

**WaterSMART: Water and Energy Efficiency Grants for FY 2012  
FOA R12SF80049**

**SACRAMENTO SUBURBAN WATER DISTRICT  
NORTH ANTELOPE IN-CONDUIT HYDROELECTRIC AND PUMP BACK  
CONJUNCTIVE USE PROJECT**

***Applicant:***

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**Technical Proposal: EXECUTIVE SUMMARY**

**Date:** January 19, 2011

**Applicant Name:** Sacramento Suburban Water District

**City, County, State:** Sacramento County, California

**One paragraph project summary:**

This project consists of the installation of the North Antelope in-conduit hydroelectric and booster pump station at Sacramento Suburban Water District's (SSWD) Antelope pressure reducing station (PRS). The hydroelectric and booster pump station will generate electricity from flow from the existing 48-inch pipeline upstream of the existing Antelope PRS. The Antelope PRS consists of four pressure reducing valves (PRVs) to reduce pressure by approximately 48 pounds per square inch (psi) in the Folsom Reservoir surface water supply it receives through the Cooperative Transmission Pipeline from Folsom Reservoir. The hydroelectric and booster pump station will pump groundwater produced from wells in the SSWD North Service Area (NSA) eastward into the Cooperative Transmission Pipeline for conveyance to neighboring water districts who rely on surface water for the majority of their supply. This project will generate renewable energy when SSWD receives surface water from Folsom Reservoir via the Cooperative Transmission Pipeline and will provide for the reversal of flow in the Cooperative Transmission Pipeline, thereby allowing SSWD to export previously banked groundwater to the other agencies connected to the pipeline. This project will expand conjunctive use opportunities in the neighboring water agency service areas, enabling these agencies to use more groundwater during dry years. This project meets the funding opportunity announcement (FOA) goals in that it increases the use of renewable energy sources in the management and delivery of water resulting in quantifiable and sustained energy savings and improved water management. SSWD has committed \$986,610 to the project and is seeking to be matched by \$300,000 in WaterSMART Water and Energy Efficiency Grants for FY 2012 funds.

**Technical Proposal: BACKGROUND DATA**

Figure 1 provides a map of the area showing the geographic location of SSWD and the project area. Figure 2 shows the location of the Cooperative Transmission Pipeline and the project location. SSWD serves a population of approximately 171,000 in Sacramento County, California.

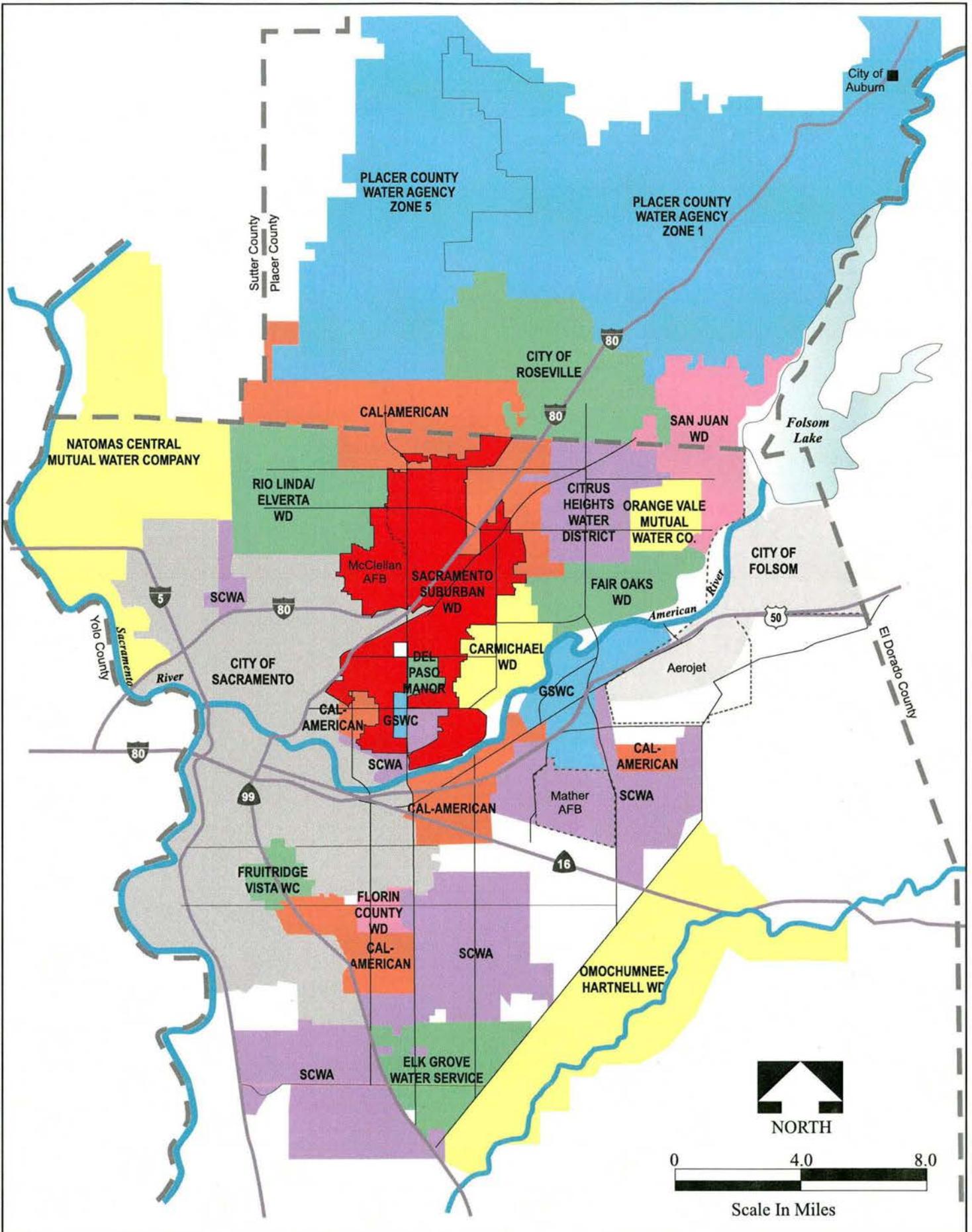
SSWD uses both surface water and groundwater as its supply sources. SSWD receives surface water from Folsom Reservoir via San Juan Water District (SJWD) in SSWD's NSA and from the American River via the City of Sacramento in SSWD's South Service Area (SSA). Surface water supplies include surface water from Placer County Water Agency (PCWA), the City of Sacramento, and occasional Section 215 Central Valley Project (CVP) water from the United States Bureau of Reclamation (Reclamation). The PCWA water supply ranges from 12,000 to 29,000 acre-feet per year (ac-ft/yr) and is available only during Water Forum wet years, when the March through November unimpaired inflow into Folsom Reservoir is greater than 1,600,000 acre-feet (ac-ft). PCWA can take back the water at anytime for their needs. SSWD is eligible to purchase Section 215 Reclamation CVP water when it is available in average and wet water years. SSWD has an agreement with the City of Sacramento to receive up to 20 million gallons per day (mgd) of American River water. SSWD's ability to obtain this surface water supply from the City of Sacramento is tied to Hodge flow

restrictions in the American River which are dependant upon the time of year. The Hodge decision and possible impacts of ongoing efforts such as the Water Forum Flow Management Standards and the Operational Criteria and Plan create uncertainty as to the extent of availability of and can legally constrain the surface water used by SSWD in its SSA if minimum Hodge flows or other criteria in the Lower American River are not met.

SSWD's groundwater supply infrastructure has a total groundwater pumping capacity of 98,390 gallon's per minute (gpm) from 89 active wells. The groundwater basin underlying SSWD is located in the North American Sub-basin which is part of the larger Sacramento Valley Groundwater Basin. The Sacramento Groundwater Authority adopted its groundwater management plan (GMP) in December 2003 and adopted a revised GMP in December 2008. SSWD's portion of the "sustainable yield" of the portion of the North American Sub-basin within the Sacramento County as defined as part of the Water Forum process and the formation of SGA is 35,035 ac-ft/yr.

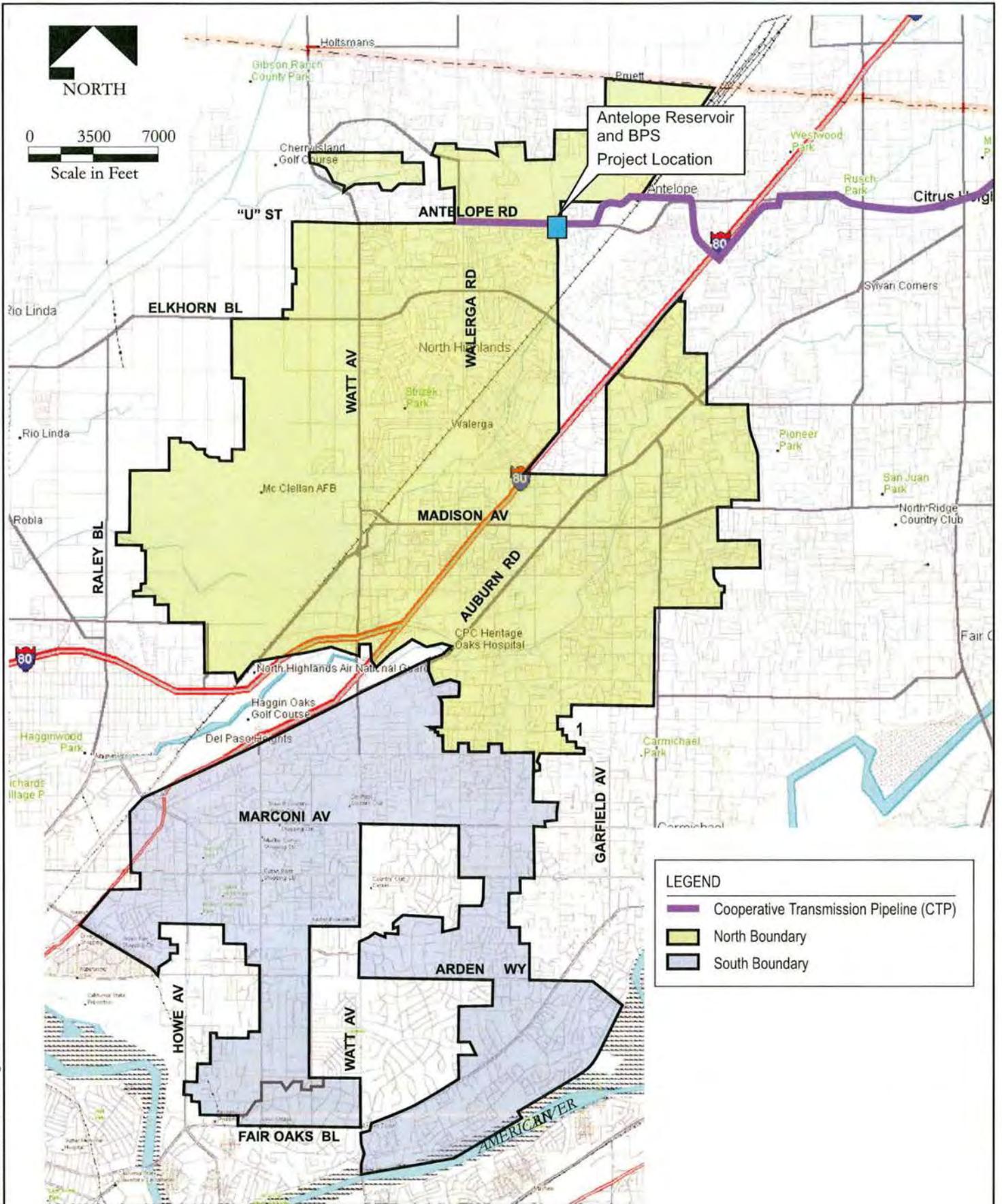
The water distribution system consists of 682 miles of pipeline that ranges in size from 48-inch mains down to 4-inch laterals. There are six active storage tanks in the NSA totaling over 10 million gallons (MG) and one active 5 MG storage tank in the SSA. There are 45 emergency interties with neighboring agencies along SSWD's boundary. Water delivered by SSWD is primarily used for municipal purposes, with a small percentage (approximately 10%) used by commercial and industrial customers. There are currently approximately 44,200 accounts that serve residential, commercial, industrial, institutional, and landscape irrigation customers. In 2010 the total water use was 36,386 ac-ft/yr. Surface water use was 16,208 ac-ft/yr and groundwater use was 20,178 ac-ft/yr. The 2035 projected total water use is 43,067 ac-ft/yr.

SSWD has negotiated long and short term Warren Act agreements with Reclamation. SSWD has also successfully administered a meter retrofit grant received as part of the Challenge Grant Program: Recovery Act of 2009 Water Marketing and Efficiency Grants, Funding Opportunity Announcement No. 09SF811499, in May 2009.



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DATE 01-11-12	PROJECT 142078	SITE <b>Sacramento Suburban Water District</b>
		TITLE <b>Project Vicinity Map</b>
		<b>Figure 1</b>



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DATE	01-11-12	PROJECT	142078	SITE	<b>Sacramento Suburban Water District</b>		<b>Figure 2</b>
	<b>Brown AND Caldwell</b>		TITLE	<b>Project Location In-Conduit Hydroelectric and Booster Pump Station</b>			

## Technical Proposal: TECHNICAL PROJECT DESCRIPTION

This project consists of the design and construction of an in-conduit hydroelectric and booster pump station at SSWD's Antelope PRS with the ability to generate energy and provide for the reversal of flow in the Cooperative Transmission Pipeline thereby allowing additional groundwater banking and exchange opportunities for SSWD and its neighboring water agencies. The work tasks for this project are described below.

**Task 1. Project Management and Administration:** Work to be completed as part of this task includes SSWD Board communications, budget monitoring, project status meetings, and communication with contractors.

**Task 2. Design Completion:** SSWD will utilize in-house staff and consulting services to finalize the construction plans and details required project bid services. Preliminary (10%) drawings are provided for reference in Appendix A. The 30%, 60%, 90%, and final design along with a bid package for the project will be completed in this task. For this project, American Water Works Association (AWWA) standards and SSWD Standard Details and Specifications will be followed along with any other applicable project design and material standards.

**Task 3. Environmental Compliance:** A categorical exemption will be prepared per California Environmental Quality Act (CEQA) requirements, and a categorical exclusion will be prepared under the National Environmental Policy Act (NEPA). A Storm Water Pollution Prevention Plan will be prepared and implemented as part of project construction and standard storm water best management practices will be required.

**Task 4. Permitting:** The following permits will be obtained as part of this task:

- California Department of Public Health Water System Permit Amendment
- California Department of Public Health Public Water Supply Permit Amendment
- County of Sacramento Electrical Permit

The California Department of Public Health Permit Amendment will amend SSWD's existing permit to add the construction of a booster pump station. The California Department of Public Health Public Water Supply Amendment will also amend SSWD's existing permit. This amendment covers SSWD water supply operations; it will allow SSWD to provide water through its facility to another agency.

**Task 5. Project Bidding and Contractor Selection:** Upon design completion, SSWD will advertise the project and solicit competitive bids to construct the project. SSWD will select the most qualified contractor with the best price to complete the project after the bids are opened.

**Task 6. Construction:** Mobilization and site preparation including an onsite meeting with the construction contractor, and equipment mobilization to the project location. On-site safety and security equipment will be installed at this stage. The storm water best

management practices identified in the Storm Water Pollution Protection Plan (to be prepared by the contractor) will also be implemented during this stage of construction. Prior to installation of the in-conduit hydroelectric and booster pump station facilities, the site will be excavated in accordance with the final plans and specifications. Construction of the hydroelectric and pump station includes, but is not limited to, construction and installation of piping and appurtenances, turbine, generator, switch gear, controls, electrical equipment and tie-in to grid, and building. Following construction of the hydroelectric and booster pump station, start-up and control testing will be performed. Testing will include meter flow testing and calibration, motorized valve control testing and calibration, and pump flow rate testing. Finally, general site cleanup and demobilization will be performed and final project certification will be performed.

**Task 7. Monitoring and Performance Reporting:** SSWD will submit financial and progress reports quarterly to the Reclamation. Following execution of the grant agreement, quarterly reports will be prepared assessing the progress and accomplishments of the North Antelope in-conduit hydroelectric project. A project completion report will also be prepared at the end of the project, anticipated to be in mid 2014.

**Technical Proposal: EVALUATION CRITERIA**

**Evaluation Criterion A: Water Conservation (32 points)**

**Subcriterion No. A.1 – Water Conservation**

**A.1(a) Quantifiable Water Savings:** Not applicable.

**A.1(b) Improved Water Management:**

**Describe the amount of water better managed.** 3,400 ac-ft/yr will be better managed as a result of this project. The booster pump station will have a design flow of 4,200 gallon per minute (gpm). This pump station will pump groundwater produced from wells in the SSWD NSA eastward into the Cooperative Transmission Pipeline for conveyance to the various SJWD family of water agencies (SJWD, Citrus Heights Water District, Fair Oaks Water District, Orange Vale Water Company, City of Folsom). Currently, surface water from Folsom Reservoir treated at SJWD's Sidney Peterson Water Treatment Plant is transmitted to Citrus Heights Water District, Fair Oaks Water District, Orange Vale Water Company, City of Folsom, SSWD and SJWD through the Cooperative Transmission Pipeline. All of these districts, with the exception of SSWD, rely on surface water for the majority of their supply with the remaining small portion of supply coming from local groundwater wells. This project will provide for the reversal of flow in the Cooperative Transmission Pipeline, thereby allowing SSWD to export previously banked groundwater to the other agencies connected to the pipeline. This project will expand conjunctive use opportunities in the SJWD family of agencies service areas, enabling these water agencies that typically rely on surface water to use more groundwater during dry years.

Estimated amount of water better managed = 3,400 ac-ft/yr (based on 4,200 gpm pumped for 6 months)

SSWD's average annual water supply over the past five years is 38,895 ac-ft/yr, as shown below.

Year	Total, ac-ft/yr
2006	39,904
2007	44,582
2008	38,498
2009	35,105
2010	36,386
5-year average	38,895

The amount of water expected to be better managed as a percentage of the average annual water supply is 9 percent of SSWD's average annual water supply, as shown in the calculation below.

$$3,400 \text{ ac-ft/yr} / 38,895 \text{ ac-ft/yr} = 9\%$$

**Subcriterion No. A.2 – Percentage of Total Supply**

**Provide the percentage of total water supply conserved (Estimated Amount of water conserved/Average Annual Water Supply):** Not applicable.

**Subcriterion No. A.3 – Reasonableness of Costs Total project cost:**

**Annual acre-feet conserved (or better managed):** 3,400 ac-ft/yr (basis of this quantity is described in A.1(b), above).

**Expected life of the improvement (years):** The expected life of this improvement is 50 years. This is based on the typical of life the major project components.

**Cost of water better managed:** \$1,286,610/(3,400 ac-ft/yr x 50 years) = \$7.60/ac-ft

**Evaluation Criterion B: Energy-Water Nexus (16 points)**

**Subcriterion No. B.1 – Implementing Renewable Energy Projects Related to Water Management and Delivery:**

- **Describe the amount of energy capacity** – The capacity of this system is 200 kW. This is based on the design head range of 100 ft to 140 ft and the design flow rate range of 10 cubic feet per second (cfs) to 28 cfs. The formula used to calculate the energy capacity is as follows:

$$\text{Energy capacity, kW} = QH/3,956 \times \text{eff} \times 0.7457 \text{ kW/hp}$$

Where

Q= flow, ranging from 10 cfs to 28 cfs (converted to gallons per minute)

H = head, ranging from 100 ft to 140 ft

eff = efficiency of the system is 69%

3,956 ft-gal/hp-min = conversion constant, based on density of water=62.4lb/ft<sup>3</sup> and gravitational acceleration=32.2 ft/sec<sup>2</sup>

1 hp = 0.7457 kW

The turbines for this site were sized to optimize the flow and head available at the hydroelectric and booster pump station for maximum efficiency. The selected turbine for this site is a Cornell Pump Model 10TR1. The minimum flow that the turbine can operate is approximately 10 cfs and the maximum flow is approximately 14.5 cfs. Flows above this value will bypass the turbine in order for the station to

maintain the required flow range and optimize efficiency.

- **Describe the amount of energy generated** –The project will generate approximately 740,000 KWh per year. This is based on the capacity of the two 10TRI units combined with SSWD’s surface water use in the NSA in 2010. The year 2010 was used for this estimate because it was classified by the Water Forum as a wet year, which is the typical year type for SSWD to operate the in-conduit hydroelectric units. This annual energy generation will vary annually depending upon the amount of surface water that SSWD receives through the Cooperative Transmission Pipeline. The spreadsheet calculations for the estimated amount of energy generated is provided in Appendix B.

**Table 1. Design Criteria and Energy Production**

<b>Design Criteria</b>	<b>Two 10TRI Units</b>
Design Head	100-140 ft
Design Flow	10 cfs (min) – 26 cfs (max)
Nameplate Capacity	200 kW
Estimate Annual Generation	740,000 KWh

**Describe any other benefits of the renewable energy project** - Other benefits of this project are ability to expand conjunctive use of groundwater, sustaining flows in the lower American River during dry years by providing groundwater to the surface water users thereby reducing their demand on the river. In addition, this project will provide a potential secondary source of available supply for approximately 265,000 retail customers in the SJWD and family of agencies service area in the event that the capacity of the Peterson Surface Water Treatment Plant is limited due to conditions beyond the control of SJWD. In general, having access to an additional source of water increases water supply reliability and protects SJWD customers’ limited, local groundwater resources.

There are no expected water needs of this renewable energy project.

**Subcriterion No. B.2 – Increasing Energy Efficiency in Water Management**  
**Describe any energy efficiencies that are expected to result from implementation of the water conservation management project.** Not applicable.

**Evaluation Criterion C: Benefits to Endangered Species (12 points)**

**For projects that will directly benefit federally-recognized candidate species, include the following:**

- (1) **Relationship of the species to water supply** Fish species relying on the American River water supply include the endangered winter-run Chinook Salmon, the threatened spring-run Chinook Salmon, and the threatened Steelhead Trout. Approximately 20 miles of the lower American River to the confluence with the Sacramento River, an approximate 40 mile stretch of the lower Sacramento River, and an approximately 30 mile stretch of the lower Cosumnes River, and several other tributaries that have been identified under the Endangered Species Act as being critical habitat would be impacted by this project.
- (2) **What is the extent to which the proposed project would reduce the likelihood of listing or would otherwise improve the status of the species?** This project will improve the volume or flow regimes of water

through the habitat area during dry years because this project expands the ability to implement conjunctive use of groundwater and surface water. This will result in sustaining flows in the lower American River during dry years by providing groundwater to the surface water users thereby reducing their demand on the American River.

**Evaluation Criterion D: Water Marketing (12 points)**

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

The project will make water available to meet existing dry year water supply needs of San Juan Water District's family of water agencies (Citrus Heights Water District, Fair Oaks Water District, Orange Vale Water Company, City of Folsom, and San Juan Water District retail water system). These water agencies would be new customers and this project would enable SSWD to provide a much needed dry year supply to these agencies.

- (1) Estimated amount of water to be marketed:** It is estimated that up to 3,400 ac-ft/yr will be marketed as a result of this project. This is based on a pumping capacity of 4,200 gpm pumped for six months out of the year.
- (2) A detailed description of the mechanism through which water will be marketed:** The mechanism through which water will be marketed is the creation of a new water market based on the regional conjunctive use operation of the Cooperative Transmission Pipeline. SSWD's groundwater will be marketed to the SJWD family of water agencies who will use the water in dry years or during emergencies to reduce their dry year water dependency on American River water from Folsom Reservoir.
- (3) Number of users, types of water use, etc. in the water market:** The five water agencies in the San Juan Water District family of water agencies (Citrus Heights Water District, Fair Oaks Water District, Orange Vale Water Company, City of Folsom, and San Juan Water District retail water system) would be the users. These agencies have a combined retail customer count of approximately 265,000 residential, commercial, institutional, and industrial customers.
- (4) A description of any legal issues pertaining to water marketing:** There are no restrictions under any existing laws or contracts pertaining to water marketing.
- (5) Estimated duration of the water market:** It is estimated that the water would be available six months per year. The life of the equipment for this project is expected to be 50 years. The need for the groundwater from SSWD to the other water agencies is expected to occur in dry years.

**Evaluation Criterion E: Other Contributions to Water Supply Sustainability (14 points)**

- (1) Will the project make water available to address a specific concern?** This project will address regional water supply shortages in dry years that occur due to climate variability and a reduced availability of surface water supply in dry years. The San Juan family of water agencies, located to the east of SSWD, are largely dependent upon surface water. In dry years, their surface water supply from the Reclamation owned and operated Folsom Reservoir is greatly reduced.

The Water Forum Agreement (WFA) was developed in an attempt to preserve the fishery, wildlife, recreational, and aesthetic values of the lower American River and in an effort to provide a safe and reliable water supply for the Sacramento region. SJWD and SSWD are signatories of the WFA. The WFA

reduces the amount of surface water from the American River that agencies in the Sacramento region, including SJWD and SSWD, can use in average and dry years.

The Sacramento Regional Water Authority (RWA) developed a Regional Water Master Plan in 2003 that reviewed the concepts on how the Sacramento region could utilize groundwater and surface water conjunctively to meet the objectives set forth in the Water Forum process. In June 2006 RWA developed an Integrated Regional Water Management Plan (IRWMP) that identifies specific projects and implementation programs and agreements between different affected agencies to identify projects to put conjunctive use in place. An intended purpose of this IRWMP is to provide and encourage regional opportunities for water resources planning and project development. The ability to pump water back from SSWD to the SJWD family of agencies is included in the IRWMP.

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

This project promotes and encourages collaboration among six water agencies in northern Sacramento County, including SSWD and the San Juan family of agencies: San Juan Water District, City of Folsom, Orange Vale Water Company, Citrus Heights Water District, and Fair Oaks Water District. This project will promote and allow collaboration of these water agencies during dry years emergencies by providing a new water supply from SSWD to the other agencies and helping to prevent a water shortage for over 265,000 retail customers.

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

This project will serve as an example of water and energy conservation and efficiency in the Sacramento region. This would be the first project of its kind in the Sacramento region. This project would increase awareness among Sacramento water agencies of the opportunities to generate energy that are otherwise wasted. This project serves as an excellent demonstration project for how the enhancement of existing facilities can optimize and increase flexibility of water and energy resources in the Sacramento region resulting in increased water and energy supply reliability.

**Provide sufficient explanation of the expected benefits and their significance.**

**Evaluation Criterion F: Implementation and Results (10 points)**

**Subcriterion No. F1 – Project Planning**

**(1) Identify any district-wide, or system-wide, planning that provides support for the proposed project.**

The following reports/studies have been prepared to support this project.

**Potential Opportunities for In-Conduit Hydropower Production Analysis**

**(2010)** – SSWD analyzed the potential opportunities for in-conduit hydropower production throughout their system. SSWD named five potential locations within the SSWD system: Antelope PRS, Verner PRS, McClellan Business Park Booster Pump Station #1 and #2 sites, and Capehart Supply Pipeline. The preliminary analysis concluded that both the Antelope PRS and Verner PRS warranted further investigation.

**In-Conduit Hydroelectric Project Feasibility Study (November 2011) –** SSWD analyzed the feasibility of an in-conduit hydroelectric and booster pump station at both the Antelope PRS and Verner PRS. A preliminary feasibility analysis of the two locations showed that Antelop PRS would yield the greatest power generation, and would provide the most feasible location for a new hydroelectric plant. The feasibility study describes the existing operation of the Antelop PRS and Verner PRS, the design criteria for the in-conduit hdyro-electric project for each site, preliminary plant design plans, a description of the proposed controls, and an updated economic analysis for both locations.

**SSWD Water System Master Plan (July 2009) –** SSWD identified and quantified the excess groundwater pumping capacity at buildout in their water system. A comparison of the 2035 monthly maximum day and peak hour demands to the well and well plus booster pump reliability capacity was made to determine the available excess capacity on a monthly basis in each of SSWD's service areas. It was estimated that the NSA has over 22,000 ac-ft/yr of excess capacity.

**Sacramento RWA IRWMP (June 2006) -** An intended purpose of this IRWMP is to provide and encourage regional opportunities for water resources planning and project development. The ability to pump water back from SSWD to the SJWD family of agencies is included in the IRWMP.

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

SSWD has developed 10 percent design drawings in support of the proposed project as part of the In-Conduit Hydroelectric Project Feasibility Study. These design drawings are included in Appendix A of this application.

**(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).**

- Water Forum Agreement – This project is consistent with the local Water Forum Agreement's two coequal objectives: (1) Provide a reliable and safe water supply for the region's economic health and planned development to the year 2030; and (2) Preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River. Conjunctive use and reduced dependence on the American River is an integral element of the Water Forum Agreement.
- Sacramento Regional Water Authority Integrated Regional Water Management Plan (IRWMP) – A key water supply objective is to identify and develop specific integrated facilities and operations that will enhance regional and individual drinking water supply availability and reliability.

**Subcriterion No. F2 – Readiness to Proceed**

**(1) Describe the implementation plan of the proposed project.** SSWD currently owns the land on which this project will be constructed. 10% design plans are included in Appendix A. Once SSWD receives grant funds, SSWD will be ready to complete the design documents and proceed with the environmental and construction process.

**(2) Include an estimated project schedule.** This schedule is based on the assumption that funds will be awarded no later than September 30, 2012, per Section II.B. of the FOA.

The following provides an overview of the estimated project schedule:

Project Stage/Milestone	Dates	Duration
Design Documents Completed	October 2012 – December 2012	3 months
Environmental (CEQA/NEPA)	October 2012 – December 2012	3 months
Project Advertisement	January 2013	1 month
Contractor Selected	February 2013	1 month
Construction	February 2013 – April 2014	15 months
Monitoring and Performance Reporting	October 2012 – May 2014	19 months

**(3) Explain any permits that will be required, along with the process for obtaining such permits.**

The following permits will be required for this project:

- California Department of Public Health Public Water System Permit Amendment
- California Department of Public Health Public Water Supply Amendment
- County of Sacramento Electrical Permit

The Department of Public Health Permit Amendment will amend SSWD’s existing permit to add the construction of a booster pump station. The Public Water Supply Amendment will also amend SSWD’s existing permit. This amendment covers SSWD water supply operations; it will allow SSWD to provide water through its facility to another agency.

The other permits required for contractors to submit for approval are a traffic control plan and placement of storm water mitigations measures in the areas of the work.

**Subcriterion No. F3 – Performance Measures**

**(1) Brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project.** SSWD will quantify the actual benefits of this project by measuring the energy generated through the in-conduit hydroelectric station. They will also be able to quantify the water better managed based on the metered quantity of water pumped back into the Cooperative Transmission Pipeline. An additional performance measure of this project will be the quantity of surface water that would otherwise be used, but will be replaced by groundwater during dry years as a result of this project.

**Evaluation Criterion G: Connection to Reclamation Project Activities (4 points)**

- (1) How is the proposed project connected to Reclamation project activities?**  
 This project is connected to Reclamation project activities because SSWD has opportunities to purchase Section 215 water from Reclamation. In addition, the water it receives through the Cooperative Transmission Pipeline is from Folsom Reservoir, which is a Reclamation owned and operated facility. Also, there is a direct connection because the groundwater that SSWD will pump back to the SJWD family of agencies will offset Reclamation surface water that the SJWD family of agencies would otherwise be using from Folsom Reservoir during dry years.
- (2) Does the applicant receive Reclamation project water?** Yes, SSWD receives Reclamation project water from Folsom Reservoir in some years when it

purchases Section 215 water.

- (3) **Is the project on Reclamation project lands or involving Reclamation facilities?** Yes, this project does impact the operation of Folsom Reservoir which is a Reclamation facility.
- (4) **Is the project in the same basin as a Reclamation project or activity?** Yes, this project is in the American River Basin which is the same basin as Folsom Reservoir, a Reclamation project.
- (5) **Will the proposed work contribute water to a basin where a Reclamation project is located?** Yes, other benefits of the expanded conjunctive use of groundwater created by this project include sustaining flows in the lower American River during dry years by providing groundwater to the surface water users thereby reducing their demand on the river. This project allows for less water to be consumed from Folsom Reservoir during dry years.

#### **Description of Performance Measures**

##### **Performance Measure No. B – Projects with Quantifiable Energy Savings**

##### **B.1 – Implementation of Renewable Energy Improvements Related to Water Management and Delivery**

(1) **Explain the methodology used for quantifying the energy generated from the renewable energy system.** The quantity of energy generated will be calculated using the electricity meters that will be installed as part of this project. This will enable SSWD to measure the exact amount of energy generated as part of this project.

(2) **Explain the methodology for calculating the quantity of energy savings resulting from the activity.** The quantity of energy savings will be calculated using the electricity meters that will be installed as part of this project. This will enable SSWD to measure the exact amount of energy generated as part of this project.

(3) **Explain anticipated cost savings for the project.** The annual average anticipated cost savings for the project based on the Sacramento Municipal Utility District's net metering/feed-in tariff rates for super peak, on peak, and off peak times of day is \$75,628/yr when SSWD receives surface water through the Cooperative Transmission Pipeline.

(4) **Include an estimate of energy conserved.** The estimate of energy conserved is based on the energy generated as part of this project. It is estimated that 740,000kWH will be conserved as part of this project. Without this project this energy would be otherwise lost and wasted.

#### **Environmental Compliance**

- (1) **Will the project impact the surrounding environment? (e.g., soil[dust], air, water [quality and quantity], animal habitat)** All work will be performed in compliance with local and state storm water pollution prevention requirements to ensure required erosion control measures are implemented.
- (2) **Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?** No.
- (3) **Are there wetlands or other surface waters inside the project**

**boundaries that potentially fall under CWA jurisdiction as “waters of the United States”? If so, please describe and estimate any impacts the project may have.** There are no wetlands or other surface waters inside the project boundaries that fall under CWA jurisdiction.

- (4) When was the water delivery system constructed?** SSWD’s water distribution system is comprised of two former water district systems that were consolidated in 2002 when SSWD was formed (Arcade Water District, established in 1954, and Northridge Water District, established in 1956).
- (5) Will the project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)?** No. SSWD water system does not consist of any irrigation distribution systems.
- (6) Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register or Historic Places?** No listed or eligible structures will be involved in this project.
- (7) Are there any known archeological sites in the proposed project area?** There are no known archeological sites in the proposed project area.
- (8) Will the project have a disproportionately high and adverse effect on low income or minority populations?** No.
- (9) Will the project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?** No.
- (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.

**Required Permits and Approvals**

The following permits will be obtained as part of this task:

- California Department of Public Health Water System Permit Amendment
- California Department of Public Health Public Water Supply Permit Amendment
- County of Sacramento Electrical Permit

The California Department of Public Health Water System Permit Amendment will amend SSWD’s existing permit to add the construction of a booster pump station. The Public Water Supply Amendment will also amend SSWD’s existing permit. This amendment covers SSWD water supply operations; it will allow SSWD to provide water through its facility to another agency.

## Letters of Project Support



January 4, 2012

Bill George, Chair  
Pam Tobin, Vice Chair

**Members**

- California American Water
- Carrollwood Water District
- Citrus Heights Water District
- Del Paso Manor Water District
- El Dorado Irrigation District
- Elk Grove Water District
- Fair Oaks Water District
- Folsom, City of
- Fruitridge Vista Water Company
- Golden State Water Company
- Lincoln, City of
- Orange Vale Water Company
- Placer County Water Agency
- Sancho Murieta Community Services District
- Roseville, City of
- San Joaquin / Elverta Community Water District
- Sacramento, City of
- Sacramento County Water Agency
- Sacramento Suburban Water District
- San Juan Water District
- West Sacramento, City of

**Associates**

- El Dorado County Water Agency
- Sacramento Municipal Utility District
- Sacramento Regional County Sanitation District

Mr. Rob Roscoe  
Sacramento Suburban Water District  
3701 Marconi Avenue, Suite 100  
Sacramento, CA 95821

**Subject: Reclamation's WaterSMART: Water and Energy Efficiency Grants for FY 2012**

Dear Mr. Roscoe:

On behalf of the Regional Water Authority (RWA), I am pleased to provide this letter of support for Sacramento Suburban Water District's North Antelope in-conduit hydroelectric and pump station conjunctive use project. RWA is a joint powers authority formed in 2001 comprised of more than 20 regional water supply interests in Sacramento, Placer, El Dorado, and Yolo counties. RWA's mission is to serve and represent regional water supply interest and assist RWA members with protecting and enhancing the reliability, availability, affordability, and quality of water resources. An intended purpose of RWA's Integrated Regional Water Management Plan is to provide and encourage regional opportunities for water resources planning and project development.

The proposed project will result in increased energy efficiency and conjunctive water management, which is a key objective of RWA's adopted Integrated Regional Water Management Plan. RWA hopes that the Bureau of Reclamation recognizes the value of this project to the Sacramento region, the Bay-Delta, and the State.

Sincerely,

John Woodling  
Executive Director

January 9, 2012



Sacramento City-County  
Office of Metropolitan  
Water Planning

Mr. Rob Roscoe  
Sacramento Suburban Water District  
3701 Marconi Avenue, Suite 100  
Sacramento, CA 95821

Subject: Reclamation's WaterSMART: Water and Energy Efficiency Grants for FY 2012

Dear Mr. Roscoe:

I am writing in support of the Sacramento Suburban Water District's (SSWD) grant proposal to Reclamation's WaterSMART Water and Energy Efficiency Grant Program.

The Water Forum is a stakeholder organization representing over 40 business, environmental, public, and water interests in the Sacramento region. Through execution of the Water Forum Agreement in April 2000, members agreed to a series of actions to achieve the Water Forums' two coequal objectives:

- Provide a reliable and safe water supply for the region's economic health and planned development to the year 2030; and
- Preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River.

Conjunctive use and reduced dependence on the American River is an integral element of the Water Forum Agreement. The Water Forum hopes that the Bureau of Reclamation recognizes the value of this project to the Sacramento region.

Sincerely,

Tom Gohring  
Executive Director



January 9, 2012

Mr. Rob Roscoe  
Sacramento Suburban Water District  
3701 Marconi Avenue, Suite 100  
Sacramento, CA 95821

Directors  
Edward J. "Ted" Costa  
Kenneth H. Miller  
Dave Peterson  
Pamela Tobin  
Bob Walters  
General Manager  
Shauna Lorange

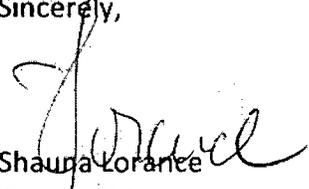
Subject: Reclamation's WaterSMART: Water and Energy Efficiency Grants for FY 2012

Dear Mr. Roscoe:

On behalf of San Juan Water District, I am pleased to provide this letter of support for Sacramento Suburban Water District's North Antelope in-conduit hydroelectric and pump station conjunctive use project.

The proposed project will result in developing a renewable energy source and will promote conjunctive water management. This project will expand conjunctive use opportunities providing increased supply reliability by reducing the dependence on American River water in dry years. This project meets Water Forum Agreement objectives to reduce surface water diversions in dry years as well as Regional Water Authority Integrated Regional Water Management objectives to increase conjunctive water management in the Sacramento region.

Sincerely,

  
Shauna Lorange  
General Manager



**CITRUS  
HEIGHTS  
WATER  
DISTRICT**

6230 Sylvan Road  
P.O. Box 286  
Citrus Heights  
California  
95611-0286

phone  
916/ 725-6873  
fax  
916/ 725-0345  
website  
www.chwd.org

January 9, 2012

Mr. Robert S. Roscoe  
Sacramento Suburban Water District  
3701 Marconi Avenue, Suite 100  
Sacramento, CA 95821

Subject: Reclamation's WaterSMART: Water and Energy Efficiency Grants for FY 2012

Dear Mr. Roscoe:

On behalf of Citrus Heights Water District, I am pleased to provide this letter of support for Sacramento Suburban Water District's North Antelope in-conduit hydroelectric and pump station conjunctive use project.

The proposed project will result in developing a renewable energy source and will promote conjunctive water management. This project will expand conjunctive use opportunities providing increased supply reliability by reducing the dependence on American River water in dry years. This project meets Water Forum Agreement objectives to reduce surface water diversions in dry years as well as Regional Water Authority Integrated Regional Water Management objectives to increase conjunctive water management in the Sacramento region.

Sincerely,

Robert A. Churchill  
General Manager

*Board of Directors*  
**Allen B. Dains**  
**Joseph M. Dion**  
**Charles T. Rose**

*General Manager/  
Secretary*  
**Robert A. Churchill**

*Assistant General  
Manager/Treasurer*  
**David B. Kane**

*Assessor/Collector*  
**Nancy E. Alaniz**

## Official Resolution

## **RESOLUTION NO. 12-01**

### **A RESOLUTION OF THE BOARD OF DIRECTORS OF THE SACRAMENTO SUBURBAN WATER DISTRICT AUTHORIZING AN APPLICATION FOR FUNDING ASSISTANCE THROUGH THE BUREAU OF RECLAMATION'S WATERSMART WATER AND ENERGY EFFICIENCY GRANT PROGRAM**

WHEREAS, the United States Bureau of Reclamation ("Reclamation") has implemented the WaterSMART Program to provide eligible agencies and organizations with grants to encourage water conservation and water use efficiency, increase the use of renewable energy and improve energy efficiency, benefit endangered and threatened species, facilitate water markets, and carry out activities to address climate-related impacts on water or prevent any water-related crisis or conflict;

WHEREAS, Reclamation has solicited proposals from public water suppliers and other water users for a new round of grant funding under the WaterSMART Program, which proposals are due on or before January 19, 2012;

WHEREAS, the Board of Directors of the Sacramento Suburban Water District ("SSWD") has identified itself as an eligible applicant under Reclamation's WaterSMART Water and Energy Efficiency Grant Program; and

WHEREAS, SSWD is interested in pursuing grant funding assistance under the WaterSMART Program in the amount of \$600,000 for the following projects: (1) acceleration of the SSWD's water meter retrofit program (\$300,000) and (2) in-conduit hydroelectric generation facilities (\$300,000) (the "Projects").

NOW, THEREFORE, be it resolved by the Board of Directors as follows:

1. The Board has reviewed the scope and purpose of SSWD's grant funding application, finds that the Projects will serve both the needs of the District's ratepayers and satisfy the goals of the WaterSMART Program, and, on that basis, supports staff's submittal of the grant funding application to Reclamation.
2. SSWD is capable of funding the minimum 50-percent cost share required to obtain grant funding under the WaterSMART Water and Energy Efficiency Grant Program.
3. The General Manager of SSWD is hereby authorized to apply for grant funding from Reclamation's WaterSMART Program as part of a regional collaborative effort and to execute any related documents, including entering into a grant funding agreement with Reclamation and any regional partners.

4. The General Manager and staff are directed to take all other actions necessary to secure funding for the Projects under the WaterSMART Water and Energy Efficiency Grant Program.

PASSED AND ADOPTED by the Board of Directors of the Sacramento Suburban Water District on the 9<sup>th</sup> day of January 2012, by the following vote:

AYES:  
NOES:  
ABSENT:

By:   
Thomas C. Fellenz  
President, Board of Directors  
Sacramento Suburban Water District

\*\*\*\*\*

I hereby certify that the foregoing resolution was duly and regularly adopted and passed by the Board of Directors of Sacramento Suburban Water District at a workshop meeting hereof held on the 9<sup>th</sup> day of January 2012.

(SEAL)

By:   
Robert S. Roscoe  
General Manager/Secretary  
Sacramento Suburban Water District

**Funding Plan**

**(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)?**

SSWD will acquire its cost share from its CIP budget approved by its Board of Directors and funded by customer water rates as well as by partial funding from the California Department of Water Resources (DWR) Proposition 84 Integrated Regional Water Management Planning Grant. SSWD has been awarded \$261,873 from the Proposition 84 grant for the booster pump station portion of this project. The award announcement is provided in Appendix C.

Appendix D includes documentation from SSWD's fiscal solvency and ability to pay.

- 2. Describe any in-kind costs incurred before the anticipated project start date that you seek to include as project costs.** SSWD does not seek to include as project costs any in-kind costs that are incurred before the anticipated project start date.
- 3. Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment.** There are no funding partners for this project.
- 4. Describe any funding requested or received from other Federal partners.** There has been no funding request or received from other Federal partners.
- 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 pending funding requests that have not yet been approved that would affect this project.

Table 2 summarizes the non-Federal (SSWD and California DWR) and Federal (Reclamation) funding sources. In-kind contributions from SSWD are noted. There are no other non-Federal or Federal funding sources.

**Table 2. Summary of non-Federal and Federal funding sources.  
<denote in-kind contributions with an asterisk(\*)>**

<b>Funding Sources</b>	<b>Funding Amount</b>
<b>Non-Federal Entities</b>	
1. Sacramento Suburban Water District-equipment, contractor fees, consultant fees	\$645,096
2. Sacramento Suburban Water District-in-kind* contribution for staff labor for project administration and reporting	\$79,641
3. California Department of Water Resources Proposition 84 Funding	\$261,873
Non-Federal Subtotal:	\$986,610

<b>Other Federal Entities</b>		
1.none		\$ -
Other Federal Subtotal:		\$ -
<b>Requested Reclamation Funding:</b>		\$300,000
<b>Total Project Funding:</b>		\$1,286,610

Table 3 provides a summary of all of the budget proposal components including unit costs, quantities, and funding by SSWD and requested of Reclamation for each budget item.

**Table 3. Budget Proposal**

Budget item description	Computation			SSWD funding, \$	Reclamation funding, \$	Total cost, \$
	\$/unit	Unit	Qty			
<b>Salary and Wages</b>						\$ -
Project Manager – Warren Jung	\$58	hourly rate	215	\$12,470		\$ 12,470
Engineer- John Valdes	\$58	hourly rate	885	\$51,330		\$ 51,330
Construction inspection –Charlie Brackett	\$31	hourly rate	511	\$15,841		\$ 15,841
<b>Fringe Benefits</b>						
Full-Time Employees				\$0		\$ -
Part-Time Employees				\$0		\$ -
<b>Travel</b>						
Trip 1				\$0		\$ -
Trip 2				\$0		\$ -
<b>Equipment</b>						
<i>Pipes, Valves, and Fittings</i>						
48" fitting	\$2,100	EA	2	\$4,200		\$ 4,200
24" DIP	\$275	LF	20	\$5,500		\$ 5,500
24" fittings	\$1,200	EA	9	\$10,800		\$ 10,800
18" fittings and couplings	\$950	EA	9	\$8,550		\$ 8,550
18" DIP	\$180	LF	95	\$17,100		\$ 17,100

24" isolation valve	\$8,000	EA	2	\$16,000		\$ 16,000
18" flow meter	\$8,000	EA	3	\$24,000		\$ 24,000
Misc adaptors, gauges, minor piping	\$20,000	EA	1	\$20,000		\$ 20,000
<u>Turbine/Generators/ Switchgear/controls</u>						
Pumpback pump	\$92,000	EA	1	\$92,000		\$92,000
2 10TR1 Units Package	\$174,500	EA	EA	\$345,000		\$345,000
PATs and Pump Installed	\$75,000	EA	1	\$75,000		\$75,000
<u>Electrical Equipment and Tie-in to Grid</u>						
Electrical Controls and SCADA	\$130,000	EA	1		\$130,000	\$130,000
Site electrical, Security, SMUD tie- in	\$150,000	EA	1		\$150,000	\$150,000
<u>Building and Misc Structural</u>						
Metal	\$80	SQ	725	\$58,000		\$58,000
Foundation structure (concrete)	\$760	CY	26	\$139	\$20,000	\$20,139
HVAC	\$8,500	EA	1	\$8,500		\$8,500
Roofing, doors, & Misc supports	\$16,000	EA	1	\$16,000		\$16,000
<b>Supplies/Materials</b>						
Office Supplies				\$0		\$ -
<b>Contractual/ Construction</b>						
Design	\$180	Consulting hourly rate	710	\$127,800		\$ 127,800
Construction management	\$160	Construction managemen t hourly rate	248	\$39,680		\$ 39,680
<u>Mobilization &amp; Site Work</u>						
Mobilization, Bonds, Insurance	\$20,000	EA	1	\$20,000		\$20,000
Traffic Control	\$1,200	EA	1	\$1,200		\$1,200

Site Grading & Paving & Access	\$1,500	EA	1	\$1,500		\$1,500
<b>Environmental and Regulatory Compliance Costs</b>						
CEQA/NEPA	\$2,000	CEQA/NEPA	1	\$2,000		\$2,000
Permits	\$2,500	EA	4	\$10,000		\$10,000
Reporting-Quarterly financial and monitoring reports and final report	\$500	EA	8	\$4,000		\$4,000
<b>Total Direct Costs</b>	--	--	--	\$986,660	\$300,000	\$ 1,286,660
						\$ -
<b>Indirect Costs - __%</b>	0	--	--	0	0	\$ -
<b>Total Project Costs</b>	--	--	--	\$986,660	\$300,000	\$ 1,286,660

### Budget Narrative

This section describes all components included in the budget proposal in Table 3.

**Salaries and Wages.** As part of the application it is anticipated that SSWD will report project progress and updates to Reclamation. Warren Jung, Engineering Services Manager is the designated project manager for this project and the related reporting. Other key personnel include John Valdes, engineer, and Charlie Brackett, construction inspection. Other personnel will include engineers, engineering technicians, and GIS specialists. Labor rates and proposed hours are displayed by Task in Table 4.

**Table 4. Labor Rates and Proposed Hours by Task**

Task	Resource/hourly rate						Total dollars, \$
	Warren Jung/PM	John Valde Engineer	Charlie Brackett/ Inspection	Design engineer (consultant)	Construction Manager	Total hours	
	\$58	\$58	\$31	\$180	\$160		
Task 1. Project Management and Administration	100	155				255	\$14,813
Task 2. Design Completion	40	160		462		662	\$94,682
Task 3. Environmental Compliance		120				120	\$6,967
Task 4.							\$19,747

Permitting		120		71		191	
Task 5. Project Bidding and Contractor Selection	20	140		71		231	\$22,060
Task 6. Construction	40	160	511	107	248	1,066	\$86,291
Task 7. Monitoring and Performance Reporting	15	30				45	\$2,610
Total	215	886	511	710	248	2,570	\$247,171

**Fringe Benefits.** Not applicable. There are no fringe benefits costs include in the budget proposal.

**Travel.** Not applicable. All activity for the proposed project is local and there are no travel costs included in the budget proposal.

**Equipment.** Equipment costs for this project are based on engineering estimates for each component of the project using 2011 dollars. The equipment listed and quantified in Table 3 will purchased as new to construct the components of this project.

**Supplies.** There are no supplies included in the budget proposal.

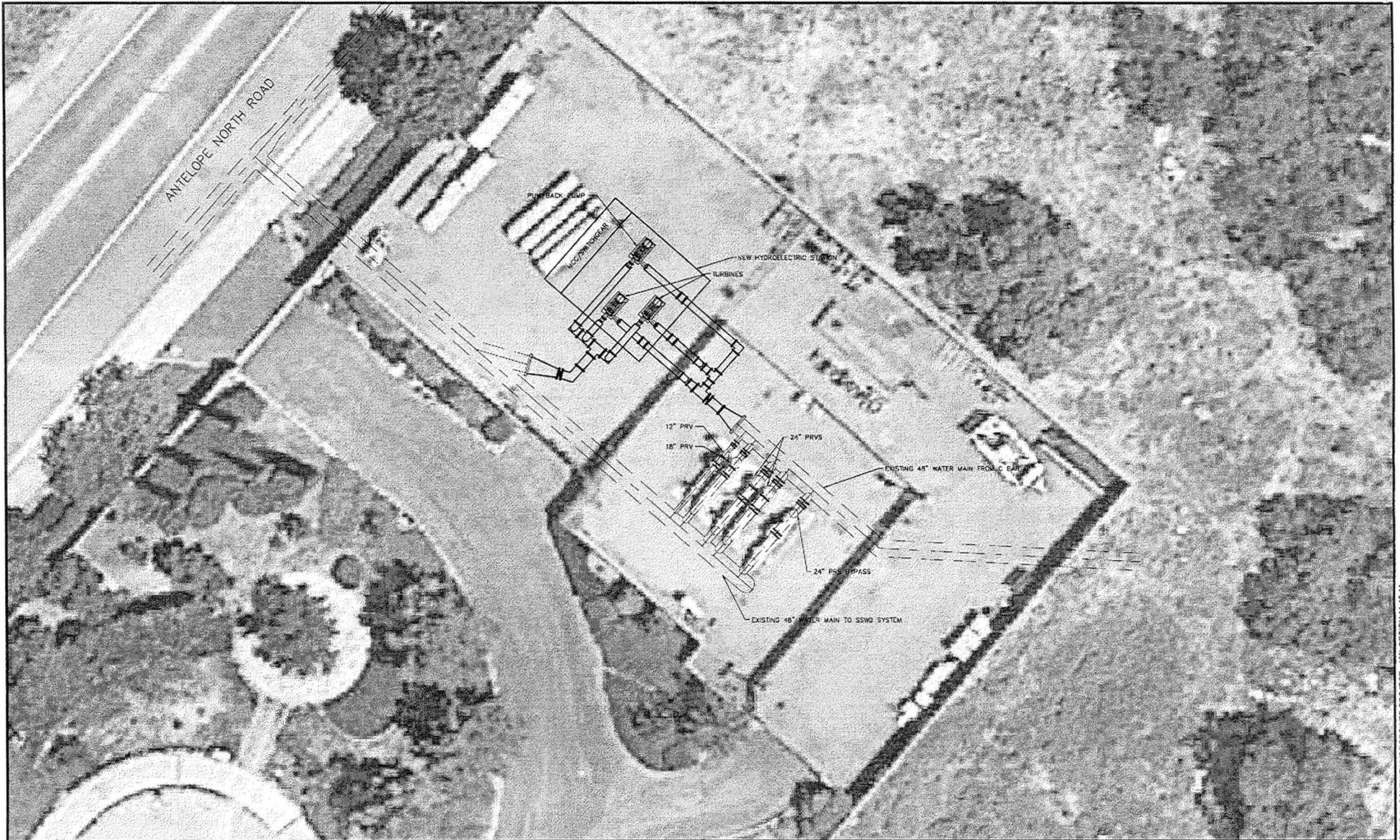
**Contractual.** SSWD will contract out the design and construction management of this project. The design and construction management consultant has not been selected at this time.

**Environmental and Regulatory Compliance Costs.** SSWD's cost to complete a CEQA categorical exemption is included in the project costs.

**Indirect Cost.** Not applicable. There are no indirect costs include in the budget proposal.

## Appendices

## **Appendix A – Project Plans (10%)**



REV	DATE	BY	DESCRIPTION

SCALE:  
 0 1/2 1  
 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED BY B. HAMMER  
 DRAWN BY B. HAMMER  
 CHECKED BY DOMENICHELLI

**DOMENICHELLI & ASSOCIATES**  
 101 Main Street (1st Floor) Sacramento, CA 95811  
 Phone: (916) 831-5971 Fax: (916) 831-4728

**SACRAMENTO SUBURBAN WATER DISTRICT**  
 3701 MARCONI AVENUE SUITE 100 SACRAMENTO, CA 95821  
 PHONE (916) 972-7171

SSWD IN-CONDUIT HYDROPOWER PROJECT  
 ANTELOPE SITE DOUBLE TURBINE WITH PUMPBACK ALTERNATIVE

SHEET  
 OF 1

SSWD IN-CONDUIT HYDROPOWER PROJECT - 10% DESIGN 11-18-11

## **Appendix B – Energy Generation Calculations**

(Due to grant application page limitations, only  
a sample set of MS Excel calculation pages are shown)

In-Conduit Hydroelectric Study SCADA Data Turbine Analysis

Date Time	cfs	Design Hd	Flow for (1) Turbine	Flow Used	KW Produced	Time of Year	SMUD Time of Day
1/1/10 0:00	9.88	125	12.92	0.00		Winter	Off Peak
1/1/10 2:00	7.64	126	12.96	0.00		Winter	Off Peak
1/1/10 4:00	5.47	125	12.92	0.00		Winter	Off Peak
1/1/10 6:00	4.45	126	12.96	0.00		Winter	Off Peak
1/1/10 8:00	9.89	111	12.25	0.00		Winter	On Peak
1/1/10 10:00	17.24	107	12.04	12.04	74.50	Winter	On Peak
1/1/10 12:00	21.11	104	11.88	11.88	71.39	Winter	On Peak
1/1/10 14:00	18.55	106	11.98	11.98	73.47	Winter	On Peak
1/1/10 16:00	17.91	106	11.98	11.98	73.47	Winter	Super Peak
1/1/10 18:00	15.06	120	12.69	12.69	87.63	Winter	Super Peak
1/1/10 20:00	14.34	121	12.74	12.74	88.61	Winter	Super Peak
1/1/10 22:00	13.62	123	12.83	12.83	90.56	Winter	On Peak
1/2/10 0:00	8.54	124	12.87	0.00		Winter	Off Peak
1/2/10 2:00	5.11	125	12.92	0.00		Winter	Off Peak
1/2/10 4:00	4.61	125	12.92	0.00		Winter	Off Peak
1/2/10 6:00	5.51	127	13.01	0.00		Winter	Off Peak
1/2/10 8:00	14.18	108	12.09	12.09	75.53	Winter	On Peak
1/2/10 10:00	20.46	107	12.04	12.04	74.50	Winter	On Peak
1/2/10 12:00	22.06	104	11.88	11.88	71.39	Winter	On Peak
1/2/10 14:00	20.01	106	11.98	11.98	73.47	Winter	On Peak
1/2/10 16:00	17.82	106	11.98	11.98	73.47	Winter	Super Peak
1/2/10 18:00	16.44	121	12.74	12.74	88.61	Winter	Super Peak
1/2/10 20:00	15.12	120	12.69	12.69	87.63	Winter	Super Peak
1/2/10 22:00	13.46	120	12.69	12.69	87.63	Winter	On Peak
1/3/10 0:00	10.42	122	12.78	0.00		Winter	Off Peak
1/3/10 2:00	5.80	124	12.87	0.00		Winter	Off Peak
1/3/10 4:00	4.55	125	12.92	0.00		Winter	Off Peak
1/3/10 6:00	4.55	125	12.92	0.00		Winter	Off Peak
1/3/10 8:00	14.69	111	12.25	12.25	78.60	Winter	Off Peak
1/3/10 10:00	21.07	105	11.93	11.93	72.43	Winter	Off Peak
1/3/10 12:00	22.02	104	11.88	11.88	71.39	Winter	Off Peak
1/3/10 14:00	20.23	104	11.88	11.88	71.39	Winter	Off Peak
1/3/10 16:00	19.18	103	11.82	11.82	70.35	Winter	Off Peak
1/3/10 18:00	17.60	122	12.78	12.78	89.59	Winter	Off Peak
1/3/10 20:00	17.42	122	12.78	12.78	89.59	Winter	Off Peak
1/3/10 22:00	13.93	120	12.69	12.69	87.63	Winter	Off Peak
1/4/10 0:00	8.26	122	12.78	0.00		Winter	Off Peak
1/4/10 2:00	5.13	124	12.87	0.00		Winter	Off Peak
1/4/10 4:00	5.60	122	12.78	0.00		Winter	Off Peak
1/4/10 6:00	13.30	123	12.83	12.83	90.56	Winter	Off Peak
1/4/10 8:00	16.15	106	11.98	11.98	73.47	Winter	On Peak
1/4/10 10:00	18.33	105	11.93	11.93	72.43	Winter	On Peak
1/4/10 12:00	19.70	105	11.93	11.93	72.43	Winter	On Peak
1/4/10 14:00	15.70	107	12.04	12.04	74.50	Winter	On Peak
1/4/10 16:00	18.57	107	12.04	12.04	74.50	Winter	Super Peak
1/4/10 18:00	17.97	121	12.74	12.74	88.61	Winter	Super Peak
1/4/10 20:00	18.02	120	12.69	12.69	87.63	Winter	Super Peak
1/4/10 22:00	14.42	118	12.59	12.59	85.66	Winter	On Peak
1/5/10 0:00	7.82	120	12.69	0.00		Winter	Off Peak
1/5/10 2:00	4.41	122	12.78	0.00		Winter	Off Peak
1/5/10 4:00	6.57	123	12.83	0.00		Winter	Off Peak
1/5/10 6:00	12.16	123	12.83	0.00		Winter	Off Peak
1/5/10 8:00	16.22	106	11.98	11.98	73.47	Winter	On Peak
1/5/10 10:00	14.32	109	12.14	12.14	76.56	Winter	On Peak
1/5/10 12:00	14.62	109	12.14	12.14	76.56	Winter	On Peak
1/5/10 14:00	13.54	108	12.09	12.09	75.53	Winter	On Peak
1/5/10 16:00	12.31	108	12.09	12.09	75.53	Winter	Super Peak

In-Conduit Hydroelectric Study SCADA Data Turbine Analysis

3/28/10 3:00	18.23	130	13.14	13.14	97.22	Spring	Off Peak
3/28/10 5:00	18.23	129	13.09	13.09	96.29	Spring	Off Peak
3/28/10 7:00	18.24	132	13.22	13.22	99.07	Spring	Off Peak
3/28/10 9:00	18.24	136	13.39	13.39	102.70	Spring	Off Peak
3/28/10 11:00	18.25	123	12.83	12.83	90.56	Spring	Off Peak
3/28/10 13:00	18.25	122	12.78	12.78	89.59	Spring	Off Peak
3/28/10 15:00	18.26	121	12.74	12.74	88.61	Spring	Off Peak
3/28/10 17:00	18.26	124	12.87	12.87	91.53	Spring	Off Peak
3/28/10 19:00	18.26	132	13.22	13.22	99.07	Spring	Off Peak
3/28/10 21:00	18.27	137	13.42	13.42	103.59	Spring	Off Peak
3/28/10 23:00	18.27	134	13.30	13.30	100.90	Spring	Off Peak
3/29/10 1:00	18.28	133	13.26	13.26	99.99	Spring	Off Peak
3/29/10 3:00	18.28	137	13.42	13.42	103.59	Spring	Off Peak
3/29/10 5:00	18.29	136	13.39	13.39	102.70	Spring	Off Peak
3/29/10 7:00	18.29	139	13.50	13.50	105.35	Spring	On Peak
3/29/10 9:00	18.30	135	13.35	13.35	101.80	Spring	On Peak
3/29/10 11:00	18.30	130	13.14	13.14	97.22	Spring	On Peak
3/29/10 13:00	18.31	126	12.96	12.96	93.45	Spring	On Peak
3/29/10 15:00	18.31	128	13.05	13.05	95.35	Spring	Super Peak
3/29/10 17:00	18.32	129	13.09	13.09	96.29	Spring	Super Peak
3/29/10 19:00	18.32	128	13.05	13.05	95.35	Spring	Super Peak
3/29/10 21:00	18.33	138	13.46	13.46	104.47	Spring	Off Peak
3/29/10 23:00	18.33	129	13.09	13.09	96.29	Spring	Off Peak
3/30/10 1:00	18.33	127	13.01	13.01	94.40	Spring	Off Peak
3/30/10 3:00	18.34	128	13.05	13.05	95.35	Spring	Off Peak
3/30/10 5:00	18.34	131	13.18	13.18	98.15	Spring	Off Peak
3/30/10 7:00	18.35	133	13.26	13.26	99.99	Spring	On Peak
3/30/10 9:00	18.35	127	13.01	13.01	94.40	Spring	On Peak
3/30/10 11:00	18.36	131	13.18	13.18	98.15	Spring	On Peak
3/30/10 13:00	18.36	122	12.78	12.78	89.59	Spring	On Peak
3/30/10 15:00	18.37	122	12.78	12.78	89.59	Spring	Super Peak
3/30/10 17:00	18.37	123	12.83	12.83	90.56	Spring	Super Peak
3/30/10 19:00	18.38	129	13.09	13.09	96.29	Spring	Super Peak
3/30/10 21:00	18.38	132	13.22	13.22	99.07	Spring	Off Peak
3/30/10 23:00	18.39	127	13.01	13.01	94.40	Spring	Off Peak
3/31/10 1:00	18.39	129	13.09	13.09	96.29	Spring	Off Peak
3/31/10 3:00	18.39	131	13.18	13.18	98.15	Spring	Off Peak
3/31/10 5:00	18.40	133	13.26	13.26	99.99	Spring	Off Peak
3/31/10 7:00	18.40	132	13.22	13.22	99.07	Spring	On Peak
3/31/10 9:00	18.41	133	13.26	13.26	99.99	Spring	On Peak
3/31/10 11:00	18.41	130	13.14	13.14	97.22	Spring	On Peak
3/31/10 13:00	18.42	130	13.14	13.14	97.22	Spring	On Peak
3/31/10 15:00	18.42	126	12.96	12.96	93.45	Spring	Super Peak
3/31/10 17:00	18.43	130	13.14	13.14	97.22	Spring	Super Peak
3/31/10 19:00	18.43	132	13.22	13.22	99.07	Spring	Super Peak
3/31/10 21:00	18.44	147	13.80	13.80	112.10	Spring	Off Peak
3/31/10 23:00	18.44	131	13.18	13.18	98.15	Spring	Off Peak
4/1/10 1:00	18.45	138	13.46	13.46	104.47	Spring	Off Peak
4/1/10 3:00	18.45	135	13.35	13.35	101.80	Spring	Off Peak
4/1/10 5:00	18.46	137	13.42	13.42	103.59	Spring	Off Peak
4/1/10 7:00	18.46	128	13.05	13.05	95.35	Spring	On Peak
4/1/10 9:00	18.46	134	13.30	13.30	100.90	Spring	On Peak
4/1/10 11:00	18.47	136	13.39	13.39	102.70	Spring	On Peak
4/1/10 13:00	18.47	128	13.05	13.05	95.35	Spring	On Peak
4/1/10 15:00	18.48	130	13.14	13.14	97.22	Spring	Super Peak
4/1/10 17:00	18.48	130	13.14	13.14	97.22	Spring	Super Peak
4/1/10 19:00	18.49	131	13.18	13.18	98.15	Spring	Super Peak
4/1/10 21:00	18.49	134	13.30	13.30	100.90	Spring	Off Peak
4/1/10 23:00	18.50	148	13.83	13.83	112.91	Spring	Off Peak
4/2/10 1:00	18.50	137	13.42	13.42	103.59	Spring	Off Peak
4/2/10 3:00	18.51	135	13.35	13.35	101.80	Spring	Off Peak

In-Conduit Hydroelectric Study SCADA Data Turbine Analysis

5/28/10 3:00	18.16	126	12.96	12.96	93.45	Spring	Off Peak
5/28/10 5:00	19.94	120	12.69	12.69	87.63	Spring	Off Peak
5/28/10 7:00	20.10	122	12.78	12.78	89.59	Spring	On Peak
5/28/10 9:00	17.85	122	12.78	12.78	89.59	Spring	On Peak
5/28/10 11:00	14.30	120	12.69	12.69	87.63	Spring	On Peak
5/28/10 13:00	17.76	125	12.92	12.92	92.49	Spring	On Peak
5/28/10 15:00	15.51	126	12.96	12.96	93.45	Spring	Super Peak
5/28/10 17:00	16.97	124	12.87	12.87	91.53	Spring	Super Peak
5/28/10 19:00	18.14	124	12.87	12.87	91.53	Spring	Super Peak
5/28/10 21:00	21.04	121	12.74	12.74	88.61	Spring	Off Peak
5/28/10 23:00	22.15	124	12.87	12.87	91.53	Spring	Off Peak
5/29/10 1:00	21.04	123	12.83	12.83	90.56	Spring	Off Peak
5/29/10 3:00	21.65	123	12.83	12.83	90.56	Spring	Off Peak
5/29/10 5:00	21.11	118	12.59	12.59	85.66	Spring	Off Peak
5/29/10 7:00	17.60	125	12.92	12.92	92.49	Spring	On Peak
5/29/10 9:00	20.83	123	12.83	12.83	90.56	Spring	On Peak
5/29/10 11:00	23.88	123	12.83	12.83	90.56	Spring	On Peak
5/29/10 13:00	24.04	119	12.64	12.64	86.65	Spring	On Peak
5/29/10 15:00	21.63	124	12.87	12.87	91.53	Spring	Super Peak
5/29/10 17:00	21.36	123	12.83	12.83	90.56	Spring	Super Peak
5/29/10 19:00	23.13	127	13.01	13.01	94.40	Spring	Super Peak
5/29/10 21:00	25.92	123	12.83	25.66	181.13	Spring	Off Peak
5/29/10 23:00	21.25	128	13.05	13.05	95.35	Spring	Off Peak
5/30/10 1:00	23.31	125	12.92	12.92	92.49	Spring	Off Peak
5/30/10 3:00	23.40	124	12.87	12.87	91.53	Spring	Off Peak
5/30/10 5:00	19.53	126	12.96	12.96	93.45	Spring	Off Peak
5/30/10 7:00	18.55	124	12.87	12.87	91.53	Spring	Off Peak
5/30/10 9:00	22.72	121	12.74	12.74	88.61	Spring	Off Peak
5/30/10 11:00	23.72	120	12.69	12.69	87.63	Spring	Off Peak
5/30/10 13:00	23.47	122	12.78	12.78	89.59	Spring	Off Peak
5/30/10 15:00	21.40	129	13.09	13.09	96.29	Spring	Off Peak
5/30/10 17:00	20.98	124	12.87	12.87	91.53	Spring	Off Peak
5/30/10 19:00	26.18	122	12.78	25.56	179.18	Spring	Off Peak
5/30/10 21:00	22.76	125	12.92	12.92	92.49	Spring	Off Peak
5/30/10 23:00	19.39	130	13.14	13.14	97.22	Spring	Off Peak
5/31/10 1:00	16.95	128	13.05	13.05	95.35	Spring	Off Peak
5/31/10 3:00	15.53	127	13.01	13.01	94.40	Spring	Off Peak
5/31/10 5:00	15.51	122	12.78	12.78	89.59	Spring	Off Peak
5/31/10 7:00	13.42	124	12.87	12.87	91.53	Spring	On Peak
5/31/10 9:00	19.64	127	13.01	13.01	94.40	Spring	On Peak
5/31/10 11:00	19.74	123	12.83	12.83	90.56	Spring	On Peak
5/31/10 13:00	19.52	123	12.83	12.83	90.56	Spring	On Peak
5/31/10 15:00	17.07	126	12.96	12.96	93.45	Spring	Super Peak
5/31/10 17:00	17.53	125	12.92	12.92	92.49	Spring	Super Peak
5/31/10 19:00	19.88	122	12.78	12.78	89.59	Spring	Super Peak
5/31/10 21:00	19.55	124	12.87	12.87	91.53	Spring	Off Peak
5/31/10 23:00	15.92	125	12.92	12.92	92.49	Spring	Off Peak
6/1/10 1:00	17.56	124	12.87	12.87	91.53	Summer	Off Peak
6/1/10 3:00	18.56	125	12.92	12.92	92.49	Summer	Off Peak
6/1/10 5:00	19.25	119	12.64	12.64	86.65	Summer	Off Peak
6/1/10 7:00	18.05	116	12.50	12.50	83.66	Summer	On Peak
6/1/10 9:00	20.20	118	12.59	12.59	85.66	Summer	On Peak
6/1/10 11:00	22.18	121	12.74	12.74	88.61	Summer	On Peak
6/1/10 13:00	22.35	121	12.74	12.74	88.61	Summer	On Peak
6/1/10 15:00	20.47	117	12.54	12.54	84.66	Summer	Super Peak
6/1/10 17:00	25.05	106	11.98	23.97	146.93	Summer	Super Peak
6/1/10 19:00	29.76	99	11.60	23.20	132.33	Summer	Super Peak
6/1/10 21:00	30.69	115	12.45	24.89	165.31	Summer	Off Peak
6/1/10 23:00	24.72	121	12.74	12.74	88.61	Summer	Off Peak
6/2/10 1:00	22.51	120	12.69	12.69	87.63	Summer	Off Peak
6/2/10 3:00	23.53	121	12.74	12.74	88.61	Summer	Off Peak

In-Conduit Hydroelectric Study SCADA Data Turbine Analysis

10/27/10 15:00	13.54	111	12.25	12.25	78.60	Winter	Super Peak
10/27/10 17:00	12.50	107	12.04	12.04	74.50	Winter	Super Peak
10/27/10 19:00	17.30	102	11.77	11.77	69.31	Winter	Super Peak
10/27/10 21:00	13.81	118	12.59	12.59	85.66	Winter	Off Peak
10/27/10 23:00	11.61	117	12.54	0.00		Winter	Off Peak
10/28/10 1:00	20.59	116	12.50	12.50	83.66	Winter	Off Peak
10/28/10 3:00	19.60	117	12.54	12.54	84.66	Winter	Off Peak
10/28/10 5:00	22.83	115	12.45	12.45	82.66	Winter	Off Peak
10/28/10 7:00	25.61	114	12.40	24.79	163.30	Winter	On Peak
10/28/10 9:00	22.31	106	11.98	11.98	73.47	Winter	On Peak
10/28/10 11:00	16.68	107	12.04	12.04	74.50	Winter	On Peak
10/28/10 13:00	17.41	92	11.19	11.19	58.79	Winter	On Peak
10/28/10 15:00	15.94	108	12.09	12.09	75.53	Winter	Super Peak
10/28/10 17:00	16.02	105	11.93	11.93	72.43	Winter	Super Peak
10/28/10 19:00	17.58	112	12.30	12.30	79.62	Winter	Super Peak
10/28/10 21:00	19.31	114	12.40	12.40	81.65	Winter	Off Peak
10/28/10 23:00	14.16	109	12.14	12.14	76.56	Winter	Off Peak
10/29/10 1:00	14.15	112	12.30	12.30	79.62	Winter	Off Peak
10/29/10 3:00	13.87	109	12.14	12.14	76.56	Winter	Off Peak
10/29/10 5:00	15.63	104	11.88	11.88	71.39	Winter	Off Peak
10/29/10 7:00	18.77	106	11.98	11.98	73.47	Winter	On Peak
10/29/10 9:00	17.06	100	11.66	11.66	67.21	Winter	On Peak
10/29/10 11:00	15.83	99	11.60	11.60	66.17	Winter	On Peak
10/29/10 13:00	16.68	101	11.71	11.71	68.26	Winter	On Peak
10/29/10 15:00	14.91	102	11.77	11.77	69.31	Winter	Super Peak
10/29/10 17:00	16.46	101	11.71	11.71	68.26	Winter	Super Peak
10/29/10 19:00	17.15	111	12.25	12.25	78.60	Winter	Super Peak
10/29/10 21:00	15.74	110	12.19	12.19	77.58	Winter	Off Peak
10/29/10 23:00	14.30	105	11.93	11.93	72.43	Winter	Off Peak
10/30/10 1:00	13.31	100	11.66	11.66	67.21	Winter	Off Peak
10/30/10 3:00	13.53	110	12.19	12.19	77.58	Winter	Off Peak
10/30/10 5:00	13.33	110	12.19	12.19	77.58	Winter	Off Peak
10/30/10 7:00	12.59	104	11.88	11.88	71.39	Winter	On Peak
10/30/10 9:00	17.64	97	11.48	11.48	64.06	Winter	On Peak
10/30/10 11:00	18.58	97	11.48	11.48	64.06	Winter	On Peak
10/30/10 13:00	18.64	82	10.57	10.57	48.25	Winter	On Peak
10/30/10 15:00	16.50	80	10.44	10.44	46.16	Winter	Super Peak
10/30/10 17:00	17.42	89	11.01	11.01	55.63	Winter	Super Peak
10/30/10 19:00	16.93	95	11.37	11.37	61.96	Winter	Super Peak
10/30/10 21:00	17.14	101	11.71	11.71	68.26	Winter	Off Peak
10/30/10 23:00	14.79	93	11.25	11.25	59.85	Winter	Off Peak
10/31/10 1:00	15.61	103	11.82	11.82	70.35	Winter	Off Peak
10/31/10 3:00	15.26	104	11.88	11.88	71.39	Winter	Off Peak
10/31/10 5:00	13.24	83	10.64	10.64	49.30	Winter	Off Peak
10/31/10 7:00	14.50	88	10.95	10.95	54.57	Winter	Off Peak
10/31/10 9:00	18.73	80	10.44	10.44	46.16	Winter	Off Peak
10/31/10 11:00	21.33	85	10.76	10.76	51.41	Winter	Off Peak
10/31/10 13:00	18.46	84	10.70	10.70	50.35	Winter	Off Peak
10/31/10 15:00	17.85	90	11.07	11.07	56.68	Winter	Off Peak
10/31/10 17:00	18.01	89	11.01	11.01	55.63	Winter	Off Peak
10/31/10 19:00	14.64	79	10.38	10.38	45.11	Winter	Off Peak
10/31/10 21:00	16.47	104	11.88	11.88	71.39	Winter	Off Peak
10/31/10 23:00	13.99	104	11.88	11.88	71.39	Winter	Off Peak
11/1/10 1:00	12.55	101	11.71	11.71	68.26	Winter	Off Peak
11/1/10 3:00	10.96	104	11.88	0.00		Winter	Off Peak
11/1/10 5:00	12.69	86	10.83	10.83	52.46	Winter	Off Peak
11/1/10 7:00	17.67	98	11.54	11.54	65.12	Winter	On Peak
11/1/10 9:00	15.62	90	11.07	11.07	56.68	Winter	On Peak
11/1/10 11:00	16.32	90	11.07	11.07	56.68	Winter	On Peak
11/1/10 13:00	16.71	89	11.01	11.01	55.63	Winter	On Peak
11/1/10 15:00	17.10	90	11.07	11.07	56.68	Winter	Super Peak

In-Conduit Hydroelectric Study SCADA Data Turbine Analysis

12/27/10 14:00	18.28	139	13.50	13.50	105.35	Winter	On Peak
12/27/10 16:00	18.70	136	13.39	13.39	102.70	Winter	Super Peak
12/27/10 18:00	19.84	136	13.39	13.39	102.70	Winter	Super Peak
12/27/10 20:00	18.57	138	13.46	13.46	104.47	Winter	Super Peak
12/27/10 22:00	15.73	137	13.42	13.42	103.59	Winter	On Peak
12/28/10 0:00	11.90	141	13.58	0.00		Winter	Off Peak
12/28/10 2:00	9.43	140	13.54	0.00		Winter	Off Peak
12/28/10 4:00	9.40	142	13.62	0.00		Winter	Off Peak
12/28/10 6:00	12.05	138	13.46	0.00		Winter	Off Peak
12/28/10 8:00	16.62	141	13.58	13.58	107.08	Winter	On Peak
12/28/10 10:00	17.48	137	13.42	13.42	103.59	Winter	On Peak
12/28/10 12:00	20.67	137	13.42	13.42	103.59	Winter	On Peak
12/28/10 14:00	19.08	137	13.42	13.42	103.59	Winter	On Peak
12/28/10 16:00	17.99	137	13.42	13.42	103.59	Winter	Super Peak
12/28/10 18:00	19.36	138	13.46	13.46	104.47	Winter	Super Peak
12/28/10 20:00	17.99	137	13.42	13.42	103.59	Winter	Super Peak
12/28/10 22:00	16.21	139	13.50	13.50	105.35	Winter	On Peak
12/29/10 0:00	11.87	139	13.50	0.00		Winter	Off Peak
12/29/10 2:00	9.90	141	13.58	0.00		Winter	Off Peak
12/29/10 4:00	8.30	139	13.50	0.00		Winter	Off Peak
12/29/10 6:00	11.68	139	13.50	0.00		Winter	Off Peak
12/29/10 8:00	16.65	136	13.39	13.39	102.70	Winter	On Peak
12/29/10 10:00	20.13	137	13.42	13.42	103.59	Winter	On Peak
12/29/10 12:00	20.24	138	13.46	13.46	104.47	Winter	On Peak
12/29/10 14:00	19.41	137	13.42	13.42	103.59	Winter	On Peak
12/29/10 16:00	18.18	138	13.46	13.46	104.47	Winter	Super Peak
12/29/10 18:00	19.81	137	13.42	13.42	103.59	Winter	Super Peak
12/29/10 20:00	18.13	136	13.39	13.39	102.70	Winter	Super Peak
12/29/10 22:00	16.23	136	13.39	13.39	102.70	Winter	On Peak
12/30/10 0:00	12.86	137	13.42	0.00		Winter	Off Peak
12/30/10 2:00	9.68	140	13.54	0.00		Winter	Off Peak
12/30/10 4:00	9.85	142	13.62	0.00		Winter	Off Peak
12/30/10 6:00	12.07	140	13.54	0.00		Winter	Off Peak
12/30/10 8:00	16.81	144	13.69	13.69	109.63	Winter	On Peak
12/30/10 10:00	17.49	137	13.42	13.42	103.59	Winter	On Peak
12/30/10 12:00	19.43	136	13.39	13.39	102.70	Winter	On Peak
12/30/10 14:00	17.89	138	13.46	13.46	104.47	Winter	On Peak
12/30/10 16:00	16.15	136	13.39	13.39	102.70	Winter	Super Peak
12/30/10 18:00	17.17	136	13.39	13.39	102.70	Winter	Super Peak
12/30/10 20:00	20.59	135	13.35	13.35	101.80	Winter	Super Peak
12/30/10 22:00	16.53	135	13.35	13.35	101.80	Winter	On Peak
12/31/10 0:00	12.41	138	13.46	0.00		Winter	Off Peak
12/31/10 2:00	10.25	139	13.50	0.00		Winter	Off Peak
12/31/10 4:00	9.08	137	13.42	0.00		Winter	Off Peak
12/31/10 6:00	11.18	140	13.54	0.00		Winter	Off Peak
12/31/10 8:00	16.19	137	13.42	13.42	103.59	Winter	On Peak
12/31/10 10:00	19.18	135	13.35	13.35	101.80	Winter	On Peak
12/31/10 12:00	19.59	135	13.35	13.35	101.80	Winter	On Peak
12/31/10 14:00	19.09	135	13.35	13.35	101.80	Winter	On Peak
12/31/10 16:00	20.68	135	13.35	13.35	101.80	Winter	Super Peak
12/31/10 18:00	21.06	133	13.26	13.26	99.99	Winter	Super Peak
12/31/10 20:00	17.39	134	13.30	13.30	100.90	Winter	Super Peak
12/31/10 22:00	17.13	133	13.26	13.26	99.99	Winter	On Peak

25.84      184.99  
 370,027  
**740,223**

**Appendix C- California Department of Water Resources  
Proposition 84 Award Announcement**

*SSWD's Proposition 84 Award is awarded as part of the Regional Water Authority \$14,134,960 grant award shown towards the bottom of the first page of the grant announcement in this appendix. Also provided is SSWD's specific project description (Project 9) that was awarded \$261,873 as part of the Regional Water Authority \$14,134,960 grant award.*

**Final Awards for Round 1 Implementation Grants  
Proposition 84, Chapter 2, Integrated Regional Water Management (IRWM)**

Funding Area/ Maximum Allocation	IRWM Region	Grant Applicant	Grant Request	Score (out of 85)	Grant Award
<b>North Coast \$8,222,222</b>	North Coast	County of Humboldt	\$8,221,061	61	\$8,221,061
	<b>Total</b>		<b>\$8,221,061</b>		<b>\$8,221,061</b>
<b>San Francisco Bay Area \$30,666,667</b>	East Contra Costa County	Contra Costa Water District <sup>+</sup>	\$1,775,000	52	\$1,775,000
	San Francisco Bay Area	Bay Area Clean Water Agencies	\$30,093,592	51	\$30,093,592
<b>Total</b>			<b>\$31,868,592</b>		<b>\$31,868,592</b>
<b>Central Coast \$11,555,556</b>	Santa Barbara Countywide	Santa Barbara County Water Agency	\$3,000,996	60	\$3,000,996
	San Luis Obispo	San Luis Obispo County Flood Control and Water Conservation District	\$11,555,556	56	\$10,401,000
	Greater Monterey County	City of Soledad	\$4,868,441	55	\$4,139,000
	Monterey Peninsula, Carmel Bay, South Monterey Bay	Monterey Peninsula Water Management District	\$6,127,286	44	\$0
<b>Total</b>			<b>\$25,552,279</b>		<b>\$17,540,996</b>
<b>Los Angeles - Ventura \$47,777,778</b>	Watersheds Coalition of Ventura County	County of Ventura	\$17,510,599	64	\$17,510,599
	Upper Santa Clara River	Castaic Lake Water Agency	\$7,700,053	57	\$6,931,000
	Greater Los Angeles County	Los Angeles County Flood Control District	\$32,000,000	56	\$25,600,000
<b>Total</b>			<b>\$57,210,652</b>		<b>\$50,041,599</b>
<b>Santa Ana \$25,333,333</b>	Santa Ana Watershed Project Authority	Santa Ana Watershed Project Authority	\$12,660,004	52	\$12,660,004
<b>Total</b>			<b>\$12,660,004</b>		<b>\$12,660,004</b>
<b>San Diego \$20,222,222</b>	South Orange County Watershed Management Area	County of Orange	\$2,316,780	54	\$2,316,780
	San Diego	San Diego County Water Authority	\$7,900,000	48	\$7,900,000
	Upper Santa Margarita	Rancho California Water District	\$4,332,008	40	\$2,167,000
<b>Total</b>			<b>\$14,548,788</b>		<b>\$12,383,780</b>
<b>Sacramento River \$16,222,222</b>	American River Basin	Regional Water Authority <sup>+</sup>	\$14,303,766	56	\$14,134,960
	Cosumnes, American, Bear Yuba	City of Nevada City <sup>+</sup>	\$3,197,503	51	\$3,197,503
<b>Total</b>			<b>\$17,501,269</b>		<b>\$17,332,463</b>

**Final Awards for Round 1 Implementation Grants  
Proposition 84, Chapter 2, Integrated Regional Water Management (IRWM)**

Funding Area/ Maximum Allocation	IRWM Region	Grant Applicant	Grant Request	Score (out of 85)	Grant Award
<b>San Joaquin River \$12,666,667</b>	Madera	Root Creek Water District	\$9,413,947	57	\$9,413,947
	American River Basin	Regional Water Authority <sup>+</sup>	\$1,918,456	56	\$1,895,806
	Mokelumne/ Amador/ Calaveras	Upper Mokelumne River Watershed Authority	\$2,703,327	54	\$2,298,000
	East Contra Costa County	Contra Costa Water District <sup>+</sup>	\$10,885,000	52	\$0
	Cosumnes, American, Bear Yuba	City of Nevada City <sup>+</sup>	\$712,761	51	\$0
	Eastern San Joaquin	Northeastern San Joaquin County Groundwater Banking Authority	\$1,345,644	48	\$0
	Westside-San Joaquin	San Luis and Delta-Mendota Water Authority <sup>+</sup>	\$11,451,053	42	\$0
<b>Total</b>			<b>\$38,430,188</b>		<b>\$13,607,753</b>
<b>Tulare Lake \$13,333,333</b>	Poso Creek	Semitropic Water Storage District	\$12,892,510	55	\$8,215,000
	Kaweah River Basin	Kaweah Delta Water Conservation District	\$7,286,423	55	\$4,643,000
	Upper Kings Water Forum	Upper Kings Basin IRWM Authority	\$13,333,333	55	\$8,496,000
	Westside-San Joaquin	San Luis and Delta-Mendota Water Authority <sup>+</sup>	\$992,600	42	\$0
<b>Total</b>			<b>\$34,504,866</b>		<b>\$21,354,000</b>
<b>Lahontan \$6,000,000</b>	Mojave	Mojave Water Agency <sup>+</sup>	\$2,000,000	53	\$2,000,000
	Antelope Valley	Antelope Valley - East Kern Water Agency	\$6,000,000	48	\$5,400,000
	Tahoe- Sierra	South Tahoe Public Utility District	\$5,744,944	42	\$1,437,000
	Inyo-Mono	Central Sierra Resource Conservation and Development, Inc.	\$4,299,858	39	\$1,075,000
<b>Total</b>			<b>\$18,044,802</b>		<b>\$9,912,000</b>
<b>Colorado River Basin \$8,000,000</b>	Coachella Valley	Coachella Valley Water District	\$4,000,000	57	\$4,000,000
	Mojave	Mojave Water Agency <sup>+</sup>	\$8,000,000	53	\$6,000,000
<b>Total</b>			<b>\$12,000,000</b>		<b>\$10,000,000</b>
<b>GRAND TOTAL</b>			<b>\$270,542,501</b>		<b>\$204,922,248</b>

<sup>+</sup> Application contains projects in two funding areas

## Project 9: North Antelope Booster Pump Station Project

Benefits of this project include:

- Increasing water supply reliability by delivering an average annual 1,600 acre-feet per year to the San Juan Water District wholesale service area for use in dry periods
- Providing emergency water supplies to a number of local water agencies by creating an intertie that connects many local agencies
- Promoting relationships among multiple water agencies
- Significantly leverages the value of existing infrastructure

### Project Abstract

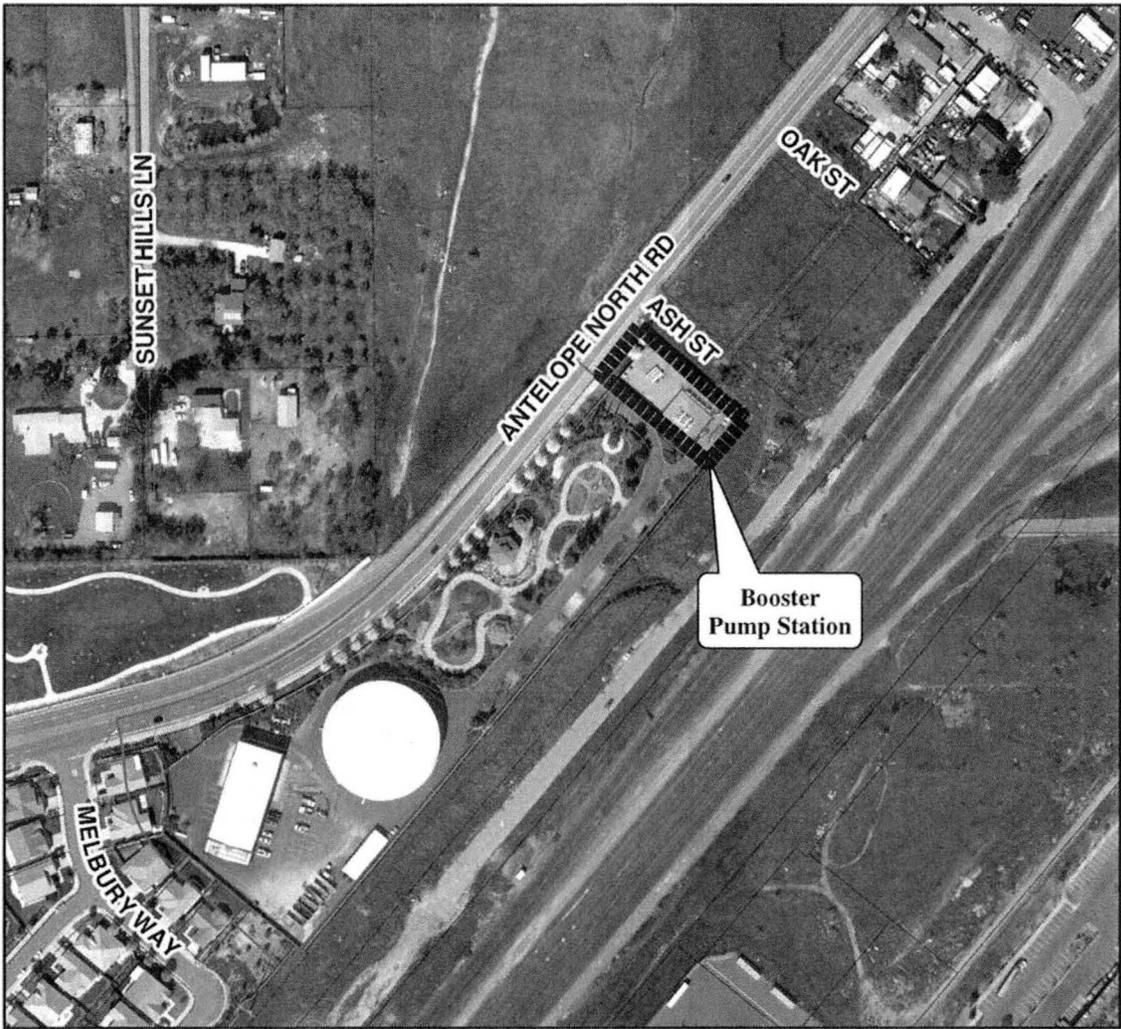
This project will construct a booster pump with a capacity of 4,200 gallons per minute to provide for the reversal of flow in the Antelope and Cooperative Transmission pipeline thereby allowing additional banking and exchange opportunities in the region.

### Detailed Description

The North Antelope Booster Pump Station Project will construct a booster pump station with a design flow of 4,200 gallon per minute (gpm) adjacent to the existing Antelope Reservoir. This pump station will pump groundwater produced from wells in the Sacramento Suburban Water District's (SSWD) North Service Area eastward into the Antelope and Cooperative Transmission Pipelines for conveyance to the various San Juan Water District (SJWD) retail customers. Currently, surface water from SJWD Sidney Peterson Water Treatment Plant is transmitted to Citrus Heights Water District, Fair Oaks Water District, Orange Vale Water Company, SSWD and SJWD through these pipelines. All of these districts, with the exception of SSWD, rely on surface water for the majority of their supply with the remaining small portion of supply coming from local groundwater wells. This project will provide for the reversal of flow in the Antelope and Cooperative Transmission Pipelines, thereby allowing SSWD to export previously banked groundwater to the other agencies connected to the pipeline. This project will expand conjunctive use opportunities in the SJWD service area, enabling the retail surface water customers to use more groundwater during dry years and in times of emergency and greatly expanding regional opportunities for conjunctive use both within and outside of the Sacramento Groundwater Authority's area of authority.

Other benefits of the expanded conjunctive use of groundwater created by this project include sustaining flows in the lower American River during dry years by providing groundwater to the surface water users thereby reducing their demand on the river. In addition, this project will provide a secondary source of supply for retail customers in the San Juan service area in the event that the capacity of the Peterson surface water treatment is limited due to conditions beyond the control of SJWD. In general, having access to an additional source of water increases water supply reliability and protects SJWD customers' limited, local groundwater resources.

The North Antelope Booster Pump Station would be constructed next to an existing SSWD pressure reducing valve (PRV) station. A 2009 Technical Memorandum prepared by Brown and Caldwell determined that the site has adequate space to accommodate the required pumps, piping and appurtenances, as well as layout space for construction.



**EXHIBIT 1**

0 100 200  
Feet

Portion of Sacramento Suburban Water District  
**North Anelope Booster Pump Location Map**

**SACRAMENTO SUBURBAN WATER DISTRICT**

Base Data: Sacramento County Gis Base Map  
Projection: CA State Plane 2, NAD83  
Scale: Relative  
Prepared by: D.A.V., SSWD  
Sacramento, CA December, 2010  
North Anelope\_Loc.mxd

Figure 1: North Anelope Booster Pump Station Project Location