BACKGROUND DATA

A map of the City's service area and project location is presented in Appendix A. The project is located within the City of Sacramento.

Water Supply and Water Rights

The Department currently obtains water from three sources:

- The America River via the E.A. Fairbairn Water Treatment Plant
- The Sacramento River via the Sacramento River Water Treatment Plant
- Groundwater

The City has several surface water entitlements, consisting of five appropriative water right permits, pre-1914 rights, and a water rights settlement contract with the Bureau of Reclamation.

The City has pre-1914 and post-1914 appropriative water rights for the Sacramento River. The City has used the Sacramento River as a source since 1854 and claims a pre-1914 appropriative right to divert 75 cfs from the river. The City's post-1914 Sacramento River permit authorizes the City to take water by direct diversion and authorizes the City to divert up to 81,800 afa with a maximum flow of 225 cfs.

The City has four water right permits authorizing diversions from the American River. Two permits (11358 and 11361) allow the City to directly divert 675 cfs while the other two permits (11359 and 11360) authorize re-diversion for consumptive uses of American River tributary water previously diverted by the Sacramento Municipal Utility District's (SMUD's) Upper American River Project (UARP). This diversion is up to 1,510 cfs of direct diversion and up to 589,000 afa of UARP stored water.

Additionally, the City has a USBR Settlement Contract limiting total diversions of American River water to a maximum of 675 cfs, up to a maximum amount of 245,000 afa in the year 2030, and to limit its diversions of Sacramento River water to a maximum of 225 cfs and a maximum amount of 81,800 afa.

Current Water Uses

The Department serves water for wholesale, municipal, domestic, and industrial uses and serves approximately 135,580 service connections throughout the City. Current demands total 137,600 afa with year 2030 demands expected to be 208,137 afa. The City currently has adequate water supply, but during extreme drought situations the low surface water

levels present difficulty to the surface water pump stations and extended intakes have to be installed.

Description of Water Delivery System

The surface water supply and treatment facilities are made up of one diversion each from the Sacramento River and American River. Additionally, the Department augments surface water supplies with groundwater from approximately 33 wells, and operates 12 pump stations, and 16 reservoirs. There are a total of approximately 1,600 miles of main lines within the water system, ranging from 2 inch to 72 inch diameter.

Description of Existing Energy Sources and Uses

Electrical power is supplied to the City from SMUD. The City uses approximately 41,820,030 kWh of electricity for water treatment, transmission, and distribution annually.

Past Working Relationship with Reclamation:

The project is connected to Reclamation Central Valley Project activities as the City of Sacramento is a Reclamation Settlement Contractor.

III. TECHNICAL PROJECT DESCRIPTION

Project Description

The Department is currently augmenting its leak detection and repair program with DMA Management. DMAs are discrete areas of the water distribution system that have a defined boundary typically encompassing 500-5,000 metered service connections, and are set up to provide leak detection savings assessment via isolation and installation of sub-meters on specific portions of the system. Areas with existing residential meters with Advanced Metering Infrastructure (AMI) technology are preferred as they provide the most accurate data.

The traditional approach to leakage control is passive, whereby the leak is repaired only when it becomes visible. The development of acoustic instruments has significantly improved the situation, allowing invisible leaks to be located as well. But the application of such instruments over the whole of a large water network is an expensive and time-consuming activity. The solution is a permanent leakage control system, whereby, the network is divided into DMAs supplied by a limited number of key mains, on which flow meters are installed. In this way, it is possible to continuously quantify the leakage level in each DMA so that the leakage location activity is always directed parts of the network with the largest leak presence.

The project will provide a viable medium to long term intervention strategy that will continue to increase water use efficiency throughout the City. This project is a continuation of the initial pilot-study DMA project which is currently underway. Through this project, the Department will be able to use DMA management as a tool to assess water savings, and determine which parts of the distribution system are

experiencing the highest level of leakage, so that resources can be targeted to the greatest effect.

The full scope of work will include selecting DMA study areas, DMA implementation and analysis, leak detection and repairs, and reporting on results. As part of the scope, three to four DMAs will be set up to undertake field leakage measurements to quantify leakage volume, reduce leakage volumes to optimized levels and maintain the achieved leakage savings through ongoing DMA monitoring. Once leaks have been identified and repaired, the DMA leakage measurements will be repeated to quantify leakage/water savings achieved.

The division of a large water network can be a delicate operation, which if not undertaken with care, can cause supply and quality problems. There are many benefits of implementing this project, such as working with smaller, more manageable areas; more focused active leakage detection efforts, quicker identification of leaks, and shorter run-time of leaks. By implementing the proposed DMA's and associated repairs, the volume of real losses could be reduced from 135 gallons/connection/day (fiscal year 2012 data) to 40 gallons/connection/day across the distribution network. This will be a 70% reduction in water losses across the distribution network.

Task 1 – Project Management

This task is for the general management of the project and includes the management of City staff and consultants, to complete general oversight of compliance measures and efforts relating to the management of the project including USBR grant coordination, invoicing, and reporting.

Deliverables for this task include monthly invoices, required quarterly reporting, and completion reports to USBR.

Task 2 – DMA Implementation and Analysis

Task 2.1 – Select Final DMA Study Areas

The goal of this task is to create an additional three to four DMA's within the City of Sacramento's water distribution service area. The project team will select the final DMAs to be funded under this project by looking at the following criteria: DMA size, infrastructure requirements, water quality, hydraulic integrity of DMA, number of supply points into the DMA, inflow chamber design, possible backup supply point, minimum flow and pressure requirements for fire flow and insurance, customer base in DMA, looping and redundancy requirements, and target leakage level.

The Department expects to receive data from this project including: baseline customer use, an idea of background leakage, and recognition of the subtle (unreported) leaks that develop with time, and reduction of leakage losses to optimized levels. This information obtained from the DMAs will allow the Department to focus the leak detection crew's attention to the areas with the largest leak presence in order to maintain low levels of leakage.

Deliverables for this task include: a technical memorandum summarizing selected DMA attributes, report detailing DMA analysis results, and locations for leak detection crews to concentrate their efforts.

Task 2.2 – Implement One-year Study

Once the DMAs have been selected, the work on the chosen areas will begin. The boundaries will be isolated and meters will be installed on all supply lines coming into the DMA. After this, data will be collected and a Water Loss Baseline will be calculated by utilizing the DMA supply meter data collected and the meter consumption data from the billing database. In addition, the project team will quantify leakage losses in the selected DMAs based on the “Minimum Night Time Flow” measurement principle. These measurements will accurately quantify the leakage volume in each of the DMAs.

Task 2.3 – Report on Results

The project consultants will compile a report and presentation summarizing the results of Task 2.1 after completing their data collection and analysis. Along with the report and presentation, a list of priority areas for the leak detection crews to focus their efforts will be compiled.

Deliverables for this task include a technical memorandum summarizing selected DMA attributes, report detailing DMA analysis results, and locations for leak detection crews to concentrate their efforts.

Task 3 – Leak Detection and Fixes

For an estimated four months following the results of the DMA studies, the project team will move forward into active leak detection and isolation. Department and contract leak detection crews will isolate leak locations and areas of concern using information and data obtained during the Task 2 phase.

Deliverables for this task include: a compiled list of leaks found stating location, recommended resolution method, and cost for repair.

Task 4 – Leak Repairs

The final component of this project is to repair leaks identified throughout the DMAs.

The Department will use in-house staff and outside contractors to perform repairs and replacements to City-owned infrastructure as identified during the leak detection phase of the project. It is anticipated that six months will be required for this phase of the project.

Deliverables for this task include: a completed City-asset repairs funded through this project.

IV. EVALUATION CRITERIA

Criterion A – Water Conservation

Subcriterion A.1. – Water Conservation

Subcriterion A.1(a) – Quantifiable Water Savings

The Department’s average annual water supply (river diversions and groundwater) over the past 5 years is 137,600 afa. The water goes to municipal, domestic, wholesale, and industrial uses.

There are many benefits of implementing this project, such as working with smaller, more manageable areas; more focused active leakage detection efforts, quicker identification of leaks, and shorter run-time of leaks. By implementing the proposed DMA’s and associated repairs, the volume of real losses could be reduced from 135 gallons/connection/day (fiscal year 2012 water audit data) to 40 gallons/connection/day across the distribution network. This will be a 70% reduction in water losses across the distribution network. This estimate is based upon commonly accepted results from leak detection, leak repairs, and service replacements common in the Sacramento area. The City’s distribution system has a much higher rate of leakage (14.3) compared to the average (2.1) according to the standard leak index developed by the American Water Works Association (AWWA) Infrastructure Leakage Index.

The type of main line meter to be installed on the DMA supply line will vary based upon the size of supply pipeline into the DMA.

This project proposes to fund DMA implementation in three to four areas within the Department’s service area. Using an average of 3,000 service connections per DMA, this will equate to 905 afa.

Pre-Project Water Losses: (2012 data) 135 gal/connection/day

Anticipated DMA Savings: 95 gal/connection/day

Baseline Real Loss = $\frac{\text{Connections} \times \text{real loss} \times 365 \text{ (days/yr)}}{10^6 \text{ (g/mg)}}$ =

$\frac{(3,000 \text{ connections} \times 4 \text{ DMAS}) \times 135 \text{ gal/con/day} \times 365 \text{ (days/yr)}}{10^6 \text{ (g/mg)}} = 591 \text{ mg}$

Real Losses After DMA and Leak Detection Implementation =

$\frac{\text{Connections} \times (\text{real loss} - \text{loss savings}) \times 365 \text{ (days/yr)}}{10^6 \text{ (g/mg)}} = 175 \text{ mg}$

Quantifiable Water Savings:

Total Savings = 591 mgy – 175 mgy = 416 mgy = **1,277 afa saved**

The water conserved will reduce the demand for Sacramento and American River diversions and groundwater pumping. As a result the water will remain in the rivers and groundwater basin for future growth or dry years.

Pre-project Measurements

The Department conducts annual water audits of its water system for reporting to the California Urban Water Conservation Council (CUWCC) and uses methodology from the AWWA M36 Water Audits and Loss Control Programs document. Water savings from this project will be captured in the annual audit and provided as water losses in gallons/connection/day during the audit.

The project will also focus on areas with AMI meters installed allowing the Department to provide data showing the reductions in water losses from service-side leaks. AMI meters provide consumption data in short-increment time frames which allows the Department to easily identify and report consumption reductions once the leaks are fixed. Collecting this data will allow the Department to identify the amount of water, energy, and greenhouse gas emissions (GHG) saved through the leak repair program that will be funded alongside the DMA Project.

Leak detection and construction crews repairing or replacing leaking City-owned assets such as pipes, fittings, and valves can estimate leakage rates of these items by using the methodology in the AWWA M36 manual. These estimates will be used to quantify water, energy, and GHG reductions through repairs.

Post-project Measurements

The Department will continue to conduct annual water loss audits which will provide the post-project measurement.

Improved Water Management

This project will also improve the Department's water management in the water system by reducing losses and consumption, as well as improving problematic areas of the system. Currently, the quantity of water delivered to an estimated 12,000 service connections (three to four DMAs) is 7,877 afa and the percentage of the Department's total water supply (river diversions and groundwater) better managed is:

$$\frac{\text{Estimated Amount of Water Better Managed}}{\text{Average Total Annual Water Supply}} = \frac{7,877}{137,600} = 6\%$$

The percentage of the Department's water supply (river diversions only) better managed is:

$$\frac{\text{Estimated Amount of Water Better Managed}}{\text{Average Annual River Diversion}} = \frac{7,877}{115,717} = 7\%$$

Subcriterion A.2. – Percentage of Total Supply

The percentage of the Department’s total water supply (river diversions and groundwater) conserved is:

$$\frac{\text{Estimated Amount of Water Conserved}}{\text{Average Total Annual Water Supply}} = \frac{1,277}{137,600} = 1\%$$

The percentage of the Company’s water supply from river diversions that is better managed is:

$$\frac{\text{Estimated Amount of Water Conserved}}{\text{Average Annual River Diversion}} = \frac{1,277}{115,717} = 1\%$$

Criterion B – Energy-Water Nexus

Subcriterion B.1. – Implementing Renewable Energy Projects Related to Water Management and Delivery

This project does not implement significant renewable energy sources.

Subcriterion B.2. – Increasing Energy Efficiency in Water Management

The reduction in leakage throughout the system will result in reduced pumping and associated energy savings by reducing the quantity of water treated at the treatment plants and pumped at the Department’s pump stations.

Currently, the Department’s annual energy to treat and distribute water is 999 kWh/MG according to a recent energy audit and report compiled for SMUD by GEI Consultants.

The estimated energy savings is approximately:

$$416 \text{ mgd saved} \times 999 \text{ kWh/MG} = \mathbf{405,594 \text{ kWh saved annually}}$$

The project will also reduce carbon and greenhouse gas emissions. Electrical power is provided to the Department by SMUD. SMUD’s greenhouse gas emission rate is 0.236655 kg CO₂/kWh. This leads to a savings of 69,743 kg CO₂ per year.

$$0.236655 \text{ kg CO}_2/\text{kWh} \times 405,594 \text{ kWh} = \mathbf{95,986 \text{ kg CO}_2 \text{ saved annually}}$$

Criterion C – Benefits To Endangered Species

The Department diverts water from the Sacramento River and the American River. These rivers and their tributaries provide critical habitat for protected Anadromous fish species, including salmon, steelhead, green sturgeon and Delta Smelt. The water

conserved through implementation of this project would remain in the river, providing more fresh water downstream to improve survival rates during migration.

Criterion D – Water Marketing

This project does not propose to directly market the water saved through conservation and better water management.

Criterion E – Other Contributions to Water Supply Sustainability

Subcriterion E.1. – Addressing Adaptation Strategies in a WaterSMART Basin Study

The WaterSMART Basin study for the Sacramento – San Joaquin Rivers is currently underway. The Department anticipates that the water and energy savings associated with this project will align with the strategies in the final basin study document.

Subcriterion E.2. – Expediting Future On-Farm Irrigation Improvements

This project does not propose to expedite on-farm irrigation improvements.

Subcriterion E.3. – Building Drought Resiliency

Benefits of water savings from this project will aid in building drought resiliency within the Sacramento region. The reduced demand on the water system due to leak repairs and better management will allow the Department to divert less water from the Sacramento and American Rivers and the underlying groundwater basin. This decrease in demand will make more water available for other uses as well as preserve the groundwater basin for future drought needs.

During the current drought (2012-2014), the Sacramento and American Rivers suffered from significant water supply deficiencies. In 2014, both rivers were critically low and water levels were only several feet above the Department's intakes on both rivers, and the Department undertook measures to lower both intake locations in case water levels dropped below the level of the intake structures. The Department also significantly increased conservation outreach activities and enforcements.

DMA's are extensively used in European countries, the Department is taking a leading-edge approach to reduce demand and increase water savings.

Subcriterion E.4. – Other Water Supply Sustainability Benefits

The City of Sacramento also has a relationship to the California Bay-Delta in that the Department's service area diverts water from the Sacramento and American Rivers and these rivers provide a significant source of fresh water to the California Bay-Delta. Water conservation and improvements in water management will result in less fresh water being diverted from the rivers and will result in a higher quantity and quality of water being delivered to the California Bay-Delta and other downstream users.

This project is consistent with three of the four CALFED Bay-Delta Program Objectives:

- Provide good water quality for all beneficial uses

By decreasing diversions due to decreased demand as a result of decreased leakage, more fresh water will remain in the rivers.

- Improve ecosystem quality

By decreasing diversions due to decreased demand as a result of decreased leakage, more fresh water will remain in the rivers for ecosystem needs.

- Improve water supply reliability

By decreasing diversions due to decreased demand as a result of decreased leakage, more fresh water will remain in the supply sources (rivers) and will be available for improved water supply reliability.

Criterion F: Implementation and Results

Subcriterion F.1 – Project Planning

Implementation of this project is consistent with Department planning mechanisms and strategies. Currently, the Department is executing the initial phase of the DMA implementation program and the proposed project will constitute the second phase. This project is consistent with water saving strategies outlined in the Department's Water Conservation Plan.

In addition, the Department anticipates that the water and energy savings associated with this project will align with the strategies in the WaterSMART Basin study for the Sacramento – San Joaquin Rivers which is currently underway.

Subcriterion F.2. – Readiness to Proceed

The Department is currently implementing the first phase of its DMA program with an initial four DMAs being implemented during 2015. The project funded under this grant agreement will constitute the second phase of DMA installation.

The Department is ready to implement the project as follows:

DMA Implementation and Analysis Phase:

The objective of this phase is to identify DMA locations and analyze them prior to implementation in the field. Once the DMA locations have been finalized, the boundaries will be isolated and meters will be installed on all supply lines coming into the DMA. Next, data will be collected and a Water Loss Baseline will be calculated by utilizing the DMA supply meter data collected and the AMR/AMI consumption data from the billing database, which will produce a mass balance. In

In addition, the project team will quantify leakage losses in the selected DMAs based on the “Minimum Night Time Flow” measurement principle. These measurements will accurately quantify the leakage volume in each of the DMAs. From the data collection and analysis, the project consultant will compile a report summarizing the results and give a presentation regarding the results and compile a list of priority areas for leak detection crews to focus their efforts.

Leak Detection Phase:

In the four months following the DMA Implementation and Analysis Phase, the Department and contract leak detection crews will isolate leak locations and areas of concern using information and data obtained during the previous phase.

Leak Repair Phase:

The final component of this project is to use in-house staff and outside contractors to perform repairs and replacements to City-owned infrastructure as identified during the leak detection phase of the project. This final phase of the project is anticipated to require 6 months to complete.

Estimated Project Schedule:

Execute USBR Contract	By October 1, 2015
Administration/Management	October 2015 – September 2017
DMA Implementation and Analysis	October 2015 – January 2017
Leak Detection	January 2017 – April 2017
Leak Repair	March 2017 – August 2017
Project Closeout	By September 2017

Subcriterion F.3. – Performance Measures

The following performance measures will be made in order to quantify the benefits of the project:

- Water Savings
- Water Better Managed
- Energy Savings

Water savings, water management, and energy savings resulting from the proposed project will be monitored by the Department in several ways, including: annual water audits, via meter data and leak data.

The Department already conducts annual audits of its water system for reporting to CUWCC using methodology from the AWWA M36 Water Audits and Loss Control Programs document. Water savings from this project will be captured in the annual audit and provided as water losses in gallons/connection/day.

The project will also focus on areas with AMI meters installed allowing the Department to provide data showing the reductions in water losses from service-side leaks. AMI meters provide consumption data in short-increment time frames which allows the Department to easily identify and report consumption reductions once the leaks are fixed. This will allow the Department to identify the amount of water and energy saved through the service-side leak repair program.

Leak detection and construction crews repairing or replacing leaking City-owned assets such as pipes, fittings, and valves can estimate leakage rates of these items by using the methodology in the AWWA M36 manual. These estimates will be used to quantify an estimate of water, energy, and GHG reductions through these repairs.

Subcriterion F.4. – Reasonableness of Costs

Total Project Cost: \$3,100,000

Replacement Required: Aside from general maintenance, this project should have a lifespan of 80-100 years before any significant rehabilitation is required. 80-100 years is a standard water industry value for new distribution infrastructure.

Annual Acre-feet Conserved: 1,277 afa

Acre-Feet Better Managed: 7,877 afa

Reasonableness of Cost:

$$\begin{aligned} &= \frac{\text{Total Project Cost}}{\text{Acre - feet} \times \text{Improvement Life}} \\ &= \frac{\$3,100,000}{(1,277) \times (100 \text{ years})} \approx \$24.28 \text{ per ac - ft conserved per year} \\ &= \frac{\$3,100,000}{(7,877) \times (100 \text{ years})} \approx \$3.93 \text{ per ac - ft better managed per year} \end{aligned}$$

Criterion G – Additional Non-Federal Funding

$$\frac{\text{Non - Federal Funding}}{\text{Total Project Cost}} = \frac{\$2,800,000}{\$3,100,000} = 90\%$$

Criterion H – Connection To Reclamation Project Activities

How is the proposed project connected to Reclamation project activities?

The project is connected to Reclamation's California Central Valley Project activities as the City is a Reclamation Settlement Contractor. Any savings in water by the City can be made available to other Settlement Contractors during dry water years.

Does the applicant receive Reclamation project water?

As a Settlement Contractor, the Company has water rights for 245,000 acre-feet of contract water.

Is the project on Reclamation project lands or involving Reclamation facilities?

No.

Is the project in the same basin as Reclamation project or activity?

Yes, the Project is located in the Sacramento River Basin and within the CALFED Solution Area.

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

Yes, expected water savings will result in a higher quantity and quality of water being delivered to the California Bay-Delta, the source of water for the Central Valley Project.

Will the project help Reclamation meet trust responsibilities to Tribes?

It is unknown if this project will help Reclamation meet trust responsibilities to Tribes.

V. PERFORMANCE MEASURES

Currently, the Department's water system loses about 135 gallons/connection/day out of 586 gallons/connection/day consumption. The amount of water that can be saved through implementation of this project is approximately 1,277 acre-feet annually, as shown in Subcriterion A.1(a) – Quantifiable Water Savings.

Water and energy usage reductions resulting from the proposed project will be monitored by the Department in several ways including annual water audits, via meter data and leak data.

Annual water audits of the Department's water system will continue to be conducted for reporting to CUWCC using methodology from the AWWA M36 Water Audits and Loss Control Programs document. Water savings from this project will be captured in the annual audit and provided as water losses in gallons/connection/day.

The project will also focus on areas with AMI meters installed allowing the Department to provide data showing the reductions in water losses from service-side leaks. AMI

meters provide consumption data in short-increment time frames which allows the Department to easily identify and report consumption reductions once the leaks are fixed. This will allow the Department to identify the amount of water, energy, and GHG savings through the leak repair program.

Leak detection and construction crews repairing or replacing components such as pipes, fittings, and valves can estimate leakage rates of these items by using the methodology in the AWWA M36 manual. These estimates will be used to quantify an estimate of water and energy usage reductions through these repairs and will be provided in the interim and final reports.

ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

The Department believes that the proposed project's construction activities will be classified as repair-type activities, which, therefore do not negatively impact the surrounding environment and qualify as a categorical exemption.

REQUIRED PERMITS AND APPROVALS

There are no permits required for the project.

LETTERS OF PROJECT SUPPORT

The City of Sacramento supports this project as an effort to reduce water and associated energy losses. Although this project will impact the community during repairs, the benefits of completing this project are significant. Individuals or businesses impacted from the construction phases of this project will be notified in advance of any work.

OFFICIAL RESOLUTION

This project will be presented to the City's Board of Supervisors for consideration. However, due to the timing of Board meetings, an official resolution is not included in this application package. In accordance with the solicitation, an official resolution in support of the Project by the Board will be provided to Reclamation following the March 3, 2015 board meeting.

PROJECT BUDGET

Funding Plan and Letters of Commitment

Letters of Commitment

The Department is relying on support from DWR and Reclamation as funding sources to support this project. The Department will contribute to the cost share requirement by providing at least 50% (\$300,000) of the Reclamation total project cost in order to implement the project. Cash contributions will be provided from the Department's Water Conservation funds to cost share with Reclamation.

Aside from Reclamation, the Department has applied for a DWR Water-Energy grant to help support this project. The Department applied for the DWR grant in December, 2014 and has not been notified regarding the outcome of this application and is not relying on those funds to complete this project.

Table 1 – Summary of Non-Federal and Federal Funding Sources

FUNDING SOURCE	FUNDING AMOUNT
Non-Federal Entities:	
City of Sacramento Department of Utilities	
In-Kind Contribution	\$0
Cash Contribution	\$300,000
DWR Water-Energy Grant	\$2,500,000
Non-Federal Subtotal:	\$2,800,000
Reclamation Funding:	\$300,000
TOTAL PROJECT FUNDING:	\$3,100,000

Budget Proposal

The proposed budget for this project is presented on the following pages, in conformance with the guidelines of the funding opportunity announcement.

A budget narrative is provided after the proposed budget discussing each item in the proposal.

The proposed budget has been consolidated onto Standard Form 424C, Budget Information – Construction Programs, and included in this proposal following the budget narrative.

Table 1 summarized the funding sources for the project.

Table 2 on the following page shows a detailed breakdown of the costs by category and summarizes the costs by the task items described in Section III of the Technical Proposal.

Table 2 - Budget Proposal

BUDGET ITEM DESCRIPTION	COMPUTATION		RECIPIENT FUNDING		USBR FUNDING	TOTAL COST
	\$/Unit and Unit	Quantity	In-Kind	Cash		
Salary & Wages						
Program Manager	\$51.28 /hour	50		\$ 1,282	\$ 1,282	\$ 2,564
Program Specialist	\$43.10 /hour	250		\$ 5,388	\$ 5,388	\$ 10,775
Supervising Engineer	\$57.64 /hour	10		\$ 288	\$ 288	\$ 576
Senior Engineer	\$54.58 /hour	70		\$ 1,910	\$ 1,910	\$ 3,821
Associate Engineer	\$42.80 /hour	30		\$ 642	\$ 642	\$ 1,284
Utilities Field Services Supervisor	\$40.61 /hour	80		\$ 1,624	\$ 1,624	\$ 3,249
Utilities Operations and Maintenance Supervisor	\$52.92 /hour	80		\$ 2,117	\$ 2,117	\$ 4,234
Leadworker	\$35.31 /hour	300		\$ 5,297	\$ 5,297	\$ 10,593
Serviceworker	\$32.08 /hour	380		\$ 6,095	\$ 6,095	\$ 12,190
Fringe Benefits						
Program Manager	\$19.23 /hour	50		\$ 481	\$ 481	\$ 962
Program Specialist	\$15.94 /hour	250		\$ 1,993	\$ 1,993	\$ 3,985
Supervising Engineer	\$20.87 /hour	12		\$ 125	\$ 125	\$ 250
Senior Engineer	\$19.05 /hour	70		\$ 667	\$ 667	\$ 1,334
Associate Engineer	\$17.34 /hour	30		\$ 260	\$ 260	\$ 520
Utilities Field Services Supervisor	\$18.44 /hour	80		\$ 738	\$ 738	\$ 1,475
Utilities Operations and Maintenance Supervisor	\$18.60 /hour	80		\$ 744	\$ 744	\$ 1,488
Leadworker	\$15.24 /hour	290		\$ 2,210	\$ 2,210	\$ 4,420
Serviceworker	\$15.64 /hour	400		\$ 3,128	\$ 3,128	\$ 6,256
Travel - Site Visits						
Equipment						
Supplies/Materials						
none						
Contractual/Construction						
Consultant Support - DMA Analysis	\$200,000 LS	1		\$100,000	\$100,000	\$ 200,000
Consultant Support - Leak Detection	\$35,000 LS	1		\$17,500	\$17,500	\$ 35,000
DMA Construction	\$120,000 LS	1		\$60,000	\$60,000	\$ 120,000
Leak Repairs/Replacements	\$175,000 LS	1		\$87,500	\$87,500	\$ 175,000
Environmental & Regulatory Compliance						
none						
Other						
none						
Total Direct Costs				\$ - \$ 299,988	\$ 299,988	\$ 599,975
Indirect Costs				\$ - \$ -	\$ -	\$ -
Rounded Total Project Costs				\$ - \$ 300,000	\$ 300,000	\$ 600,000

1) Grant project program manager will be Julie Friedman (Program Specialist)

Budget Narrative

Salaries and Wages – Department Staff

Current salary and wage rates have been provided for the Department staff along with an estimate of its effort required to manage the project and for administration of the grant. Actual rates in place at the time work is performed will be used to determine the in-kind contribution.

Fringe Benefits – Department Staff

The Fringe Benefits associated with the direct labor rate for Department staff has been included in Appendix E of this proposal. The current actual rates have been used to establish the proposed budget. As with the salaries and wages, the actual rates at the time work is performed will be used when determining the in-kind contribution.

Travel

Costs have been included for up to eight specific trips to the project site by Department and Consultant staff.

Equipment

Department equipment will be required to complete this project. The Department may contract work out to a general contractor. The Department's equipment usage will be tracked and invoiced to the project based on the US Army Corps of Engineer's recommended equipment rates for the Sacramento region.

Materials and Supplies

There are no supplies or materials to be provided by the Department for this project. The costs of these items are included under the Contractual category.

Contractual/Construction

The Department may solicit bids from local contractors to aid in implementing the project. Outside consultant may be used for the implementation and analysis phase as well as leak detection activities. A general contractor may be used for leak repairs and replacements. The lowest qualified bidder will be selected for award. A cost estimate has been prepared for this work and included in Appendix C.

Environmental and Regulatory Compliance Costs

No permits or approvals are anticipated for this project.

Reporting

Project reporting costs incurred by the Department have been included in the Department staff hours above.

Other Expenses

No other costs are associated with this project.

Indirect Costs

Indirect costs are not included in this proposal.

Total Costs

Total project costs have been identified, as well as the subtotal cost for each task identified in the work plan in order to provide a clear definition of how the budget was determined.

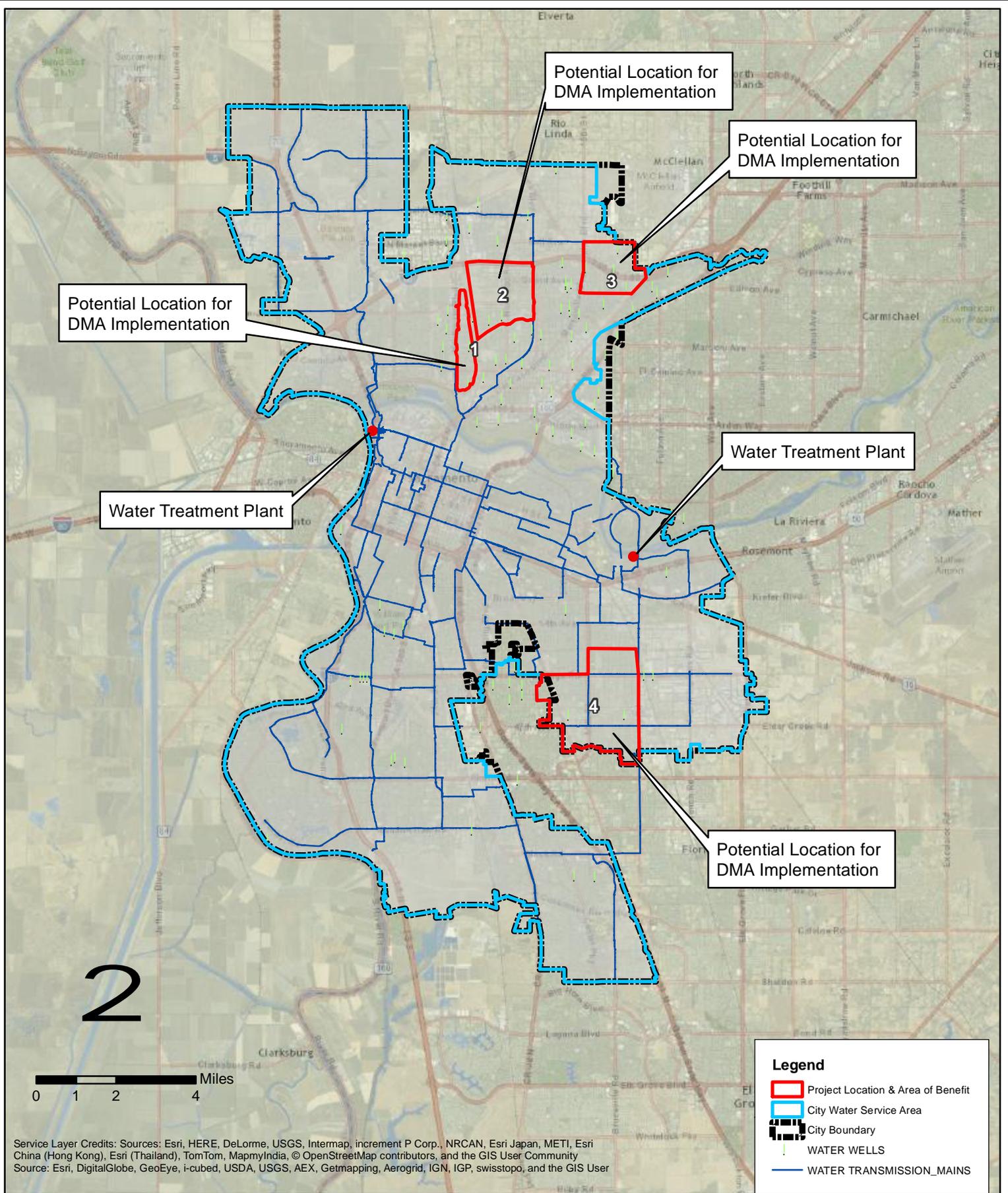
BUDGET INFORMATION - Construction Programs

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 (Columns a-b)
1. Administrative and legal expenses	\$ 18,286.00	\$	\$ 18,286.00
2. Land, structures, rights-of-way, appraisals, etc.	\$ 0.00	\$	\$ 0.00
3. Relocation expenses and payments	\$ 0.00	\$	\$ 0.00
4. Architectural and engineering fees	\$ 200,000.00	\$	\$ 200,000.00
5. Other architectural and engineering fees	\$ 7,785.00	\$	\$ 7,785.00
6. Project inspection fees	\$ 0.00	\$	\$ 0.00
7. Site work	\$ 40,208.00	\$	\$ 40,208.00
8. Demolition and removal	\$	\$	\$ 0.00
9. Construction	\$ 333,721.00	\$	\$ 333,721.00
10. Equipment	\$ 0.00	\$	\$ 0.00
11. Miscellaneous	\$	\$	\$ 0.00
12. SUBTOTAL (sum of lines 1-11)	\$ 600,000.00	\$ 0.00	\$ 600,000.00
13. Contingencies	\$	\$	\$ 0.00
14. SUBTOTAL	\$ 600,000.00	\$ 0.00	\$ 600,000.00
15. Project (program) income	\$	\$	\$ 0.00
16. TOTAL PROJECT COSTS (subtract #15 from #14)	\$ 600,000.00	\$ 0.00	\$ 600,000.00
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 X <input type="text" value="50"/> %	\$ 300,000.00

APPENDIX A

DEPARTMENT OF UTILITIES DISTRICT METERED AREA (DMAs) FOR WATER
LOSS CONTROL MAP



Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
 Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User

Legend

- Project Location & Area of Benefit
- City Boundary
- WATER WELLS
- WATER TRANSMISSION_MAINS



SYSTEM MAP

City of Sacramento Department of Utilities
 District Metered Areas (DMAs) for Water Loss Control

APPENDIX B

EXCERPTS FROM THE CITY OF SACRAMENTO WATER CONSERVATION
PLAN

Table 8-4: Implementation Suggestions for Recommended Conservation Plan

Conservation Measure	Overall Implementation Strategy	Next Steps	Target and Cost Basis Assumptions	Added Budget and/or Staffing Needs	Potential Cost Saving Strategies
Investigate Customer Potential Leaks and Water Waste Ordinance	Follow-up on all Water Waste Calls to City through 3-1-1 (generating a work order). Use "Leak Reports" from the AMI system to identify potential leaking accounts. Perform desktop review to ensure leak potential remains. Send out field staff based on prioritized list of higher leaking accounts first.	Review annually to refine and streamline approach and staffing needs.	Based on AMI Approved Plan A with assumption of 15% of accounts may have continuous running meter flagged (same percentage as FY11-12). Assume 1 hour per account at \$32 per hour.	Retrain Meter Readers to be Water Waste Investigators. Hire summer temporary staff to perform desktop reviews and send seasoned investigators in the field, if warranted.	Maximize desktop checks. When in the field and warranted attempt to convert field investigations into Water Wise House Calls. To the extent feasible, link to HET and Landscape incentive programs.
Water Loss Control Program	Update Water System Audit annually. Continue to refine assumptions in the Water System Audit (per CUWCC MOU requirements). Follow AWWA M36 best practices.	Review current strategies with Water Loss Control Expert.	Assumes an average up to \$1.45 million per year for spending on water loss control program.	Budget planned for Water Loss Control Study in FY2013.	Address issues with both apparent losses and real losses. Billing system may need closer review, given replacement of new meters on large accounts are helping to address meter accuracy issues and leak detection efforts indicate less issues with real losses than historically estimated.
AMI System with Meter Retrofits and Conservation Benefits	Continue with AMI and meter retrofit program.	Stay on track with funding and implementation.	Already approved with DOU AMI Plan "A"	Economize as much as possible.	Continue to seek funding support and cost efficiencies.
Meter Conversion - Mixed Use to Dedicated Irrigation Meter	Continue with the mixed use conversions per the replacement schedule of large meters. Consider separate dedicated meters instead of compound meters where practical (sites with large cooling tower and landscape demands).	To be determined based on Feasibility Study findings. Confirm if compound meter is sufficient to track irrigation demand using AMI to enable online water budgets tracking.	Lowest cost is to change along with meter replacement program for large metered accounts.	Depending on if acceleration of the schedule possible get more water budgets done more quickly. Assume done with meter change-outs over time.	Assume combined with other metering and irrigation related measures.

1 Priority based on benefits, challenges and relative cost effectiveness. See Appendix B for detailed cost effectiveness evaluation by conservation measure.

2 Based on analysis assumptions for market penetration needed to meet Gallons Per Capita Per Day (gpcd) water savings goals and based on cost effectiveness results.

DOU Lead: CO = Conservation Office, FO = Field Operations, PI = Public Information, IPM = Integrated Planning & Business Operations, DS = Development Services, CE = Code Enforcement

"Customer Categories: SF – Single Family, MF – Multi-family, CII – Commercial, Industrial and Institutional, All – All of the Above,

System – City's Distribution System, IRR - Dedicated Irrigation Meter; DOU - City Dept. of Utilities"

Partnerships: RWA = Regional Water Authority, SMUD = Sacramento Municipal Utility District, SRCSD = Sacramento Regional County Sanitation District, SSQP = Sacramento Stormwater Quality Partnership

APPENDIX C

PROJECT DOCUMENTATION

City of Sacramento Department of Utilities District Metered Areas (DMAs) for Water Loss Control
Detailed Budget
January 23, 2015

Work Plan Tasks	Requested Grant Funding	Federal Contribution	Department Contribution	Total
Task 1 - Project Management				\$ 7,314.20
Personnel Services (Salary, Wages, & Fringe)	\$ 7,314.20	\$ 3,657.10	\$ 3,657.10	\$ 7,314.20
Travel	\$ -	\$ -	\$ -	\$ -
Equipment	\$ -	\$ -	\$ -	\$ -
Supplies/Materials	\$ -	\$ -	\$ -	\$ -
Contractual/Construction	\$ -	\$ -	\$ -	\$ -
Contractual	\$ -	\$ -	\$ -	\$ -
Construction	\$ -	\$ -	\$ -	\$ -
Task 2 - DMA Implementation and Analysis				\$ 335,494.50
Personnel Services (Salary, Wages, & Fringe)	\$ 15,494.50	\$ 7,747.25	\$ 7,747.25	\$ 15,494.50
Travel	\$ -	\$ -	\$ -	\$ -
Equipment	\$ -	\$ -	\$ -	\$ -
Supplies/Materials	\$ -	\$ -	\$ -	\$ -
Contractual/Construction	\$ 320,000.00	\$ 160,000.00	\$ 160,000.00	\$ 320,000.00
Contractual	\$ 200,000.00	\$ 100,000.00	\$ 100,000.00	\$ 200,000.00
Construction	\$ 120,000.00	\$ 60,000.00	\$ 60,000.00	\$ 120,000.00
Task 3 - Leak Detection				\$ 41,757.15
Personnel Services (Salary, Wages, & Fringe)	\$ 6,757.15	\$ 3,378.58	\$ 3,378.58	\$ 6,757.15
Travel	\$ -	\$ -	\$ -	\$ -
Equipment	\$ -	\$ -	\$ -	\$ -
Supplies/Materials	\$ -	\$ -	\$ -	\$ -
Contractual/Construction	\$ 35,000.00	\$ 17,500.00	\$ 17,500.00	\$ 35,000.00
Contractual	\$ 35,000.00	\$ 17,500.00	\$ 17,500.00	\$ 35,000.00
Construction	\$ -	\$ -	\$ -	\$ -
Task 4 - Leak Repairs				\$ 215,148.95
Personnel Services (Salary, Wages, & Fringe)	\$ 40,148.95	\$ 20,074.48	\$ 20,074.48	\$ 40,148.95
Travel	\$ -	\$ -	\$ -	\$ -
Equipment	\$ -	\$ -	\$ -	\$ -
Supplies/Materials	\$ -	\$ -	\$ -	\$ -
Contractual/Construction	\$ 175,000.00	\$ 87,500.00	\$ 87,500.00	\$ 175,000.00
Contractual	\$ -	\$ -	\$ -	\$ -
Construction	\$ 175,000.00	\$ 87,500.00	\$ 87,500.00	\$ 175,000.00
				\$ 600,000.00

Task 1 - Project Management	Rate	Hours	Total	Role	Information Basis
Personnel Services (Salary, Wages, & Fringe)			\$ 7,314.20		
Program Manager	\$ 70.51	20	\$ 1,410.20	Administration	Based upon City staff rates and estimated hours
Program Specialist	\$ 59.04	100	\$ 5,904.00	Administration	Based upon City staff rates and estimated hours
Travel					
	\$ -		\$ -		
Equipment					
	\$ -		\$ -		
Supplies/Materials					
	\$ -		\$ -		
Contractual/Construction					
Contractual	\$ -		\$ -		
Construction	\$ -		\$ -		
Total			\$ 7,314.20		

Task 2 - DMA Implementation and Analysis	Rate	Hours	Total	Role	Information Basis
Personnel Services (Salary, Wages, & Fringe)					
Program Manager	\$ 70.51	30	\$ 2,115.30	DMA Selection, implementation, and oversight	Based upon City staff rates and estimated hours
Program Specialist	\$ 59.04	110	\$ 6,494.40	DMA Selection, implementation, and oversight	Based upon City staff rates and estimated hours
Senior Engineer	\$ 73.63	40	\$ 2,945.20	DMA Selection and implementation	Based upon City staff rates and estimated hours
Utilities Field Services Supervisor	\$ 56.14	20	\$ 1,122.80	DMA Selection and implementation	Based upon City staff rates and estimated hours
Utilities Operations and Maintenance Supervisor	\$ 71.52	20	\$ 1,430.40	DMA Selection and implementation	Based upon City staff rates and estimated hours
Supervising Engineer	\$ 78.50	10	\$ 785.00	DMA Selection and implementation	Based upon City staff rates and estimated hours
Associate Engineer	\$ 60.14	10	\$ 601.40	DMA Selection and implementation	Based upon City staff rates and estimated hours
Travel					
	\$ -		\$ -		
Equipment					
	\$ -		\$ -		
Supplies/Materials					
	\$ -		\$ -		
Contractual/Construction			\$ 320,000.00		
Contractual	\$ 200,000.00	1	\$ 200,000.00		
Professional Services for DMA Analysis and Setup				DMA Selection, implementation, and analysis	Previous project history
Construction	\$ 120,000.00	1	\$ 120,000.00		
DMA Implementation - DMA meter installation, vaults, bypass piping, etc.				Installation of meters, vaults, valve replacements, etc. as needed	Estimate based upon 4 DMAs @ \$30k each
Total			\$ 335,494.50		

Task 3 - Leak Detection	Rate	Hours	Total	Role	Information Basis
Personnel Services (Salary, Wages, & Fringe)			\$ 6,757.15		
Program Specialist	\$ 59.04	20	\$ 1,180.80	Oversight and Guidance	Based upon City staff rates and estimated hours
Senior Engineer	\$ 73.63	5	\$ 368.15	Oversight and Guidance	Based upon City staff rates and estimated hours
Utilities Field Services Supervisor	\$ 59.05	10	\$ 590.50	Leak Detection Oversight	Based upon City staff rates and estimated hours
Utilities Operations and Maintenance Supervisor	\$ 71.52	10	\$ 715.20	Leak Detection Oversight	Based upon City staff rates and estimated hours
Leadworker	\$ 50.55	30	\$ 1,516.50	Leak Detection	Based upon City staff rates and estimated hours
Serviceworker	\$ 47.72	50	\$ 2,386.00	Leak Detection	Based upon City staff rates and estimated hours
Travel	\$ -		\$ -		
Equipment	\$ -		\$ -		
Supplies/Materials	\$ -		\$ -		
Contractual/Construction			\$ 35,000.00		
Contractual	\$ 35,000.00	1	\$ 35,000.00	Leak Detection Services	Previous estimates
Contract leak detection services to supplement City staff					
Construction	\$ -		\$ -		
Total			\$ 41,757.15		

Task 4 - Leak Repairs	Rate	Hours	Total	Role	Information Basis
Personnel Services (Salary, Wages, & Fringe)			\$ 40,148.95		
Program Specialist	\$ 59.04	20	\$ 1,180.80	Oversight and Guidance	Based upon City staff rates and estimated hours
Senior Engineer	\$ 73.63	25	\$ 1,840.75	Design of Replacements	Based upon City staff rates and estimated hours
Associate Engineer	\$ 60.14	20	\$ 1,202.80	Design of Replacements	Based upon City staff rates and estimated hours
Utilities Field Services Supervisor	\$ 59.05	50	\$ 2,952.50	City-asset repair	Based upon City staff rates and estimated hours
Utilities Operations and Maintenance Supervisor	\$ 71.52	50	\$ 3,576.00	City-asset repair	Based upon City staff rates and estimated hours
Leadworker	\$ 50.55	270	\$ 13,648.50	City-asset repair	Based upon City staff rates and estimated hours
Serviceworker	\$ 47.72	330	\$ 15,747.60	City-asset repair	Based upon City staff rates and estimated hours
Travel					
	\$ -		\$ -		
Equipment					
	\$ -		\$ -		
Supplies/Materials					
	\$ -		\$ -		
Contractual/Construction			\$ 175,000.00		
Contractual	\$ -		\$ -		
Construction	\$ 175,000.00	1	\$ 175,000.00		
Pipeline repair materials, new pipeline materials, and other associated construction costs					Estimate of costs to fund repairs and small replacements for pipelines, valves, etc.
Total			\$ 215,148.95		

APPENDIX D

ANNUAL DIVERSIONS

Table 3-1. Summary of 2005 through 2010 Water Production and Use^(a)

Parameter	Year	Water Production				Water Use		
		Fairbairn Water Treatment Plant (FWTP)	Sacramento River Water Treatment Plant (SRWTP)	Groundwater Wells	Total Water Production	Retail (City of Sacramento)	Wholesale & Wheeling	Total Water Use
Production/Use, acre-feet (af)	2005	53,600	65,200	20,300	139,100	131,500	7,500	139,000
	2006	62,900	56,000	18,700	137,600	130,900	6,700	137,600
	2007	46,900	83,500	20,300	150,700	138,600	19,000	157,600
	2008	55,600	65,700	19,400	140,700	132,400	6,400	138,800
	2009	52,800	54,600	20,000	127,400	121,400	4,700	126,100
	2010	53,800	43,700	18,400	115,900	110,600	5,300	115,900
Daily Production/Use, million gallons per day (mgd)	2005	49.0	58.3	16.5	123.8	117.4	6.7	124.1
	2006	52.0	62.1	17.1	131.1	116.9	6.0	122.9
	2007	52.5	60.8	18.6	132.0	123.7	17.0	140.7
	2008	48.9	50.9	17.2	117.0	118.2	5.7	123.9
	2009	44.1	44.1	17.2	105.4	108.4	4.2	112.6
	2010	40.0	46.7	16.3	102.9	98.7	4.8	103.5
Percent Production/Use	2005	39%	47%	15%	100%	95%	5%	100%
	2006	46%	41%	14%	100%	95%	5%	100%
	2007	30%	55%	14%	100%	88%	12%	100%
	2008	39%	47%	14%	100%	95%	5%	100%
	2009	41%	43%	16%	100%	96%	4%	100%
	2010	46%	38%	16%	100%	95%	5%	100%
Average	40%	45%	15%	100%	94%	6%	100%	

^(a) Source: 2005-2010 System Demand.xls, City of Sacramento Department of Utilities.

APPENDIX E

CITY OF SACRAMENTO

EMPLOYEE FRINGE BENEFITS

Fringe Benefits for Department Employees By Classification

Classification	Base Salary	Base Rate	Fringe Rate	Total
Program Manager	\$ 106,662.00	\$ 51.28	\$ 19.23	\$ 70.51
Program Specialist	\$ 89,643.00	\$ 43.10	\$ 15.94	\$ 59.04
Supervising Engineer	\$ 119,887.00	\$ 57.64	\$ 20.87	\$ 78.51
Senior Engineer	\$ 113,523.00	\$ 54.58	\$ 19.05	\$ 73.63
Associate Engineer	\$ 89,026.00	\$ 42.80	\$ 17.34	\$ 60.14
Utilities Field Services Supervisor	\$ 84,464.00	\$ 40.61	\$ 18.44	\$ 59.05
Utilities Operations and Maintenance Supervisor	\$ 110,083.00	\$ 52.92	\$ 18.60	\$ 71.52
Leadworker	\$ 73,327.00	\$ 35.31	\$ 15.24	\$ 50.55
Serviceworker	\$ 66,738.00	\$ 32.08	\$ 15.64	\$ 47.72

Fringe Rate includes medical, incentives, pension, and other benefits for 2014.

Fully burdened rate will be used for billing and will be at the current rate at the time of service.