

Attachment 8. Benefits and Cost Analysis

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Acronyms

AFY	acre-feet per year
AVA	American Viticulture Area
Basin Plan	Water Quality Control Plan for the Central Coastal Basin
BMP	Best Management Practices
CBSM	Community Based Social Marketing
CCWA	Central Coast Water Authority
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CIP	Capital Improvement Projects
CN	Composite Runoff Curve Number
Conservation Districts	Coastal San Luis and Upper Salinas Las Tablas Resource Conservation Districts
County	San Luis Obispo County, County of San Luis Obispo
CSA 16	County Service Area No. 16
CSD	Community Services District
CWC	California Water Code
DACs	Disadvantaged Communities
Delta	California Bay-Delta
District	San Luis Obispo County Flood Control and Water Conservation District
DPHS	Department of Public Health and Safety
DWR	California Department of Water Resources
EIR	Environmental Impact Report
GIS	Geographic Information Systems
GPCD	gallons per capita per day
GPD	gallons per day
GPM	gallons per minute
GWMP	Groundwater Management Plan
IRWM	Integrated Regional Water Management
IRWMP	Integrated Regional Water Management Plan
IRWMP, IRWM Plan	San Luis Obispo County Integrated Regional Water Management Plan
LRM	Load Reduction Modeling
MGD	million gallons per day
MHI	median household income
MOU	Memorandum of Understanding
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
Paso Basin	Paso Robles Groundwater Basin
ppm	parts per million
PRGBMP	Paso Robles Groundwater Basin Management Plan
Proposal, SLO Proposal	San Luis Obispo Regional Integrated Water Management Proposal

Acronyms, Continued

PVC	polyvinyl chloride
RCD	Resource Conservation District
Region	San Luis Obispo County IRWM Region
Regional Agency	San Luis Obispo County Flood Control and Water Conservation District
RMS	Resource Management Strategies
RWMG	Regional Water Management Group
RWQCB	Central Coast Regional Water Quality Control Board
SEP	Supplemental Environmental Project
SMCSD	San Miguel Community Services District
SSCSD	San Simeon Community Services District
STAC	Stakeholder and Technical Advisory Committee
SWP	State Water Project
SWP	Statewide Priorities (only in Attachment 9)
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Loads
UCCE	U.C. Cooperative Extension
USFWS	U.S. Fish and Wildlife Service
WRAC	Water Resources Advisory Committee
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

Chapter 1. BENEFITS AND COST ANALYSIS

Attachment 8 looks closely at the Attachment 7 benefits and Attachment 4 budgets and identifies the water resources benefits and costs attributed to the six projects proposed for implementation in the San Luis Obispo Regional Integrated Water Management Proposal Proposition 84 (Prop 84) IRWM Implementation Grant Application – Round 2 (Proposal). This attachment is organized to first present the total Proposal Summary of Project Benefits and Costs, as it must be completed for the entire proposal, and not by project. Immediately after the summary, an introduction is provided to briefly describe the six projects and identify the method used to complete the benefit-cost analysis. Lastly, a detailed economic analysis of benefits and costs for each project, including required benefit and cost tables, is included to support the initial Proposal Summary.

1.1 PROPOSAL SUMMARY OF PROJECT BENEFITS AND COSTS

The Proposal requirements for satisfying the benefit cost analysis is to select a preferred method of analysis using the set of criteria provided in the 2012 IRWM Grant PSP for Round 2 Guidelines. This Proposal only includes DWR methods of analysis. **Table 1-1** includes the total present value (2012 dollars) costs and the total monetized and non-monetized benefits for each project, which collectively represent the Proposal. The present worth of monetized benefits for the entire Round 2 Proposal totals \$ 131.8M, and the total cost is \$96.0. This results in a total benefit cost ratio of 1.37.

1.2 INTRODUCTION TO PROJECTS

This suite of projects can best be framed by the mutual challenges faced by both the state and the region. This Proposal aggressively meets these challenges that include the need for achieving sustainable surface water and groundwater supplies, ecosystem protection, assistance to disadvantaged communities, aging infrastructure rehabilitation, and poor water quality treatment alternatives.

The region takes aim at the challenges addressed in the 2007 San Luis Obispo IRWM Plan with each project clearly integrated to address these challenges in the most cost effective manner. It answers the challenge of declining groundwater elevations in the Paso Groundwater Basin, the region's largest basin providing water to both agriculture and urban uses. It addresses outdated infrastructure in DACs with projects that replace and supplement water supplies, updates water supply wells, fixes water distribution system deficiencies, constructs surface water treatment facilities, and assures watershed management and cleaner stormwater runoff - all with the additional benefit of enhancing local and regional ecosystems.

Table 1-1. Summary of Benefits and Cost for Proposal's Six Projects

Project	Project Proponent	Total Present Value Project Costs (1)	Total Present Value Project Benefits			From Section D1 – Cost-Effectiveness Analysis, Cost Savings	From Section D2 – Briefly describe the main Non-monetized benefits
			From Section D3 – Monetized (2)	From Section D4 – Flood Damage Reduction (3)	Total		
(a)	(b)	(c)	(d)	(e)	(f) = (d) + (e)	(g)	(h)
City of Paso Robles Lake Nacimiento Water Treatment Plant	City of Paso Robles	\$75,751,639	\$95,613,074	\$0	\$95,613,074	\$0	Not used.
Attiyeh Ranch Conservation Easement	The Land Conservancy of San Luis Obispo	\$7,651,814	\$35,301,690	\$0	\$35,301,690	\$0	Benefits include: <ul style="list-style-type: none"> • public educational materials, • prevent increased flooding risk • increased sediment and urban/agricultural pollution. • habitat preservation for state listed threatened species • improve water quality to sustain the wildlife living on or migrating through the project lands. • long-term groundwater protection and enhanced recharge • preserve critical groundwater recharge areas

Table 1-1. Summary of Benefits and Cost for Proposal's Six Projects, Continued

Project	Project Proponent	Total Present Value Project Costs (1)	Total Present Value Project Benefits	From Section D1 – Cost-Effectiveness Analysis, Cost Savings	From Section D2 – Briefly describe the main Non-monetized benefits		
Livestock & Land Program - Implement BMPs	The Coastal San Luis and Upper Salinas Las Tablas Resource Conservation Districts	\$8,012,243	From Section D3 – Monetized (2)	From Section D4 – Flood Damage Reduction (3)	Total	\$0	Benefits include: <ul style="list-style-type: none"> • stakeholder outreach • public educational materials • cause of pollution in local creeks will be understood • habitat preservation and improve water quality • long-term groundwater protection • reduced risk of contamination to domestic wells
San Miguel Community Services District Water System Improvements	San Miguel Community Services District (DAC)	\$903,210	\$0	\$0	\$0	\$0 ^a	Water System Improvements with Cost Effectiveness Analysis
San Simeon Supplemental Water Feasibility Study and Design Project	San Simeon Community Services District (DAC)	\$645,426	\$0	\$0	\$0	\$0 ^b	Not used.

Notes:

- a) Project cost effectiveness studied as part of a water master planning effort which assessed the condition of the existing San Miguel Water System for the DAC community of San Miguel. No incremental difference with alternative projects is available.
- b) Project is a planning study for the DAC community of San Simeon to complete an alternatives analysis and design report to make a determination of the most cost effective water supply and infrastructure solution. No incremental difference is available with a planning level project.

This attachment will follow the recommended priority of presenting each of the projects, ensuring that each is analyzed in the same manner to allow for comparative evaluation of all projects in the Round 2 Implementation Grant. The following are taken from the guidelines:

- Consistency – The analysis must be completed for the entire project and must be consistent with other data and information provided about the project and other projects in the proposal.
- Completeness – All new facilities, policies, and actions required to obtain the benefits must be revealed and their costs included.
- Without-Project and With-Project Comparison – The analysis should be based on a comparison of expected conditions without- and with-project over the period of analysis.
- Period of Analysis – The analysis will be based on a project life cycle specified by the applicant which shall include the construction period and operational life.

What follows is an overview of all six (6) projects including:

- project grant totals – (Table 1-2),
- how the projects meet multiple San Luis Obispo IRWM Objectives (**Table 1-3**),
- how the projects meet multiple Statewide Priorities and Program Preferences(**Table 1-4**),
- brief project descriptions (Table 1-5), and
- physical benefits, and the chosen DWR method of completing the Benefits and Cost analysis.

Table 1-2. Project Grant Totals

San Luis Obispo Region	Project Title	Grant Funding	Other Funding	Cost Share: Other State Fund Source	Total Project Cost
North County	City of Paso Robles Lake Nacimiento Water Treatment Plant	\$3,150,000	\$8,174,306	\$0	\$11,324,306
North County	Attiyeh Ranch Conservation Easement Project	\$2,100,000	\$1,997,629	\$4,374,761	\$8,472,390
Regional	Livestock & Land Program - Implement BMPs	\$274,984	\$42,800	\$0	\$317,784
North County	Shandon State Water Turnout	\$337,000	\$133,000	\$45,000	\$515,000
North County	San Miguel Community Services District Water System Improvements	\$950,000	\$0	\$0	\$950,000
North Coast	San Simeon Supplemental Water Feasibility Study and Design Project	\$700,000	\$0	\$0	\$700,000
Sub-Total		\$7,511,984	\$10,347,735	\$4,419,761	\$22,279,480
Regional	IRWM Implementation Grant Administration	\$57,016	\$161,634	\$0	\$218,650
Total		\$7,569,000	\$10,509,369	\$4,419,761	\$22,498,130

1.3 PROJECT SUMMARY OF PHYSICAL BENEFITS

In each project justification there are physical benefits that have been identified and committed to being measured as part of Attachment 7 – Technical Justification. Each physical benefit has to be monitored and reported so as to be quantified numerically or qualitatively with the completion and subsequent operation of each project. **Table 1-3** provides a short description of each project and the physical benefit descriptions. Proposal Attachment 8 will make use of each benefit and quantify the cost of constructing and operating the project and the benefits (monetized and non-monetized) from project construction and long term operations. The DWR

cost benefit approach according to the November 2012 PSP Guidelines are also indicated in the table and then further explained in each of the project specific analysis.

Each physical benefit has to be included in this analysis and presentation. In addition, secondary benefits can be discussed as part of the Attachment 7 Technical Justification but are not included in the Benefits and Cost Analysis.

Table 1-3. Projects Benefits Meeting Multiple San Luis Obispo IRWMP Objectives

IRWMP Programs	Objectives	City of Paso Robles Lake Nacimiento Water Treatment Plant	Attiyeh Ranch Conservation Easement	Livestock & Land Program - Implement BMPs	Shandon State Water Turn-out	San Miguel Community Services District Critical Water System Improvements	San Simeon Supplemental Water Feasibility Study and Design Project
Water Quality Program	Protect and improve source water quality.	●	●	●	●	●	●
	Meet all federal and state drinking water standards.	●		●	●	●	●
	Support the development and implementation of TMDLs.			●		●	
	Implement NPDES Phase II Storm Water Management Programs.						
	Implement the California NPS Plan and the RWQCB Conditional Agricultural Waiver Program for irrigated agriculture.						
	Comply with new waste discharge requirements.	●		●		●	
Water Supply Program	Implement inter-agency projects including emergency inter-ties between systems, jointly developed facilities, water exchanges, and other methods of enhancing reliability through cooperative efforts over the development of new supplies.	●			●		
	Maximize water conservation for both M&I and agricultural uses.						●
	Expand desalination water opportunities by 2010.						
	Expand reclaimed water use to make up 5% of total water use by 2010 and 10% of total water use by 2020.						●
Ecosystem Preservation and Enhancement Program	Purchase and conserve through easements, preserve, enhance, and restore land in ecologically sensitive ecosystems.		●				
	Manage public lands access to encourage public involvement and stewardship.						
	Manage stream flows to fish bearing streams, support a region-wide fish passage barrier prevention, circumvention and removal program, and implement fish friendly stream and river corridor restoration projects.		●				●
	Reduce the effects of invasive plant species, manage public properties to re-establish rare and special status native plant populations, and promote native drought tolerant plantings in municipal and residential landscaping.						
	Implement the San Luis Obispo County Native Tree Management Guidelines and promote the voluntary guidelines in the San Luis Obispo County Native Tree Resolution for tree protection and restoration programs, urban forest management, and wild lands fire management.				●		

Table 1-3. Projects Benefits Meeting Multiple San Luis Obispo IRWMP Objectives, Continued

IRWMP Programs	Objectives	City of Paso Robles Lake Nacimiento Water Treatment Plant	Attiyeh Ranch Conservation Easement	Livestock & Land Program - Implement BMPs	Shandon State Water Turn-out	San Miguel Community Services District Critical Water System Improvements	San Simeon Supplemental Water Feasibility Study and Design Project
	Reuse reclaimed mine lands for beneficial purposes.						
	Conserve natural resources.		●				
Groundwater Monitoring and Management Program	Develop monitoring and reporting programs for groundwater basins in the region.				●		
	Evaluate and consider Groundwater Banking Programs.						
	Protect and improve groundwater quality from point and non-point source pollution, including nitrate contamination; MTBE and other industrial, agricultural, and commercial sources of contamination; naturally occurring mineralization, boron, radionuclide, geothermal contamination; and seawater intrusion and salts.						●
	Conduct public education and outreach about ground water protection.						
	Identify areas of known or expected conflicts and target stakeholders on specific actions that they should take to help protect groundwater basin quality and supply.	●			●		
	Recharge ground water with high quality water.						●
Flood Management Program	Distinguish the root cause of flooding problems stemming from new development, existing development, and mandatory regulation.						
	Integrate ecosystem enhancement, drainage control, and natural recharge into development projects.						
	Develop financial programs for drainage and flood control projects.						
	Evaluate and minimize the risk of dam and levee failures.						
	Develop and implement public education, outreach, and advocacy.						

Table 1-4. Projects Benefits Meeting Multiple Statewide Priorities and Program Preferences

	City of Paso Robles Lake Nacimiento Water Treatment Plant	Attiyeh Ranch Conservation Easement	Livestock & Land Program	Shandon State Water Turn-out	San Miguel Community Services District Critical Water System Improvements	San Simeon Supplemental Water Feasibility Study and Design Project
Statewide Priorities						
Drought Preparedness	•			•		•
Use and Reuse Water More Efficiently						
Climate Change Response Actions						
Expand Environmental Stewardship		•				
Practice Integrated Flood Management						
Protect Surface Water and Groundwater Quality	•		•			
Improve Tribal Water and Natural Resources						
Ensure Equitable Distribution of Benefits					•	•
Program Preferences						
Include Regional Projects	•	•	•			
Effectively integrate water management programs and projects within a hydrologic region	•		•	•	•	
Effectively resolve significant water-related conflicts within or between regions	•			•		
Contribute to attainment of one or more of the objectives of the CALFED Bay-Delta Program				•		
Address critical water supply or water quality needs of DACs within the region					•	•
Effectively integrate water management with land use planning						
SWFM funding for multiple benefits						
Address Statewide Priorities	•	•	•	•	•	•

Table 1-5. Summary of Projects, Claimed Physical Benefits and Guideline Methods Used

Project Name	Project Abstracts	Physical Benefits	DWR Benefit Analysis Method Used
<p>Project 1: City of Paso Robles Lake Nacimiento Water Treatment Plant</p> <p>Sponsor: City of Paso Robles</p>	<p>A 2.4 MGD capacity Lake Nacimiento potable water treatment plant is currently under design. The City's capital program currently has construction scheduled for FY 2015/2016. Based on the most recent financial projections, securing an additional \$3.225 million in Prop 84 grant funds would allow the timing of the initial plant phase to be accelerated by one year.</p>	<ul style="list-style-type: none"> • Water Quality Benefits: Delivers better quality, lower TDS water to the City of Paso Robles. • Water Supply Benefits: Develops 2.4 MGD of new water supply for the City of Paso Robles. <ul style="list-style-type: none"> • Water Reliability Benefits: Off-sets groundwater pumping, thereby reducing City groundwater extractions from the Paso Robles Groundwater Basin. In-lieu recharge of the groundwater basin will provide the benefit of conjunctive use opportunities for drought year protection. 	<p>Section D3</p>
<p>Project 2: Attiyeh Ranch Conservation Easement</p> <p>Sponsor: The Land Conservancy of San Luis Obispo</p>	<p>The purpose of the Attiyeh Ranch Conservation Easement is to preserve the Attiyeh Ranch and prevent the conversion of current rangeland, grazing land and grassland to a more intensive cattle grazing regime, vineyard or parcel-specific development of ranchettes and hobby farms; to protect the long-term sustainability of low intensity livestock grazing and the benefits that occur from livestock grazing; and to ensure continued wildlife, water quality, watershed and open-space benefits from livestock grazing on the 8,300 acre ranch. It is further the purpose of the conservation easement to ensure the Attiyeh Ranch will be retained forever in its agricultural and natural condition and to prevent uses within the ranch that will significantly impair or interfere with the open space, agricultural, and natural habitat values of the ranch. The requested \$2.1 million conservation easement and conservancy related activities will confine the use of the ranch to such activities, including, without limitation, those involving livestock grazing, habitat protection, education and other compatible uses.</p>	<ul style="list-style-type: none"> • Water Supply Benefits: Protects the current water supply by maintaining the existing water supply at its current capacity and avoids water supply purchase costs that would otherwise be incurred if future land use modifications resulted in changes to the magnitude and timing of inflow to Nacimiento Reservoir. • Environmental Stewardship Benefits: Protects 8,305 acres of open space which supports local wildlife populations and wildlife corridors. Preserves the current land practices and protects from increased soil erosion that would lead to degraded habitat conditions on the mainstream of the Nacimiento River and its key tributaries. • Community/Social Benefits: Allows public access on the ranch with docent-led hikes which increases the amount of open space accessible to the public in the Nacimiento Reservoir area and preserves scenic enjoyment for visitors. 	<p>Section D2 and Section D3</p>

Table 1-5. Summary of Projects, Claimed Physical Benefits and Guideline Methods Used, Continued

Project Name	Project Abstracts	Physical Benefits	DWR Benefit Analysis Method Used
<p>Project 3: Livestock & Land Program</p> <p>Sponsor: The Coastal San Luis and Upper Salinas Las Tablas Resource Conservation Districts</p>	<p>The proposed \$200,000 Livestock and Land Program will address natural resource concerns faced by livestock owners by providing education, technical assistance and cost share for implementation of management measures. Water quality improvements will be achieved by giving livestock owners the tools to complete water quality site assessments and to implement Best Management Practices near listed waterways. The behavioral and management practice changes achieved by this program will provide immediate and lasting water quality and watershed improvements by reducing the off-site mobilization of manure, urine and sediments from livestock facilities. The program will make significant progress toward watershed goals listed in TMDLs and watershed plans.</p>	<ul style="list-style-type: none"> • Water Quality Benefits: 30% reduction in pollutant loading to surface waters. 	<p>Section D2</p>
<p>Project 4: Shandon State Water Turn-out</p> <p>Sponsor: San Luis Obispo County for County Service Area 16</p>	<p>San Luis Obispo County (County) is proposing to construct a \$325,000 water turnout facility that will connect the water distribution system for County Service Area 16 (CSA 16) in Shandon, CA to the State Water Project pipeline. The Shandon State Water Turnout Project will allow CSA 16 to access and distribute its existing State Water allocation of 100 acre-feet per year to the community of Shandon, providing increased water supply reliability and relief to the stressed Paso Robles groundwater basin. Connecting Shandon to the State Water system will diversify its supply so that, when available, State Water can be used in lieu of the groundwater basin, and vice versa. The ability to conjunctively use supplies to allow for periods of groundwater basin recovery will reduce the dependence on State Water alone.</p>	<ul style="list-style-type: none"> • Water Supply Benefits: Delivers 100 AFY of critical water supply. • Water Reliability Benefits: Eliminates the need to pump from the overdrafted Paso Robles Groundwater Basin where Shandon relies on subordinate water rights. In-lieu recharge of the groundwater basin will provide the benefit of conjunctive use opportunities for drought year protection. • Reduced Energy Benefits: Replaces energy inefficient groundwater pumps with an energy efficient water delivery system; reduces annual energy consumption by approximately 60,000 Kwh. 	<p>Section D2</p>

Table 1-5. Summary of Projects, Claimed Physical Benefits and Guideline Methods Used, Continued

Project Name	Project Abstracts	Physical Benefits	DWR Benefit Analysis Method Used
<p>Project 5: San Miguel Community Services District Critical Water System Improvements</p> <p>Sponsor: San Miguel Community Services District</p>	<p>This \$950,000 grant application is seeking funding for six of the highest priority, critical water supply projects. The six projects will ensure continued reliability of the minimum quantity of potable water delivered, augment inadequate water supply system pressure to prevent loss of system integrity and to maintain adequate fire protection flows and replace or rehabilitate water supply wells that have exceeded their useful life. The San Miguel Community Services District (SMCSD) needs to implement all six of these identified projects in the immediate future, or they will be faced with continued deterioration of an already deficient water system, and may not be able to support even limited beneficial growth with the identified deficiencies that face the District’s water system. The majority of the District’s residents are low-income households, meeting the criteria as a Disadvantaged Community (DAC). These projects help meet the critical water supply and water quality needs of the DAC.</p>	<ul style="list-style-type: none"> • Critical Water Supply Benefits: Collectively, the projects included in the Critical Water System Improvements will upgrade the water system to a minimum level of performance, including certification of Title 22 water treatment, required by CDPH. • Critical Water System Reliability Benefits: Greatly reduces concerns with the possibility of losing additional wells, operating during emergency conditions, and the inability to operate storage facilities to meet fire code¹ requirements. • Reduced Energy Benefits: Replaces energy inefficiencies in Well 3’s groundwater motor and electrical components with current-day energy efficient equipment. The new well siting will ultimately lead to the construction of a new primary well using the same energy efficient equipment. 	<p>Section D1</p>
<p>Project 6: San Simeon Supplemental Water Feasibility Study and Design Project</p> <p>Sponsor: San Simeon Community Services District</p>	<p>This project is submitted under the Expanded Project Eligibility allowance based on the DAC status of the San Simeon Community Services District (SSCSD) service area and the critical water supply, water quality, and water system improvements needed to provide safe, reliable drinking water and fire protection. SSCSD is pursuing a \$700,000 supplemental water supply feasibility study and design project to increase safe sustainable water supplies from the small Pico Creek groundwater basin which is dependent on the local watershed to recharge and protect the basin each year, especially during extended drought conditions.</p>	<ul style="list-style-type: none"> • Alternatives Feasibility Study: The feasibility study will take the necessary steps to gather sufficient data to make a determination of possible alternative project solutions. Completion of an environmental review and recommendation of a preferred alternative will be the threshold for successful completion. • Final Design Report: The final feasibility study will inform the design effort on the recommended alternative and the needed environmental and permitting actions. A 30%, 50% and 90% design report will be evaluated as intermediate monitoring steps. The final design report will indicate completion of the project. 	<p>Section D1</p>

¹ The California Fire Code (CFC 903.2, 903.4.2), which is the adopted fire code for San Luis Obispo County (Title 16.10), expressly states the fire flow requirements.

Chapter 2. PROJECT SPECIFIC BENEFITS AND COST ANALYSIS

Chapter 2 will present each project’s total costs for the grant project and all costs associated with the project over the life cycle of the project. The different kinds of cost categories are presented and described in **Table 2-1**.

Table 2-1. Cost Categories

Cost Category	Description	Comments
Grant Costs	Plan, design, and construction costs consistent with the project budget in Table 1-2	Costs for administration of the grant and monitoring of performance are not included
Administrative	All additional oversight costs to manage the long-term operations and maintenance of the project	Includes the incremental increase in cost an agencies need to manage the project once implementation begins
Operation	Operation costs to fully implement the project according to the stated level of performance	Includes costs associated with the meeting the stated benefits, and can include variable cost elements such as power, chemical, and cost for raw untreated resources
Maintenance	Scheduled and unscheduled maintenance of the project to ensure in meeting its expected lifecycle	Includes labor and fixed costs, such as equipment, buildings, vehicles, etc.
Replacement	Replacement costs for certain project elements to meet the overall expected lifecycle of the larger project definition	Includes replacement of lesser project elements which may not have a lifecycle equivalent to the grant project

Likewise, for project benefits, each project will have annualized benefits which can be formulated to a monetized value and then compared with the costs. The benefit stems from the root, or baseline, condition where no project is constructed, to a point in time where the project is being managed and is operational. The realized monetary value is the worth of projects output (or stated benefits), and the monetized value of not having to implement an alternative, more expensive, project. Benefits can be as simple as being able to pay less for energy with the project’s higher energy efficiency, or as complex as not having to construct a desalinization water treatment plant and conveyance system. All of the implementation projects in this Proposal have gone through some form of alternatives analysis, and have been selected because of their highest value to the respective agencies. It is through the exercise of monetizing benefits where lesser known project elements can be quantified and carried forward as contributing to the stated physical benefits in Attachment 7 – Technical Justification, also listed in **Table 1-5**.

Project 1. City of Paso Robles Lake Nacimiento Water Treatment Plant

Brief Project Description: The City of Paso Robles Lake Nacimiento Water Treatment Plant project includes the construction of a potable water treatment plant necessary to begin taking its water allocation from Nacimiento Reservoir. The Nacimiento Water Treatment Plant will have a capacity of 2.4 million gallons per day (mgd) and will provide potable water for the City of Paso Robles, enabling the City of Paso Robles to reduce groundwater pumping within the Paso Robles Groundwater Basin. The plant will be built on a 21-acre site the City of Paso Robles has owned for many years. The plant site has been operated as a wellfield since 1975 and has four Salinas River underflow wells in place. The Paso Robles Nacimiento Water Project water delivery turnout is also located on the plant site. No land acquisition is needed to complete the project.

Below is the development of a present worth evaluation of the project and its incremental increase in administrative, and operations and maintenance costs, and monetized benefits. In summary, the monetized water supply and energy benefits for the Nacimiento Water Treatment Plant Project totals \$95.6M, and the total cost is \$75.8M, resulting in a project benefit / cost ratio of 1.26.

1.0 Background

The City of Paso Robles currently relies on water from two sources: Salinas River underflow wells and groundwater from the deeper formation of the Paso Robles Groundwater Basin. Significant groundwater level declines in City wells and other basin wells have been occurring since the 1990's. San Luis Obispo County has designated the basin as a Level of Severity III, indicating the demand for water will equal or exceed its supply before supplemental supplies can be developed. The Lake Nacimiento Water Treatment Project will provide additional potable water for the City of Paso Robles, enabling the City to reduce groundwater pumping within the overdrafted Paso Robles Groundwater Basin.

The City's rate structure has been adjusted to commence with the critical Nacimiento Water Treatment Plant project to reduce reliance on groundwater and benefit from the cleaner raw water source of Lake Nacimiento. As a result of the rate increase, the project design is in progress and scheduled to be completed by August 2013². The added cost of the treatment plant and its long term operations and benefits have been analyzed and determined to be the preferred alternative to continued use of pumping groundwater from greater depths, to treating the degrading quality in groundwater supplies, and to risk permanent damage to the groundwater resource.

The primary physical benefits attributed to this project are as follows (also shown in **Table 1-5**):

- **Water Quality Benefits:** Delivers better quality, lower TDS water to the City of Paso Robles.

² City of El Paso de Robles. "Plans for Construction of 2.4 MGD Water Treatment Plan Plant Project." 2012

- **Water Supply Benefits:** Develops 2.4 MGD of new water supply for the City of Paso Robles.
- **Water Reliability Benefits:** Off-sets groundwater pumping, thereby reducing City groundwater extractions from the Paso Robles Groundwater Basin. In-lieu recharge of the groundwater basin will provide the benefit of conjunctive use opportunities for drought year protection.

1.1 Project Utilization

The primary use of the project water will be to replace a good portion of the groundwater currently being extracted from twelve (12) in-system municipal wells located within the water service area. The estimated 2012 water demand of approximately 7,950 AFY³ will be re-apportioned between the new direct diversion (via an existing turnout) from the Salinas River, existing underflow wells on the Salinas River, and existing municipal wells. The reallocation will be based on using new surface water (2,670 AFY of the 4,000 AFY Nacimiento Water Contract) first, the underflow wells (4,140 AFY of the 4,600 AFY⁴ of permitted water) as the second priority, and groundwater supplies (1,120 AFY) as the last priority to meet maximum month, along with storage and peak hour demands. This is illustrated in **Figure 2-1** where surface water fills in the baseline supply, along with the underflow supply, and groundwater on top reacting more to the peaking effects throughout the dry months. Because groundwater will still be required, the existing municipal wells will continue to operate on most days but will be cycled based on system pressures and storage levels.

1.2 Project Budget

Based on Attachment 4 – Budget, the total project budget is estimated to total \$11,324,306 with a 72 percent local cost share, used to satisfy the Proposal’s need to meet or exceed the minimum 25 percent local funding match requirement for non-DAC projects. **Table 2-2**, (also included in Attachment 4 – Budget), and Attachment 5 – Schedule are used to spread grant costs over the expected grant implementation timeline.

³ City of Paso Robles water deliveries for 2005 and 2010 were 7,163 acre-feet per year (AFY) and 5,749 AFY, respectively. Water deliveries in 2010 were much lower than 2005 deliveries because of mandatory City-wide outdoor water use restrictions implemented in 2009. For purposes of this analysis, project 2015 water demands of 7,950 AFY (City of Paso Robles 2010 UWMP) will be used to reflect a normal hydrologic year with adequate water supplies in 2012.

⁴City of Paso Robles is currently only taking 90% of their 4,600 Salina River Water Right due to minor system inefficiencies. The City is looking to improve the underflow system to take the full annual amount (not as part of this project).

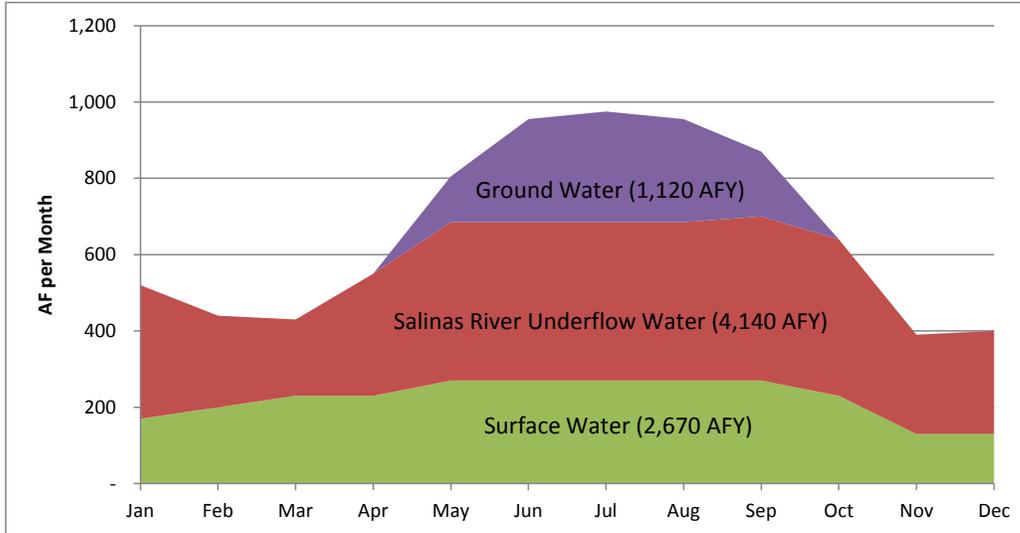


Figure 2-1. City of Paso Robles Water Demand and Supplies (with Project)

Table 2-2. City of Paso Robles Lake Nacimiento Water Treatment Plant Budget (Table 7 of 2012 Round 2 PSP)

Project serves a need of a DAC?: Yes No		No			
Funding Match Waiver request?: Yes No		No			
Category		(a)	(b)	(c)	(d)
		Requested Grant Amount	Cost Share: Non-State Fund Source* (Funding Match)	Cost Share: Other State Fund Source**	Total Cost
(a)	Direct Project Administration	\$ -	\$0	\$0	\$0
(b)	Land Purchase/ Easement	\$0	\$0	\$0	\$0
(c)	Planning/ Design/ Engineering/ Environmental Documentation	\$0	\$929,856	\$0	\$929,856
(d)	Construction/ Implementation	\$3,150,000	\$5,070,000	\$0	\$8,220,000
(e)	Environmental Compliance/ Mitigation/ Enhancement	\$0	\$0	\$0	\$0
(f)	Construction Administration	\$0	\$530,450	\$0	\$530,450
(g)	Other Costs	\$0	\$0	\$0	\$0
(h)	Construction/Implementation Contingency	\$0	\$1,644,000	\$0	\$1,644,000
(i)	Grand Total (Sum rows (a) through (h))	\$3,150,000	\$8,174,306	\$0	\$11,324,306

*The source of the Non-State share (Funding Match) is secured by the City of Paso Robles collected from reserves and water rate charges as approved by the City Council.

1.0 Benefits and Cost

Measurement and initial quantification of the physical benefits is provided in Attachment 7 – Technical Justification. In summary, Water Supply benefits will be measured using standard flow measuring devices with real-time telemetry. Water Quality Benefits will be measured through lab results of water system sampling as required under Title 22 Drinking Water Standards. Water Reliability Benefits will be monitored through groundwater elevations at nearby dedicated monitoring wells, with any long-term average increase in groundwater elevations being associated with increased drought year storage.

Of the DWR methods for quantifying benefits, method Section D3 – Monetized Benefits Analysis has been selected based on the grant amount and the ability to monetize the benefits in terms of an annual dollar value for each year of the project’s operation. Project Costs will be based on the five (5) cost elements described in **Table 2-1**.

1.0.1 Description of Monetized Benefits

Based on Exhibit D of the 2012 PSP for Round 2, the Nacimiento Water Treatment Plant project will be using Section D3 – Monetized Benefits Analysis to capture the three physical benefits. An explanation of the approach taken with each is provided below.

For the Nacimiento Water Treatment Plant project, the physical benefits include: 1) improved water quality with lower TDS, 2) increased surface water for the City of Paso Robles, 2) storage of drought year supplies by off-setting groundwater pumping and providing in-lieu recharge. Each will be monitored and reported annually. Of these three physical benefits, the benefits of improved water quality and stored water as a drought year supply can be monetized in terms of avoided costs in having to construct other projects which derive similar benefits as the project.

1.0.1.1 Water Quality Benefit Approach

As identified in the Attachment 7 – Technical Justification, the Total Dissolved Solids (TDS) concentration of Nacimiento water is higher quality than the local groundwater supply. The TDS of Lake Nacimiento water ranges from 150 to 300 ppm compared to the average Paso Robles Groundwater Basin TDS concentration of 567 ppm. In addition, the average hardness of Lake Nacimiento water is 140 ppm compared with 377 ppm hardness of the local groundwater supply. As a secondary benefit, but not quantified, use of the higher quality lake water will encourage the elimination of household water softeners, which introduces additional salts into the City’s wastewater stream. Reduction in the use of water softeners and associated salt will improve the quality of wastewater discharges to the Salinas River from the City of Paso Robles’s wastewater treatment plant. While this is considered a secondary benefit, its significance is important because TDS concentrations in wastewater discharges have, at times, exceeded NPDES discharge permit limits of 1,115 ppm.

The monetary benefit of using source water with lower TDS concentrations is seen predominantly in the treatment process and the needed technology and energy consumption to reduce TDS concentrations. The capital cost increases significantly as the treatment solution approaches the need for a desalinization process using reverse-osmosis (RO). The monetized benefit of constructing the project is the avoided cost of having to treat a portion of the groundwater to mix with water in the distribution system to bring the overall TDS down to below 225 ppm (i.e., the average expected TDS concentration with the project).

To calculate the volume of RO water needed, a weighted average approach is used to generate the total annual volume of RO treatment capacity needed to reduce the current estimated TDS of 350 ppm to 225 ppm. This equates to 1,800 AFY of RO treated water or 1.6 mgd if operated year-round 24/7.

The incremental unit cost for capital construction of an RO water treatment plant is highly sensitive to economies of scale, with smaller plants requiring more cost per mgd than larger regional scale plants. **Figure 2-2** below illustrates this pattern. For a 2.0 mgd plant, a \$10M/mgd cost can be associated with the capital cost of construction. Annualized at 4 percent for 30 years, the annual cost is \$931,000.



Source: “Seawater Desalination Costs White Paper.” [Water Reuse Association, January 2012]

Figure 2-2. Unit Construction Cost vs. Capacity

Operations and maintenance are estimated based on the incremental increase in labor, raw water, energy, filter replacement and chemical costs to run the RO plant. Some economies are recognized in having an existing water provider where existing labor and equipment costs can be shared with the operation of a new water treatment plant. Based on a detailed estimate, the operation and maintenance cost in 2016 is estimated to be \$2.10M (2012 dollars). As a check for reasonableness, the total treated water unit cost per acre-foot of water is estimated to be \$1,600/AF; whereas recent publications have quoted as high as \$3,200/AF.⁵ If this quote is adjusted for the minimal raw water costs due to less expensive groundwater (rather than ocean water and conveyance), the unit cost is \$1,950/AF. The slight difference is considered to be acceptable for purposes of this avoided cost analysis.

1.0.1.1 Water Supply Benefit Approach

Securing drought year water is considered to be similar to a water district constructing a recycled water treatment plant for outdoor irrigation use. The RO water treatment plant above does not provide this benefit because of its continued use of groundwater that is subject to deepening in elevation in dry months and drought years.

Recycled water is drought proof and is a viable cost effective alternative to banking water in a community with a wastewater treatment facility. Using the same approach as the RO treatment plant above and adjusting for size and microfiltration technology, the annual monetized avoided

⁵ “Seawater Desalination Costs White Paper.” [Water Reuse Association, January 2012]

capital costs of a 2.0 mgd⁶ recycled water treatment plant for the City equals \$550,000. Operations and maintenance are not considered to differ from the RO plant, other than reduced energy and filtration equipment maintenance. Since the avoided benefit of the recycled water treatment project is only for dry months and drought conditions, the percent of avoided cost is reduced to 50 percent (i.e., if built and purple pipe distribution system is in place, and enhanced water quality of wastewater discharge (in the wet months) is realized, the plant would likely operate year-round and for every year.) The total unit cost of finished water from the 2.0 mgd recycled water treatment plant equals \$958/AF.

1.0.2 Description of Costs

Monetizing costs is done by accounting for changes in expenditures that are the direct result of the project. For the City of Paso Robles Lake Nacimiento Water Treatment Plant project the following table summarizes the different cost categories and how they apply to the project:

Cost Category	Description	Frequency of Occurrence
Grant Costs	Plan, design, and construct the water treatment plant, and manage the grant requirements including labor compliance and grant reporting	Over Period of Construction
Administrative	Additional oversight costs to manage the long-term operations and maintenance of the water treatment plant	Continuous
Operation	Operate the water treatment plant to produce up to 2.4 mgd instantaneously or 2,670 AFY.	Continuous
Maintenance	Scheduled and unscheduled maintenance	Continuous
Replacement	Replacement after 30 year lifecycle for valves and electrical equipment. (primary water treatment plant assumed to have 50+ year lifecycle and is not included as a replacement item.)	30 years

Grant Costs (first row) are based on **Table 2-2** and distributed over the project schedule starting in June 2012 with initial planning studies and design reports and ending in April 2016. The monthly distribution of the Grant costs is shown in **Figure 2-3** below.

Administrative costs are quantified based on the incremental increase in administrative actions pertaining to the water treatment plant and purchase of Lake Nacimiento water. This includes time for management and clerical staff at a burdened rate commensurate with the position titles required to manage a surface water treatment plant and complete the necessary administrative requirements. This cost is incremental to the administrative staff currently employed by the City of Paso Robles to run and operate their existing water system.

⁶ 2.0 mgd is 83% of the 2.4 mgd surface water treatment plant. The lesser capacity considers a 17% average loss rate of groundwater over time that a recycled water treatment plant will not incur.

Operations costs include the cost of the raw water (\$1,180/AF⁷), treatment to Title 22 Drinking Water Standards and clear well storage and pumping. All energy and treatment related costs are included in this cost amount.

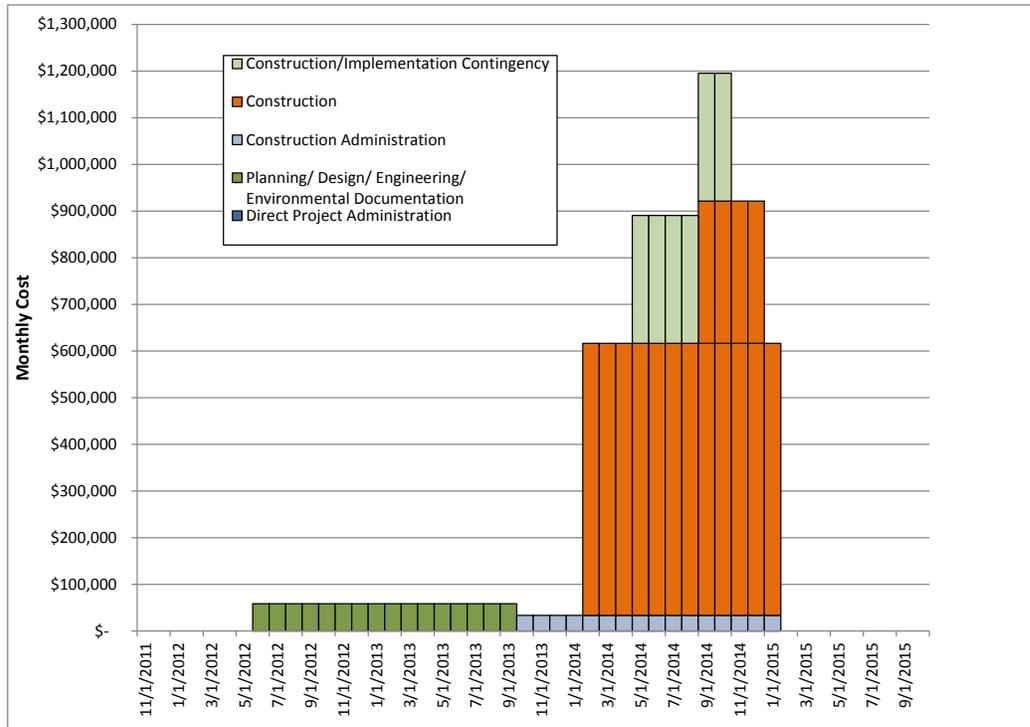


Figure 2-3. City of Paso Robles Lake Nacimiento Water Treatment Plant Project Cost Distribution

Maintenance costs stem from scheduled and unscheduled maintenance over each annual period.

Replacement assumes the lifecycle of the project is 50 years. Replacement costs assume that a portion of the valves, telemetry, computer and electrical equipment will need to be replaced or updated at the end of 30 years. A replacement fund is started 10 years prior to the assumed replacement event at an assumed cost of 15 percent of the total grant construction cost.

1.0.1 Benefits and Cost Tables

Below is the annual avoided cost benefits tables (**Table 2-3** and **Table 2-4**) and annual cost table (**Table 2-5**) for the City of Paso Robles Lake Nacimiento Water Treatment Plant Project.

⁷ Cost based on a calculation performed by County staff using the City’s portion of the overall operating budget (\$16.2M) and the 4,000 AFY entitlement.

Table 2-3. Annual Avoided Costs of Desalinization Water Treatment Plant for City of Paso Robles Lake Nacimiento Water Treatment Plant Project (Table 16 of 2012 Round 2 PSP)

(a)	Costs				Discounting Calculations		
	(b)	(c)	(d)	(e)	(f)	(g)	
Year	Alternative (Avoided Project Name): Avoided Desalinization Water Treatment Plant Avoided Project Description: 1.6 mgd (1,800 AFY) water treatment plant to continue using groundwater based on existing water demands and patterns of use. This plant will create low TDS water to mix with untreated groundwater to meet Title 22 Drinking Water Standards				Discount Factor	Discounted Costs (e) x (f)	
	Avoided Capital Costs	Avoided Replacement Costs	Avoided Operations and Maintenance Costs	Cost Avoided for Individual Alternatives (b) + (c) + (d)			
2012	\$0.00	\$0.00	\$0.00	\$0.00	1.00	\$0	
2013	\$0.00	\$0.00	\$0.00	\$0.00	0.94	\$0	
2014	\$0.00	\$0.00	\$0.00	\$0.00	0.89	\$0	
2015	\$0.00	\$0.00	\$0.00	\$0.00	0.84	\$0	
2016	\$925,281.59	\$0.00	\$3,090,903	\$4,016,184.72	0.79	\$3,181,194	
2017	\$925,281.59	\$0.00	\$3,182,740	\$4,108,021.89	0.75	\$3,069,753	
2018	\$925,281.59	\$0.00	\$3,277,333	\$4,202,614.18	0.70	\$2,962,677	
2019	\$925,281.59	\$0.00	\$3,374,763	\$4,300,044.24	0.67	\$2,859,775	
2020	\$925,281.59	\$0.00	\$3,475,116	\$4,400,397.20	0.63	\$2,760,864	
2021	\$925,281.59	\$0.00	\$3,578,479	\$4,503,760.75	0.59	\$2,665,769	
2022	\$925,281.59	\$0.00	\$3,684,944	\$4,610,225.20	0.56	\$2,574,326	
2023	\$925,281.59	\$0.00	\$3,794,602	\$4,719,883.59	0.53	\$2,486,376	
2024	\$925,281.59	\$0.00	\$3,907,550	\$4,832,831.73	0.50	\$2,401,769	
2025	\$925,281.59	\$0.00	\$4,023,887	\$4,949,168.32	0.47	\$2,320,363	
2026	\$925,281.59	\$0.00	\$4,143,713	\$5,068,995.00	0.44	\$2,242,021	
2027	\$925,281.59	\$0.00	\$4,267,135	\$5,192,416.48	0.42	\$2,166,614	
2028	\$925,281.59	\$0.00	\$4,394,259	\$5,319,540.61	0.39	\$2,094,017	
2029	\$925,281.59	\$0.00	\$4,525,197	\$5,450,478.46	0.37	\$2,024,114	
2030	\$925,281.59	\$0.00	\$4,660,063	\$5,585,344.44	0.35	\$1,956,791	
2031	\$925,281.59	\$0.00	\$4,798,975	\$5,724,256.41	0.33	\$1,891,941	
2032	\$925,281.59	\$0.00	\$4,942,054	\$5,867,335.73	0.31	\$1,829,463	
2033	\$925,281.59	\$0.00	\$5,089,426	\$6,014,707.44	0.29	\$1,769,259	
2034	\$925,281.59	\$0.00	\$5,241,219	\$6,166,500.29	0.28	\$1,711,235	
2035	\$925,281.59	\$0.00	\$5,397,565	\$6,322,846.94	0.26	\$1,655,304	
2036	\$925,281.59	\$0.00	\$5,558,602	\$6,483,883.98	0.25	\$1,601,380	
2037	\$925,281.59	\$0.00	\$5,724,471	\$6,649,752.13	0.23	\$1,549,383	
2038	\$925,281.59	\$0.00	\$5,895,315	\$6,820,596.32	0.22	\$1,499,235	
2039	\$925,281.59	\$0.00	\$6,071,284	\$6,996,565.85	0.21	\$1,450,864	
2040	\$925,281.59	\$0.00	\$6,252,533	\$7,177,814.45	0.20	\$1,404,197	
2041	\$925,281.59	\$0.00	\$6,439,219	\$7,364,500.52	0.18	\$1,359,168	
2042	\$925,281.59	\$0.00	\$6,631,506	\$7,556,787.17	0.17	\$1,315,713	
2043	\$925,281.59	\$0.00	\$6,829,561	\$7,754,842.42	0.16	\$1,273,770	
2044	\$925,281.59	\$0.00	\$7,033,558	\$7,958,839.32	0.15	\$1,233,281	
2045	\$925,281.59	\$0.00	\$7,243,675	\$8,168,956.13	0.15	\$1,194,189	
2046	\$925,281.59	\$0.00	\$7,460,095	\$8,385,376.45	0.14	\$1,156,440	
2047	\$0.00	\$0.00	\$7,683,008	\$7,683,007.79	0.13	\$999,599	
2048	\$0.00	\$0.00	\$7,912,608	\$7,912,608.10	0.12	\$971,200	
2049	\$0.00	\$0.00	\$8,149,096	\$8,149,096.42	0.12	\$943,610	
2050	\$0.00	\$0.00	\$8,392,679	\$8,392,679.40	0.11	\$916,807	
2051	\$0.00	\$0.00	\$8,643,570	\$8,643,569.86	0.10	\$890,768	
2052	\$0.00	\$0.00	\$8,901,987	\$8,901,987.04	0.10	\$865,471	
2053	\$0.00	\$0.00	\$9,168,157	\$9,168,156.73	0.09	\$840,895	
2054	\$0.00	\$0.00	\$9,442,312	\$9,442,311.51	0.09	\$817,019	
2055	\$0.00	\$0.00	\$9,724,691	\$9,724,690.93	0.08	\$793,823	
2056	\$0.00	\$0.00	\$10,015,542	\$10,015,541.74	0.08	\$771,288	
2057	\$0.00	\$0.00	\$10,315,118	\$10,315,118.07	0.07	\$749,394	
2058	\$0.00	\$0.00	\$10,623,682	\$10,623,681.70	0.07	\$728,124	
2059	\$0.00	\$0.00	\$10,941,502	\$10,941,502.23	0.06	\$707,459	
2060	\$0.00	\$0.00	\$11,268,857	\$11,268,857.37	0.06	\$687,382	
2061	\$0.00	\$0.00	\$11,606,033	\$11,606,033.17	0.06	\$667,877	
2062	\$0.00	\$0.00	\$11,953,324	\$11,953,324.25	0.05	\$648,926	
2063	\$0.00	\$0.00	\$12,311,034	\$12,311,034.06	0.05	\$630,515	
					Total Present Value of Discounted Costs (Sum of column (g))		\$75,291,402
					(%) Avoided Cost Claimed by Project		100%
					Total Present Value of Discounted Avoided Project Costs Claimed by Alternative Project (Total Present Value of Discounted Costs x % Avoided Cost Claimed by Project)		\$75,291,402
Comments: None							

Table 2-4. Annual Avoided Costs of Recycled Water Treatment Plant for City of Paso Robles Lake Nacimiento Water Treatment Plant Project (Table 16 of 2012 Round 2 PSP)

(a)	Costs				Discounting Calculations	
	(b)	(c)	(d)	(e)	(f)	(g)
Year	Alternative (Avoided Project Name): <u>City of Paso Avoided Recycled Water Treatment Plant for Drought Proof Water Supplies</u> Avoided Project Description: Construct 2.0 mgd (2,240 AFY) recycled water treatment plant for use as a dry month, drought year supply to meet outdoor irrigation water demands.				Discount Factor	Discounted Costs (e) x (f)
	Avoided Capital Costs	Avoided Replacement Costs	Avoided Operations and Maintenance Costs	Cost Avoided for Individual Alternatives (b) + (c) + (d)		
2012	\$0.00	\$0.00	\$0.00	\$0.00	1.00	\$0
2013	\$0.00	\$0.00	\$0.00	\$0.00	0.94	\$0
2014	\$0.00	\$0.00	\$0.00	\$0.00	0.89	\$0
2015	\$0.00	\$0.00	\$0.00	\$0.00	0.84	\$0
2016	\$545,738.12	\$0.00	\$1,599,803	\$2,145,540.96	0.79	\$1,699,469
2017	\$545,738.12	\$0.00	\$1,647,735	\$2,193,473.24	0.75	\$1,639,091
2018	\$545,738.12	\$0.00	\$1,697,105	\$2,242,843.50	0.70	\$1,581,116
2019	\$545,738.12	\$0.00	\$1,747,957	\$2,293,694.86	0.67	\$1,525,438
2020	\$545,738.12	\$0.00	\$1,800,334	\$2,346,071.76	0.63	\$1,471,954
2021	\$545,738.12	\$0.00	\$1,854,282	\$2,400,019.97	0.59	\$1,420,568
2022	\$545,738.12	\$0.00	\$1,909,849	\$2,455,586.62	0.56	\$1,371,187
2023	\$545,738.12	\$0.00	\$1,967,082	\$2,512,820.28	0.53	\$1,323,722
2024	\$545,738.12	\$0.00	\$2,026,033	\$2,571,770.94	0.50	\$1,278,091
2025	\$545,738.12	\$0.00	\$2,086,752	\$2,632,490.13	0.47	\$1,234,214
2026	\$545,738.12	\$0.00	\$2,149,293	\$2,695,030.89	0.44	\$1,192,015
2027	\$545,738.12	\$0.00	\$2,213,710	\$2,759,447.87	0.42	\$1,151,421
2028	\$545,738.12	\$0.00	\$2,280,059	\$2,825,797.37	0.39	\$1,112,365
2029	\$545,738.12	\$0.00	\$2,348,399	\$2,894,137.34	0.37	\$1,074,780
2030	\$545,738.12	\$0.00	\$2,418,789	\$2,964,527.52	0.35	\$1,038,604
2031	\$545,738.12	\$0.00	\$2,491,291	\$3,037,029.40	0.33	\$1,003,778
2032	\$545,738.12	\$0.00	\$2,565,968	\$3,111,706.34	0.31	\$970,245
2033	\$545,738.12	\$0.00	\$2,642,885	\$3,188,623.59	0.29	\$937,951
2034	\$545,738.12	\$0.00	\$2,722,110	\$3,267,848.35	0.28	\$906,845
2035	\$545,738.12	\$0.00	\$2,803,712	\$3,349,449.86	0.26	\$876,877
2036	\$545,738.12	\$0.00	\$2,887,761	\$3,433,499.41	0.25	\$848,001
2037	\$545,738.12	\$0.00	\$2,974,332	\$3,520,070.45	0.23	\$820,172
2038	\$545,738.12	\$0.00	\$3,063,501	\$3,609,238.62	0.22	\$793,347
2039	\$545,738.12	\$0.00	\$3,155,344	\$3,701,081.83	0.21	\$767,486
2040	\$545,738.12	\$0.00	\$3,249,942	\$3,795,680.35	0.20	\$742,549
2041	\$545,738.12	\$0.00	\$3,347,379	\$3,893,116.81	0.18	\$718,501
2042	\$545,738.12	\$0.00	\$3,447,738	\$3,993,476.37	0.17	\$695,305
2043	\$545,738.12	\$0.00	\$3,551,109	\$4,096,846.72	0.16	\$672,927
2044	\$545,738.12	\$0.00	\$3,657,580	\$4,203,318.18	0.15	\$651,335
2045	\$545,738.12	\$0.00	\$3,767,246	\$4,312,983.78	0.15	\$630,499
2046	\$545,738.12	\$0.00	\$3,880,201	\$4,425,939.35	0.14	\$610,388
2047	\$545,738.12	\$0.00	\$3,996,545	\$4,542,283.59	0.13	\$590,975
2048	\$545,738.12	\$0.00	\$4,116,380	\$4,662,118.15	0.12	\$572,232
2049	\$545,738.12	\$0.00	\$4,239,810	\$4,785,547.75	0.12	\$554,134
2050	\$545,738.12	\$0.00	\$4,366,942	\$4,912,680.24	0.11	\$536,656
2051	\$545,738.12	\$0.00	\$4,497,889	\$5,043,626.71	0.10	\$519,774
2052	\$545,738.12	\$0.00	\$4,632,763	\$5,178,501.56	0.10	\$503,465
2053	\$545,738.12	\$0.00	\$4,771,685	\$5,317,422.67	0.09	\$487,709
2054	\$545,738.12	\$0.00	\$4,914,773	\$5,460,511.40	0.09	\$472,484
2055	\$545,738.12	\$0.00	\$5,062,155	\$5,607,892.80	0.08	\$457,770
2056	\$545,738.12	\$0.00	\$5,213,958	\$5,759,695.64	0.08	\$443,549
2057	\$545,738.12	\$0.00	\$5,370,314	\$5,916,052.57	0.07	\$429,802
2058	\$545,738.12	\$0.00	\$5,531,362	\$6,077,100.20	0.07	\$416,511
2059	\$545,738.12	\$0.00	\$5,697,241	\$6,242,979.27	0.06	\$403,660
2060	\$545,738.12	\$0.00	\$5,868,097	\$6,413,834.70	0.06	\$391,234
2061	\$545,738.12	\$0.00	\$6,044,078	\$6,589,815.80	0.06	\$379,215
2062	\$545,738.12	\$0.00	\$6,225,338	\$6,771,076.33	0.05	\$367,591
2063	\$545,738.12	\$0.00	\$6,412,037	\$6,957,774.68	0.05	\$356,345
Total Present Value of Discounted Costs (Sum of column (g))						\$40,643,344
(%) Avoided Cost Claimed by Project						50%
Total Present Value of Discounted Avoided Project Costs Claimed by Alternative Project (Total Present Value of Discounted Costs x % Avoided Cost Claimed by Project)						\$20,321,672
Comments: None						

Table 2-5. Annual Cost of City of Paso Robles Lake Nacimiento Water Treatment Plant Project (Table 19 of 2012 Round 2 PSP)

(All costs should be in 2012 Dollars)										
City of Paso Robles Lake Nacimiento Water Treatment Plant Project										
YEAR	Initial Costs		Annual Costs						Discounting Calculations	
	Grant Costs		Operations and Maintenance Costs					Total Costs (a) +...+ (g)	Discount Factor (i)	Discounted Costs(h) x (i) (j)
	(row (i), column(d))	Adjusted Grant Costs	Admin	Operation	Maintenance	Replacement	Other			
	(a)	(b)	(c)	(d)	(e)	(f)	(g)			
2012	\$406,812	\$0	\$0	\$218,918	\$0	\$0	\$0	\$625,730	1.00	\$625,730
2013	\$622,503	\$0	\$0	\$225,485	\$0	\$0	\$0	\$847,989	0.943	\$799,989
2014	\$8,034,504	\$0	\$0	\$232,250	\$0	\$0	\$1,644,000	\$9,910,754	0.890	\$8,820,536
2015	\$616,486	\$0	\$0	\$239,218	\$0	\$0	\$0	\$855,704	0.840	\$718,466
2016	\$0	\$0	\$2,015,364	\$285,946	\$794,891	\$0	\$0	\$3,096,201	0.792	\$2,452,481
2017	\$0	\$0	\$2,075,825	\$293,338	\$818,737	\$0	\$0	\$3,187,900	0.747	\$2,382,185
2018	\$0	\$0	\$2,138,100	\$300,951	\$843,299	\$0	\$0	\$3,282,351	0.705	\$2,313,928
2019	\$0	\$0	\$2,202,243	\$308,793	\$868,598	\$0	\$0	\$3,379,635	0.665	\$2,247,650
2020	\$0	\$0	\$2,268,310	\$316,871	\$894,656	\$0	\$0	\$3,479,837	0.627	\$2,183,293
2021	\$0	\$0	\$2,336,359	\$325,190	\$921,496	\$0	\$0	\$3,583,046	0.592	\$2,120,799
2022	\$0	\$0	\$2,406,450	\$333,759	\$949,141	\$0	\$0	\$3,689,351	0.558	\$2,060,114
2023	\$0	\$0	\$2,478,644	\$342,586	\$977,615	\$0	\$0	\$3,798,845	0.527	\$2,001,184
2024	\$0	\$0	\$2,553,003	\$351,677	\$1,006,944	\$0	\$0	\$3,911,623	0.497	\$1,943,957
2025	\$0	\$0	\$2,629,593	\$361,040	\$1,037,152	\$0	\$0	\$4,027,785	0.469	\$1,888,383
2026	\$0	\$0	\$2,708,481	\$370,685	\$1,068,266	\$0	\$0	\$4,147,432	0.442	\$1,834,413
2027	\$0	\$0	\$2,789,735	\$380,619	\$1,100,314	\$0	\$0	\$4,270,669	0.417	\$1,782,001
2028	\$0	\$0	\$2,873,427	\$390,851	\$1,133,324	\$0	\$0	\$4,397,602	0.394	\$1,731,100
2029	\$0	\$0	\$2,959,630	\$401,390	\$1,167,324	\$0	\$0	\$4,528,344	0.371	\$1,681,666
2030	\$0	\$0	\$3,048,419	\$412,245	\$1,202,343	\$0	\$0	\$4,663,008	0.350	\$1,633,656
2031	\$0	\$0	\$3,139,872	\$423,426	\$1,238,414	\$0	\$0	\$4,801,711	0.331	\$1,587,028
2032	\$0	\$0	\$3,234,068	\$434,942	\$1,275,566	\$0	\$0	\$4,944,576	0.312	\$1,541,742
2033	\$0	\$0	\$3,331,090	\$446,804	\$1,313,833	\$123,300	\$0	\$5,215,027	0.294	\$1,534,028
2034	\$0	\$0	\$3,431,023	\$459,021	\$1,353,248	\$123,300	\$0	\$5,366,592	0.278	\$1,489,257
2035	\$0	\$0	\$3,533,953	\$471,605	\$1,393,845	\$123,300	\$0	\$5,522,704	0.262	\$1,445,829
2036	\$0	\$0	\$3,639,972	\$484,567	\$1,435,661	\$123,300	\$0	\$5,683,500	0.247	\$1,403,703
2037	\$0	\$0	\$3,749,171	\$497,918	\$1,478,731	\$123,300	\$0	\$5,849,119	0.233	\$1,362,837
2038	\$0	\$0	\$3,861,646	\$511,668	\$1,523,093	\$123,300	\$0	\$6,019,707	0.220	\$1,323,192
2039	\$0	\$0	\$3,977,496	\$525,832	\$1,568,785	\$123,300	\$0	\$6,195,413	0.207	\$1,284,730
2040	\$0	\$0	\$4,096,820	\$540,420	\$1,615,849	\$123,300	\$0	\$6,376,390	0.196	\$1,247,414
2041	\$0	\$0	\$4,219,725	\$555,446	\$1,664,324	\$123,300	\$0	\$6,562,796	0.185	\$1,211,208
2042	\$0	\$0	\$4,346,317	\$570,923	\$1,714,254	\$123,300	\$0	\$6,754,794	0.174	\$1,176,078
2043	\$0	\$0	\$4,476,706	\$586,864	\$1,765,682	\$0	\$0	\$6,829,253	0.164	\$1,121,738
2044	\$0	\$0	\$4,611,008	\$603,284	\$1,818,652	\$0	\$0	\$7,032,944	0.155	\$1,089,807
2045	\$0	\$0	\$4,749,338	\$620,196	\$1,873,212	\$0	\$0	\$7,242,745	0.146	\$1,058,790
2046	\$0	\$0	\$4,891,818	\$637,615	\$1,929,408	\$0	\$0	\$7,458,841	0.138	\$1,028,660
2047	\$0	\$0	\$5,038,572	\$655,557	\$1,987,290	\$0	\$0	\$7,681,420	0.130	\$999,393
2048	\$0	\$0	\$5,189,730	\$674,037	\$2,046,909	\$0	\$0	\$7,910,676	0.123	\$970,962
2049	\$0	\$0	\$5,345,422	\$693,072	\$2,108,316	\$0	\$0	\$8,146,809	0.116	\$943,345
2050	\$0	\$0	\$5,505,784	\$712,677	\$2,171,566	\$0	\$0	\$8,390,027	0.109	\$916,517
2051	\$0	\$0	\$5,670,958	\$732,871	\$2,236,713	\$0	\$0	\$8,640,541	0.103	\$890,455
2052	\$0	\$0	\$5,841,086	\$753,671	\$2,303,814	\$0	\$0	\$8,898,571	0.097	\$865,139
2053	\$0	\$0	\$6,016,319	\$775,094	\$2,372,929	\$0	\$0	\$9,164,342	0.092	\$840,545
2054	\$0	\$0	\$6,196,809	\$797,160	\$2,444,116	\$0	\$0	\$9,438,085	0.087	\$816,653
2055	\$0	\$0	\$6,382,713	\$819,889	\$2,517,440	\$0	\$0	\$9,720,041	0.082	\$793,443
2056	\$0	\$0	\$6,574,194	\$843,299	\$2,592,963	\$0	\$0	\$10,010,456	0.077	\$770,896
2057	\$0	\$0	\$6,771,420	\$867,411	\$2,670,752	\$0	\$0	\$10,309,583	0.073	\$748,992
2058	\$0	\$0	\$6,974,563	\$892,247	\$2,750,875	\$0	\$0	\$10,617,684	0.069	\$727,713
2059	\$0	\$0	\$7,183,800	\$917,828	\$2,833,401	\$0	\$0	\$10,935,028	0.065	\$707,040
2060	\$0	\$0	\$7,399,314	\$944,176	\$2,918,403	\$0	\$0	\$11,261,892	0.061	\$686,957
2061	\$0	\$0	\$7,621,293	\$971,315	\$3,005,955	\$0	\$0	\$11,598,563	0.058	\$667,447
2062	\$0	\$0	\$7,849,932	\$999,268	\$3,096,134	\$0	\$0	\$11,945,333	0.054	\$648,493
2063	\$0	\$0	\$8,085,430	\$1,028,059	\$3,189,018	\$0	\$0	\$12,302,506	0.051	\$630,078
Total Present Value of Discounted Costs (Sum of Column (j))										\$75,751,639

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Project 2. Attiyeh Ranch Conservation Easement

Brief Project Description: The purpose of the Attiyeh Ranch conservation easement is to preserve the Attiyeh Ranch and prevent the conversion of rangeland, grazing land and grassland to nonagricultural uses; to protect the long-term sustainability of livestock grazing and the benefits that occur from livestock grazing; to preserve the natural ecosystem that exists today for environmental and social benefits; and to ensure continued wildlife, water quality, watershed and open-space benefits from livestock grazing on the 8,300 acre ranch. It is further the purpose of the conservation easement to ensure the Attiyeh Ranch will be retained forever in its agricultural and natural condition and to prevent uses within the ranch that will significantly impair or interfere with the open space, agricultural, and natural habitat values of the ranch. The conservation easement will confine the use of the ranch to such activities, including, without limitation, those involving livestock grazing, habitat protection, education and other compatible uses.

Below is the development of a present worth evaluation of the project and its incremental increase in administrative, and operations and maintenance costs, and monetized benefits. In summary, the monetized flood protection and sediment control benefits for the Attiyeh Ranch Conservation Easement project totals \$32.5M, and the total cost is \$7.65 million, resulting in a project benefit/ cost ratio of 4.6.

2.0 Background

The Land Conservancy is the lead agency for the completion of the Attiyeh Ranch Conservation Easement project. The current value of the Attiyeh Ranch is approximately \$ 8,310,000. The land is privately owned by the Attiyeh Foundation, Robert S. and Linda H. Attiyeh, and Robert JS Attiyeh. The conservation easement will encumber the entire 8,305 acre ranch located in San Luis Obispo and Monterey Counties, and includes over six miles of Nacimiento River directly upstream of Nacimiento Reservoir. The conservation easement value estimate is based on a prior appraisal and recent comparable sale of similar ranch property in Monterey County. In January, 2011 the Oak Ridge Ranch (6,375 acres) sold for \$14,900,000 giving the land value \$2,102 an acre. With these resources the land value for Attiyeh Ranch, to purchase it in fee, was determined to be \$2,000 an acre. Conservation easement values are approximately 50% the value of the property, giving the Attiyeh Ranch Conservation Easement a value of \$1,000 an acre, or \$8,305,000. Title and escrow costs for the conservation easement will be an additional \$5,000.

Grant funding is being requested for 25% of this task. The landowner will be providing an additional 23% of the conservation easement value, and the remaining funds will be acquired through the following funding sources currently being developed:

- Department of Fish and Wildlife (Wildlife Conservation Board)
- Department of Defense (Readiness and Environmental Protection Initiative)

- The Nature Conservancy (Packard Foundation, Land and Water Conservation Fund)
- The Wyss Foundation

The primary physical benefits attributed to this project are as follows (also shown in **Table 1-5**):

- **Water Supply Benefits:** Protects the current water supply by maintaining the existing water supply at its current capacity and avoids water supply purchase costs that would otherwise be incurred if future land use modifications resulted in changes to the magnitude and timing of inflow to Nacimiento Reservoir.
- **Environmental Stewardship Benefits:** Protects 8,305 acres of open space which supports local wildlife populations and wildlife corridors. Preserves the current land practices and protects from increased soil erosion that would lead to degraded habitat conditions on the mainstream of the Nacimiento River and its key tributaries.
- **Community/Social Benefits:** Allows public access on the ranch with docent-led hikes which increases the amount of open space accessible to the public in the Nacimiento Reservoir area and preserves scenic enjoyment for visitors.

2.1 Project Utilization

In the context of project costs, the conservation easement will include the following activities: 1) the land will be purchased and converted to a conservation easement, 2) a stewardship plan will be implemented to manage the property for public access and ecosystem preservation, and 3) a long term annual operational fund will be setup to cover expenses of managing the property and provide Project reporting and continued public outreach and education. The public access plan will restrict access in highly sensitive areas through fencing and signage. In less sensitive area, vehicle access, parking and docent led trail systems will be constructed and maintained in perpetuity. Maintenance costs will pay for resurfacing, signage, brush and trail clearing activities, and needed equipment.

2.2 Project Budget

Based on Attachment 4 – Budget, the total project budget is estimated to total **\$8,472,390** with a 25 percent local cost share, used to satisfy the Proposal’s need to meet or exceed the minimum 25 percent local funding match requirement for non-DAC projects. **Table 2-6** (also included in Attachment 4 – Budget), and Attachment 5 – Schedule are used to spread grant costs over the expected grant implementation timeline.

Table 2-6. Attiyeh Ranch Conservation Easement Budget (Table 7 of 2012 Round 2 PSP)

Project serves a need of a DAC?: Yes No		No			
Funding Match Waiver request?: Yes No		No			
Category		(a)	(b)	(c)	(d)
		Requested Grant Amount	Cost Share: Non-State Fund Source* (Funding Match)	Cost Share: Other State Fund Source**	Total Cost
(a)	Direct Project Administration	\$0	\$0	\$112,115	\$112,115
(b)	Land Purchase/ Easement	\$2,100,000	\$1,944,354	\$4,262,646	\$8,307,000
(c)	Planning/ Design/ Engineering/ Environmental Documentation	\$0	\$42,620	\$0	\$42,620
(d)	Construction/ Implementation	\$0	\$10,655	\$0	\$10,655
(e)	Environmental Compliance/ Mitigation/ Enhancement	\$0	\$0	\$0	\$0
(f)	Construction Administration	\$0	\$0	\$0	\$0
(g)	Other Costs	\$0	\$0	\$0	\$0
(h)	Construction/Implementation Contingency	\$0	\$0	\$0	\$0
(i)	Grand Total (Sum rows (a) through (h))	\$2,100,000	\$1,997,629	\$4,374,761	\$8,472,390

*The source of Non-State Share is coming from private and public contributions.

2.0 Benefits and Cost

Measurement and initial quantification of the physical benefits is provided in Attachment 7 – Technical Justification. The Attiyeh Ranch Conservation Easement is closely tied with differences in land use with and without the project. The uses of the Project site, if not conserved through an easement, could be converted from the existing open space and ranch uses to a combination of vineyards, ranchette homes, and intensive grazed ranching activities. The implication of such land use conversions is increased water consumption, higher rainfall runoff and sediment transport to downstream creeks, rivers, and Lake Nacimiento. The Project also adds accessibility to the property where none was allowed prior to the project.

Of the DWR methods for quantifying benefits, method Section D3 – Monetized Benefits Analysis has been selected for Water Supply and Environmental Stewardship benefits based on the grant amount and the ability to monetize the benefits in terms of an annual dollar value for each year of the project’s operation. Project Costs will be based on the five (5) cost elements described in **Table 2-1**.

Section D2– Non-Monetized Benefits Analysis has been selected for the Community/Social Benefits based on making private lands open to the public.

2.0.1 Description of Monetized Benefits

The preservation of the Attiyeh Ranch as open space prevents higher intensity land uses that would exacerbate soil erosion and degrade aquatic habitat. In the *San Antonio and Nacimiento Rivers Watershed Management Plan* (2008)⁸, a comparison of landscape-scale rates of erosion, based on data from sediment monitoring stations, shows a clear distinction in the rates and patterns of erosion and sediment delivery for the Nacimiento watershed and the San Antonio watershed. The most significant sources of sediment within the Nacimiento watershed were determined to be reactivation of previously deposited alluvial materials and fire-dependent influxes of sediment from the upper watershed. Conversely, the San Antonio watershed, which abuts the Nacimiento watershed to the east, has a higher proportion of total sediment delivery derived from higher intensity land uses such as agriculture, grazing, and residential development.

2.0.1.1 Water Supply Benefit Approach

Changes in land use from a natural state of flora and fauna to some form of beneficial use for urban and agricultural uses comes with an increase in water consumption. The high potential for vineyards and ranchette housing being developed over the Attiyeh Ranch lands⁹ can be used as an avoided cost of having to import water from Lake Nacimiento, assuming indigenous groundwater supplies are insufficient to sustain these long term uses. The annualized cost and conveyance of raw surface water supplies to meet increased water demands is used as a monetized benefit of conserving the land from being developed.

The conservative incremental water demand calculation is based on 50 percent coverage of the Attiyeh Ranch 8,305 acres with vineyards, 20 percent coverage with ranchette homes and 30 percent left as open space. Annual outdoor irrigation unit water demand factors for vineyards (on drip systems) and ranchette land uses with minimal landscaping are 0.45 AF/acre/year and 0.05 AF/acre/year, respectively.¹⁰ Summing the three land use water demands equates to 1,950 AFY. Assuming equivalent raw water costs as Project 1 – City of Paso Robles Lake Nacimiento Water Treatment Plant, the annual raw water cost is estimated at \$1,180 /AF. This cost includes repayment of large conveyance structures, and operations and maintenance activities to deliver the water to the property boundary. The product of the volume of water and the unit cost equates to \$2.3M of annual wholesale raw water cost (placed as an avoided operations cost).

2.0.1.2 Environmental Stewardship Benefit Approach

Increased rainfall runoff and sediment/contaminant transport into waterways resulting from changes in land use can be mitigated through use of detention basins which store the incremental increases in runoff and allow sufficient detention time for sediments (and contaminants such as heavy metals) to settle out in the basin before being released after the rainfall event. This form of mitigation is typically tied to the 100 year storm event and preventing changes in the FEMA

⁸ Nacitone Watersheds Steering Committee and Central Coast Salmon Enhancement, Inc. “San Antonio and Nacimiento Rivers Watershed Management Plan”. 2008.

⁹ The conservation easement is not removing prime lands considered by the County Planning Department to be available for urban or agricultural development; therefore, no cost is attributed to having to relocate these uses to other similarly environmentally sensitive areas.

¹⁰ Vineyard unit demand factor based on “Baseline Water Demand Proposed Laetitia Agricultural Cluster Subdivision San Luis Obispo County.” [Geosyntec Consultants, April 2012]

designated floodplains of downstream watersheds. Mitigation for increased runoff translates into changing the flood hydrograph so as not to exceed the existing (before development) 100 year stage elevation downstream.

Figure 2-4 provides an illustrative example of a 100-year storm event hydrograph, measuring flow (in cfs) in a small receiving river. With the conservation easement (the blue line), the amount of runoff and the peak flows are going to be less than if the property is permitted to develop into vineyards and ranchette homes (the red line). The detention basin (dashed line) serves to store the incremental increase in runoff volume (213 AF per year¹¹) and reduce the peak flow back to the lower, with-project, flow rates.

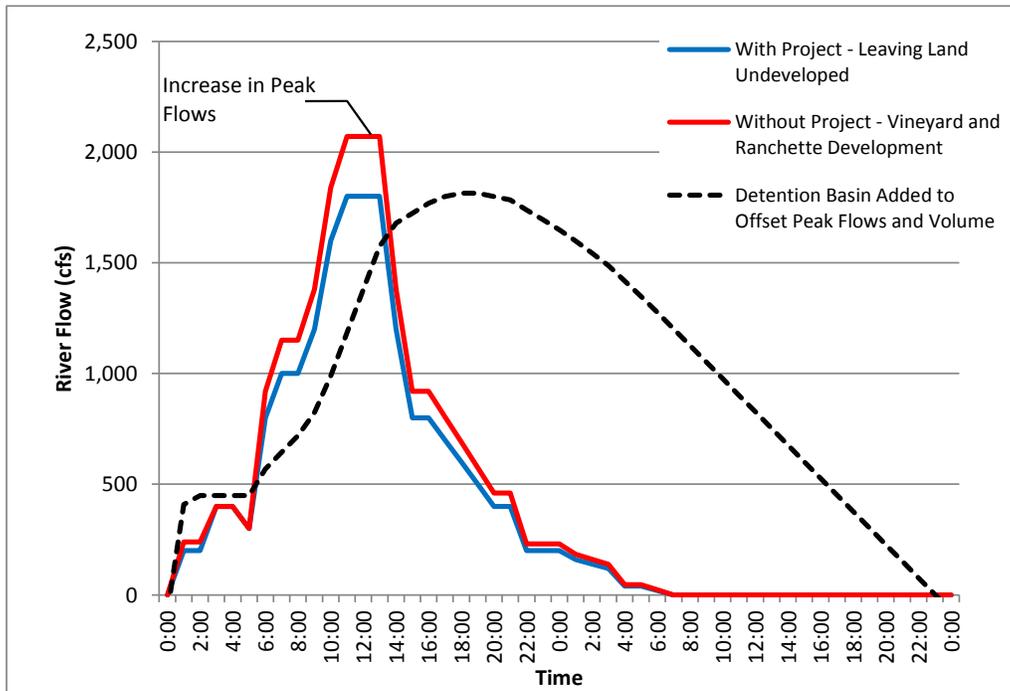


Figure 2-4. Illustrative Example of Detention Basin Storage Benefits to Streamflow Hydrograph

Without the Project, any development proposal for Attiyeh Ranch would be conditioned to avoid any increase in the 100 year floodplain and to provide for sediment capture on-site through implementation of Best Management Practices including the use of detention basins. The monetized benefit becomes the avoided cost of not having to build an estimated 150 AF off-stream detention basin (a small 10 acre pond, 15 feet deep) and long term maintenance to clear brush and debris, and to test and haul sediments away over time.¹² The annualized unit cost of constructing and maintaining the basin over a 50 year life is estimated at \$0.207 M per year. The basin is considered to be in-stream and be credited to reduce sediments in all rainfall events (i.e., less than 100 year event). Maintenance of the basin is assumed to occur every two years at \$15,000 per event.

¹¹ See Attachment 7 – Technical Justification Table 2-7 for additional spill volume for vineyard and ranchette development. Intensive grazing (worst case) is not used in this analysis.

¹² A secondary benefit, but not included, is the potential for groundwater recharge from standing water in the basin.

2.0.1.1 Community/Social Benefit Approach

The community (public) benefit provides no opportunity for monetized benefits approach. As a non-monetized benefit, Table 12 of the 2012 PSP for Round 2 is used to provide a description of the Project’s Community/Social, Environmental Stewardship and Sustainability Benefits.

Community/Social benefits include public educational materials, docent-led hikes and maintaining natural scenic conditions over the 8,305 acres of the Attiyeh Ranch property. As stated in the monetized benefits, the Project will also prevent increased flooding risk and increased sediment and urban/agricultural pollution.

Environmental Stewardship benefits include habitat preservation for state listed threatened species and improve water quality to sustain the wildlife living on or migrating through the project lands.

Sustainability benefits include long-term groundwater protection and enhanced recharge by preventing water intensive uses from occurring on the project lands. Critical recharge areas will remain natural to continue to capture rainfall where outcroppings and native soils are connected to the regional aquifer system.

2.0.2 Description of Project Costs

One-time Project costs include the land purchase and project administrative efforts to manage the purchase and reporting requirements. Additional costs include the setup costs for implementation of the public use plan. Annual operations costs are nominal and include administration, general oversight and monitoring, and maintenance activities.

Cost Category	Description	Frequency of Occurrence
Grant Costs	Purchase of the conservation easement and administrative requirements to implement the public use plan and reporting	Over Period of Transfer of Fee Title
Administrative	General oversight of stewardship efforts	Continuous
Operation	Annual monitoring and stewardship of the conservation easement.	Continuous
Maintenance	Repair of signage, roads, trails, equipment	Continuous
Replacement	None	

Grant Costs (first row) are based on **Table 2-6** and distributed over the project schedule starting in January 2013 with initial planning, development of financing and appraisal studies, and ending in September 2015. The monthly distribution of the Grant costs is shown in **Figure 2-5** below. The left vertical axis reflects the monthly distribution of the administrative costs, and the right vertical axis the actual purchase amount for the conservation easement.

Administrative costs are quantified based on the incremental increase in administrative actions pertaining to the annual stewardship responsibilities of the easement. The assumed amount of effort includes part time and volunteer contributions for administrative management activities and operations and maintenance requirements to monitor and sustain the stewardship plan requirements.

Operations costs include nominal expenses related to monitoring, docent-led trail events, and public education and outreach.

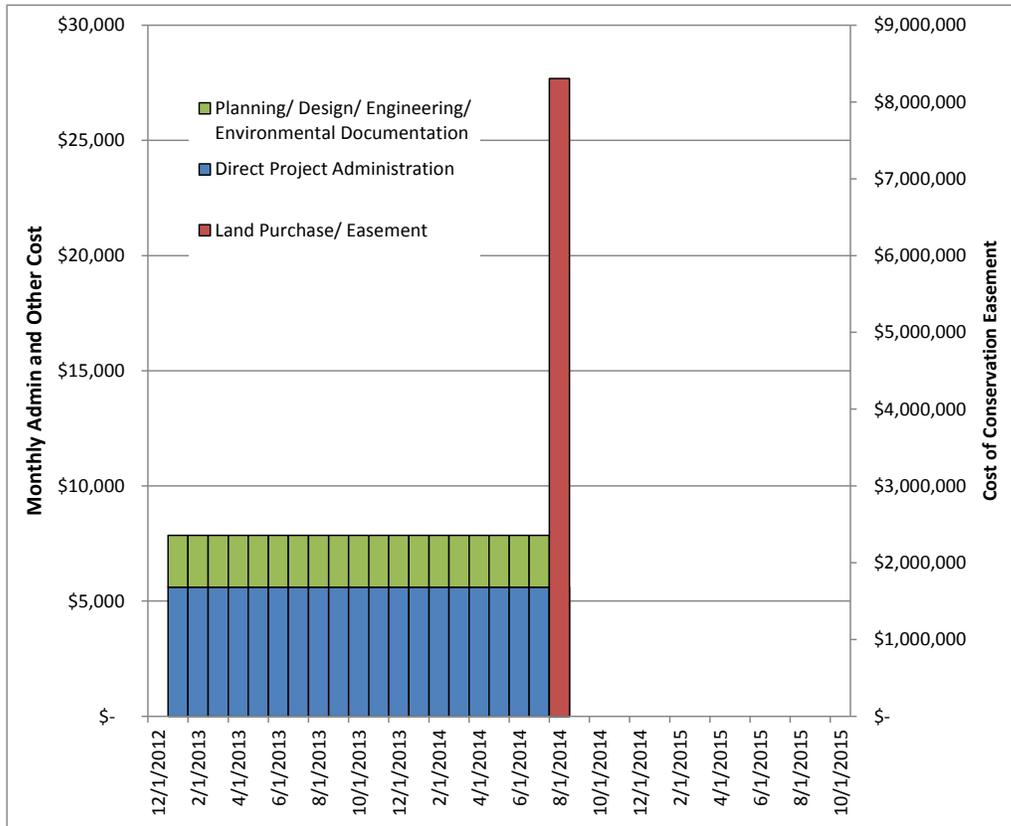


Figure 2-5. Attiyeh Ranch Conservation Easement Project Cost Distribution

Maintenance costs include keeping the property in good condition with fences, roads and signage inspected and in-place in perpetuity.

2.0.1 Benefits and Cost Tables

Below is the annual monetized benefits table (Table 2-7) and annual cost table (Table 2-10) for the Attiyeh Ranch Conservation Easement Project. Table 2-9 provides the non-monetized benefits in the required format.

Table 2-7. Annual Avoided Costs of Raw Water for Attiyeh Ranch Conservation Easement Project (Table 16 from 2012 Round 2 PSP)

(a)	Costs				Discounting Calculations	
	(b)	(c)	(d)	(e)	(f)	(g)
Year	Alternative (Avoided Project Name): Avoided Attiyeh Ranch Raw Water Purchase from Lake Nacimiento Avoided Project Description: Raw water supply to support development on the Attiyeh Ranch property if permitted to develop into vineyards and ranchette homes.				Discount Factor	Discounted Costs (e) x (f)
	Avoided Capital Costs	Avoided Replacement Costs	Avoided Operations and Maintenance Costs	Cost Avoided for Individual Alternatives (b) + (c) + (d)		
2012	\$0	\$0	\$0	\$0	1.00	\$0
2013	\$0	\$0	\$0	\$0	0.94	\$0
2014	\$0	\$0	\$0	\$0	0.89	\$0
2015	\$0	\$0	\$0	\$0	0.84	\$0
2016	\$0	\$0	\$0	\$0	0.79	\$0
2017	\$0	\$0	\$0	\$0	0.75	\$0
2018	\$0	\$0	\$2,442,558	\$2,442,558	0.70	\$1,721,907
2019	\$0	\$0	\$2,466,983	\$2,466,983	0.67	\$1,640,685
2020	\$0	\$0	\$2,491,653	\$2,491,653	0.63	\$1,563,294
2021	\$0	\$0	\$2,516,570	\$2,516,570	0.59	\$1,489,554
2022	\$0	\$0	\$2,541,736	\$2,541,736	0.56	\$1,419,292
2023	\$0	\$0	\$2,567,153	\$2,567,153	0.53	\$1,352,344
2024	\$0	\$0	\$2,592,824	\$2,592,824	0.50	\$1,288,554
2025	\$0	\$0	\$2,618,753	\$2,618,753	0.47	\$1,227,773
2026	\$0	\$0	\$2,644,940	\$2,644,940	0.44	\$1,169,860
2027	\$0	\$0	\$2,671,390	\$2,671,390	0.42	\$1,114,678
2028	\$0	\$0	\$2,698,103	\$2,698,103	0.39	\$1,062,098
2029	\$0	\$0	\$2,725,084	\$2,725,084	0.37	\$1,011,999
2030	\$0	\$0	\$2,752,335	\$2,752,335	0.35	\$964,264
2031	\$0	\$0	\$2,779,859	\$2,779,859	0.33	\$918,779
2032	\$0	\$0	\$2,807,657	\$2,807,657	0.31	\$875,441
2033	\$0	\$0	\$2,835,734	\$2,835,734	0.29	\$834,146
2034	\$0	\$0	\$2,864,091	\$2,864,091	0.28	\$794,800
2035	\$0	\$0	\$2,892,732	\$2,892,732	0.26	\$757,309
2036	\$0	\$0	\$2,921,659	\$2,921,659	0.25	\$721,587
2037	\$0	\$0	\$2,950,876	\$2,950,876	0.23	\$687,550
2038	\$0	\$0	\$2,980,385	\$2,980,385	0.22	\$655,118
2039	\$0	\$0	\$3,010,189	\$3,010,189	0.21	\$624,217
2040	\$0	\$0	\$3,040,291	\$3,040,291	0.20	\$594,772
2041	\$0	\$0	\$3,070,693	\$3,070,693	0.18	\$566,717
2042	\$0	\$0	\$3,101,400	\$3,101,400	0.17	\$539,985
2043	\$0	\$0	\$3,132,414	\$3,132,414	0.16	\$514,514
2044	\$0	\$0	\$3,163,739	\$3,163,739	0.15	\$490,245
2045	\$0	\$0	\$3,195,376	\$3,195,376	0.15	\$467,120
2046	\$0	\$0	\$3,227,330	\$3,227,330	0.14	\$445,086
2047	\$0	\$0	\$3,259,603	\$3,259,603	0.13	\$424,091
2048	\$0	\$0	\$3,292,199	\$3,292,199	0.12	\$404,087
2049	\$0	\$0	\$3,325,121	\$3,325,121	0.12	\$385,026
2050	\$0	\$0	\$3,358,372	\$3,358,372	0.11	\$366,865
2051	\$0	\$0	\$3,391,956	\$3,391,956	0.10	\$349,560
2052	\$0	\$0	\$3,425,875	\$3,425,875	0.10	\$333,071
2053	\$0	\$0	\$3,460,134	\$3,460,134	0.09	\$317,360
2054	\$0	\$0	\$3,494,736	\$3,494,736	0.09	\$302,390
2055	\$0	\$0	\$3,529,683	\$3,529,683	0.08	\$288,127
2056	\$0	\$0	\$3,564,980	\$3,564,980	0.08	\$274,536
2057	\$0	\$0	\$3,600,630	\$3,600,630	0.07	\$261,586
2058	\$0	\$0	\$3,636,636	\$3,636,636	0.07	\$249,247
2059	\$0	\$0	\$3,673,002	\$3,673,002	0.06	\$237,490
2060	\$0	\$0	\$3,709,732	\$3,709,732	0.06	\$226,288
2061	\$0	\$0	\$3,746,830	\$3,746,830	0.06	\$215,614
2062	\$0	\$0	\$3,784,298	\$3,784,298	0.05	\$205,443
2063	\$0	\$0	\$3,822,141	\$3,822,141	0.05	\$195,753
					Total Present Value of Discounted Costs (Sum of column (g))	\$32,550,224
(%) Avoided Cost Claimed by Project						100%
Total Present Value of Discounted Avoided Project Costs Claimed by Alternative Project (Total Present Value of Discounted Costs x % Avoided Cost Claimed by Project)						\$32,550,224
Comments: None						

Table 2-8. Annual Avoided Costs of Detention Basin for Attiyeh Ranch Conservation Easement Project (Table 16 of 2012 Round 2 PSP)

(a)	Costs				Discounting Calculations		
	(b)	(c)	(d)	(e)	(f)	(g)	
Year	Alternative (Avoided Project Name): <u>Avoided Attiyeh Ranch Property Stormwater Detention Basin for Reducing Peak Flows and Controlling Sediment Transport</u> Avoided Project Description: Structural mitigation measure for increased rainfall runoff on the Attiyeh Ranch property if permitted to develop vineyards and ranchette homes.				Discount Factor	Discounted Costs (e) x (f)	
	Avoided Capital Costs	Avoided Replacement Costs	Avoided Operations and Maintenance Costs	Cost Avoided for Individual Alternatives (b) + (c) + (d)			
2012	\$0	\$0	\$0	\$0	1.00	\$0	
2013	\$0	\$0	\$0	\$0	0.94	\$0	
2014	\$0	\$0	\$0	\$0	0.89	\$0	
2015	\$0	\$0	\$0	\$0	0.84	\$0	
2016	\$0	\$0	\$0	\$0	0.79	\$0	
2017	\$0	\$0	\$0	\$0	0.75	\$0	
2018	\$206,813	\$0	\$16,405	\$223,219	0.70	\$157,360	
2019	\$206,813	\$0	\$0	\$206,813	0.67	\$137,543	
2020	\$206,813	\$0	\$0	\$206,813	0.63	\$129,757	
2021	\$206,813	\$0	\$17,942	\$224,755	0.59	\$133,032	
2022	\$206,813	\$0	\$0	\$206,813	0.56	\$115,483	
2023	\$206,813	\$0	\$0	\$206,813	0.53	\$108,947	
2024	\$206,813	\$0	\$20,218	\$227,031	0.50	\$112,827	
2025	\$206,813	\$0	\$0	\$206,813	0.47	\$96,962	
2026	\$206,813	\$0	\$0	\$206,813	0.44	\$91,474	
2027	\$206,813	\$0	\$23,472	\$230,285	0.42	\$96,090	
2028	\$206,813	\$0	\$0	\$206,813	0.39	\$81,411	
2029	\$206,813	\$0	\$0	\$206,813	0.37	\$76,803	
2030	\$206,813	\$0	\$28,076	\$234,889	0.35	\$82,292	
2031	\$206,813	\$0	\$0	\$206,813	0.33	\$68,354	
2032	\$206,813	\$0	\$0	\$206,813	0.31	\$64,485	
2033	\$206,813	\$0	\$34,601	\$241,414	0.29	\$71,013	
2034	\$206,813	\$0	\$0	\$206,813	0.28	\$57,392	
2035	\$206,813	\$0	\$0	\$206,813	0.26	\$54,143	
2036	\$206,813	\$0	\$43,934	\$250,747	0.25	\$61,929	
2037	\$206,813	\$0	\$0	\$206,813	0.23	\$48,187	
2038	\$206,813	\$0	\$0	\$206,813	0.22	\$45,460	
2039	\$206,813	\$0	\$57,475	\$264,288	0.21	\$54,805	
2040	\$206,813	\$0	\$0	\$206,813	0.20	\$40,459	
2041	\$206,813	\$0	\$0	\$206,813	0.18	\$38,169	
2042	\$206,813	\$0	\$77,467	\$284,280	0.17	\$49,496	
2043	\$206,813	\$0	\$0	\$206,813	0.16	\$33,970	
2044	\$206,813	\$0	\$0	\$206,813	0.15	\$32,047	
2045	\$206,813	\$0	\$107,578	\$314,391	0.15	\$45,960	
2046	\$206,813	\$0	\$0	\$206,813	0.14	\$28,522	
2047	\$206,813	\$0	\$0	\$206,813	0.13	\$26,907	
2048	\$206,813	\$0	\$153,919	\$360,732	0.12	\$44,277	
2049	\$206,813	\$0	\$0	\$206,813	0.12	\$23,948	
2050	\$206,813	\$0	\$0	\$206,813	0.11	\$22,592	
2051	\$206,813	\$0	\$226,896	\$433,709	0.10	\$44,696	
2052	\$206,813	\$0	\$0	\$206,813	0.10	\$20,107	
2053	\$206,813	\$0	\$0	\$206,813	0.09	\$18,969	
2054	\$206,813	\$0	\$344,607	\$551,420	0.09	\$47,713	
2055	\$206,813	\$0	\$0	\$206,813	0.08	\$16,882	
2056	\$206,813	\$0	\$0	\$206,813	0.08	\$15,926	
2057	\$206,813	\$0	\$539,245	\$746,058	0.07	\$54,201	
2058	\$206,813	\$0	\$0	\$206,813	0.07	\$14,175	
2059	\$206,813	\$0	\$0	\$206,813	0.06	\$13,372	
2060	\$206,813	\$0	\$869,384	\$1,076,197	0.06	\$65,646	
2061	\$206,813	\$0	\$0	\$206,813	0.06	\$11,901	
2062	\$206,813	\$0	\$0	\$206,813	0.05	\$11,228	
2063	\$206,813	\$1	\$1,444,115	\$1,650,929	0.05	\$84,553	
					Total Present Value of Discounted Costs (Sum of column (g))		\$2,751,466
(%) Avoided Cost Claimed by Project						100%	
Total Present Value of Discounted Avoided Project Costs Claimed by Alternative Project (Total Present Value of Discounted Costs x % Avoided Cost Claimed by Project)						\$2,751,466	
Comments: None							

Table 2-9. Non-Monetized Benefits of Attiyeh Ranch Conservation Easement Project (Table 12 of 2012 Round 2 PSP)

No.	Question	Enter "Yes", "No" or "Neg"
	Community/Social Benefits Will the proposal	
1	Provide education or technology benefits?	Yes
	Docent-led hikes on the Attiyeh Ranch will be hosted by The Land Conservancy staff, 2-3 times annually. The value of natural resources on the ranch, including water resources, will be discussed and will increase public awareness of water conservation.	
2	Provide social recreation or access benefits?	Yes
	Provide over 8,000 acres of open space for public recreation adjacent to Lake Nacimiento.	
3	Help avoid, reduce or resolve various public water resources conflicts?	No
4	Promote social health and safety?	Yes
	Prevents development on the Attiyeh Ranch that could reduce water quality from runoff of harmful contaminants in Lake Nacimiento associated with intensive grazing, vineyards, ranchettes and hobby farms.	
5	Have other social benefits?	No
	Environmental Stewardship Benefits: Will the proposal	
6	Benefit wildlife or habitat in ways that were not quantified in Attachment 7?	Yes
	Protects water quality and supply in Nacimiento Reservoir, water source for Nacimiento River which is listed critical habitat for the critical habitat for state listed threatened species steelhead trout (<i>Oncorhynchus mykiss</i>).	
7	Improve water quality in ways that were not quantified in Attachment 7?	Yes
	Protects water quality in Nacimiento Reservoir by allowing water to naturally percolate through the soil, cleaning contaminants from the water before it enters the reservoir. If Attiyeh Ranch were developed water runoff would increase, carrying with it harmful contaminants into the reservoir.	
8	Reduce net emissions in ways that were not quantified in Attachment 7?	No
9	Provide other environmental stewardship benefits, other than those claimed in Sections D1, D3, or D4?	No
	Sustainability Benefits: Will the proposal	
10	Improve the overall, long-term management of California groundwater resources?	Yes
	Conservation of the Attiyeh Ranch promotes local aquifer recharge by allowing groundwater recharge through water infiltration, and prevents development that would require additional water wells causing a decrease in groundwater resources.	
11	Reduce demand for net diversions for the regions from the Delta?	No
12	Provide a long-term solution in place of a short-term one?	Yes
	The Attiyeh Ranch Conservation Easement will be recorded on title in perpetuity, providing environmental and social benefits on the 8,305 acre ranch forever.	
13	Promote energy savings or replace fossil fuel based energy sources with renewable energy and resources?	No
14	Improve water supply reliability in ways not quantified in Attachment 7?	Yes
	Provides permanent protection of Nacimiento Reservoir water supply by extinguishing development on the Attiyeh Ranch that would lead to water loss in the reservoir.	
15	Other (If the above listed categories do not apply, provide non-monetized benefit description)?	Neg

Table 2-10. Annual Cost of Attiyeh Ranch Conservation Easement Project (Table 19 of 2012 Round 2 PSP)

(All costs should be in 2012 Dollars)										
Attiyeh Ranch Conservation Easement Project										
YEAR	Initial Costs		Annual Costs						Discounting Calculations	
	Grant Costs		Operations and Maintenance Costs						Discount Factor	Discounted Costs(h) x (i)
	(row (i), column(d))	Adjusted Grant Costs	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a) +...+ (g)		
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
2012	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	1.00	\$0
2013	\$94,187	\$0	\$0	\$0	\$0	\$0	\$0	\$94,187	0.943	\$88,856
2014	\$8,378,203	\$0	\$0	\$0	\$0	\$0	\$0	\$8,378,203	0.890	\$7,456,571
2015	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.840	\$0
2016	\$0	\$0	\$5,065	\$0	\$0	\$0	\$0	\$5,065	0.792	\$4,012
2017	\$0	\$0	\$5,217	\$0	\$0	\$0	\$0	\$5,217	0.747	\$3,898
2018	\$0	\$0	\$5,373	\$0	\$0	\$0	\$0	\$5,373	0.705	\$3,788
2019	\$0	\$0	\$5,534	\$0	\$0	\$0	\$0	\$5,534	0.665	\$3,681
2020	\$0	\$0	\$5,700	\$0	\$0	\$0	\$0	\$5,700	0.627	\$3,577
2021	\$0	\$0	\$5,871	\$0	\$0	\$0	\$0	\$5,871	0.592	\$3,475
2022	\$0	\$0	\$6,048	\$0	\$0	\$0	\$0	\$6,048	0.558	\$3,377
2023	\$0	\$0	\$6,229	\$0	\$0	\$0	\$0	\$6,229	0.527	\$3,281
2024	\$0	\$0	\$6,416	\$0	\$0	\$0	\$0	\$6,416	0.497	\$3,189
2025	\$0	\$0	\$6,608	\$0	\$0	\$0	\$0	\$6,608	0.469	\$3,098
2026	\$0	\$0	\$6,807	\$0	\$0	\$0	\$0	\$6,807	0.442	\$3,011
2027	\$0	\$0	\$7,011	\$0	\$0	\$0	\$0	\$7,011	0.417	\$2,925
2028	\$0	\$0	\$7,221	\$0	\$0	\$0	\$0	\$7,221	0.394	\$2,843
2029	\$0	\$0	\$7,438	\$0	\$0	\$0	\$0	\$7,438	0.371	\$2,762
2030	\$0	\$0	\$7,661	\$0	\$0	\$0	\$0	\$7,661	0.350	\$2,684
2031	\$0	\$0	\$7,891	\$0	\$0	\$0	\$0	\$7,891	0.331	\$2,608
2032	\$0	\$0	\$8,128	\$0	\$0	\$0	\$0	\$8,128	0.312	\$2,534
2033	\$0	\$0	\$8,371	\$0	\$0	\$160	\$0	\$8,531	0.294	\$2,509
2034	\$0	\$0	\$8,622	\$0	\$0	\$160	\$0	\$8,782	0.278	\$2,437
2035	\$0	\$0	\$8,881	\$0	\$0	\$160	\$0	\$9,041	0.262	\$2,367
2036	\$0	\$0	\$9,148	\$0	\$0	\$160	\$0	\$9,307	0.247	\$2,299
2037	\$0	\$0	\$9,422	\$0	\$0	\$160	\$0	\$9,582	0.233	\$2,233
2038	\$0	\$0	\$9,705	\$0	\$0	\$160	\$0	\$9,864	0.220	\$2,168
2039	\$0	\$0	\$9,996	\$0	\$0	\$160	\$0	\$10,156	0.207	\$2,106
2040	\$0	\$0	\$10,296	\$0	\$0	\$160	\$0	\$10,455	0.196	\$2,045
2041	\$0	\$0	\$10,605	\$0	\$0	\$160	\$0	\$10,764	0.185	\$1,987
2042	\$0	\$0	\$10,923	\$0	\$0	\$160	\$0	\$11,083	0.174	\$1,930
2043	\$0	\$0	\$11,250	\$0	\$0	\$0	\$0	\$11,250	0.164	\$1,848
2044	\$0	\$0	\$11,588	\$0	\$0	\$0	\$0	\$11,588	0.155	\$1,796
2045	\$0	\$0	\$11,936	\$0	\$0	\$0	\$0	\$11,936	0.146	\$1,745
2046	\$0	\$0	\$12,294	\$0	\$0	\$0	\$0	\$12,294	0.138	\$1,695
2047	\$0	\$0	\$12,662	\$0	\$0	\$0	\$0	\$12,662	0.130	\$1,647
2048	\$0	\$0	\$13,042	\$0	\$0	\$0	\$0	\$13,042	0.123	\$1,601
2049	\$0	\$0	\$13,434	\$0	\$0	\$0	\$0	\$13,434	0.116	\$1,556
2050	\$0	\$0	\$13,837	\$0	\$0	\$0	\$0	\$13,837	0.109	\$1,511
2051	\$0	\$0	\$14,252	\$0	\$0	\$0	\$0	\$14,252	0.103	\$1,469
2052	\$0	\$0	\$14,679	\$0	\$0	\$0	\$0	\$14,679	0.097	\$1,427
2053	\$0	\$0	\$15,120	\$0	\$0	\$0	\$0	\$15,120	0.092	\$1,387
2054	\$0	\$0	\$15,573	\$0	\$0	\$0	\$0	\$15,573	0.087	\$1,348
2055	\$0	\$0	\$16,040	\$0	\$0	\$0	\$0	\$16,040	0.082	\$1,309
2056	\$0	\$0	\$16,522	\$0	\$0	\$0	\$0	\$16,522	0.077	\$1,272
2057	\$0	\$0	\$17,017	\$0	\$0	\$0	\$0	\$17,017	0.073	\$1,236
2058	\$0	\$0	\$17,528	\$0	\$0	\$0	\$0	\$17,528	0.069	\$1,201
2059	\$0	\$0	\$18,054	\$0	\$0	\$0	\$0	\$18,054	0.065	\$1,167
2060	\$0	\$0	\$18,595	\$0	\$0	\$0	\$0	\$18,595	0.061	\$1,134
2061	\$0	\$0	\$19,153	\$0	\$0	\$0	\$0	\$19,153	0.058	\$1,102
2062	\$0	\$0	\$19,728	\$0	\$0	\$0	\$0	\$19,728	0.054	\$1,071
2063	\$0	\$0	\$20,319	\$0	\$0	\$0	\$0	\$20,319	0.051	\$1,041
Total Present Value of Discounted Costs (Sum of Column (j))										\$7,651,814

Project 3. Livestock and Land Program

Brief Project Description: The Livestock and Land Program will address natural resource concerns faced by livestock owners by providing education, technical assistance and cost share for implementation of management measures. Water quality improvements will be achieved by giving livestock owners the tools to complete water quality site assessments and to implement Best Management Practices (BMPs) near listed waterways. The behavioral and management practice changes achieved by this program will provide immediate and lasting water quality and watershed benefits by reducing the off-site mobilization of manure, urine and sediments from livestock facilities.

Below is the development of a present worth evaluation of the project and its incremental increase in administrative, and operations and maintenance costs, and monetized benefits. In summary, the non-monetized water quality benefits for the Livestock and Land Program focus on providing education and protection of the water and habitat for both wildlife and the community, resulting in long-term changes in standard practices of livestock management. The total cost of the 10-year project is \$8M.

3.0 Background

The Livestock and Land Program is more about behavioral and management practice changes than actual on the ground construction of water resource infrastructure. As such, the quantification of true project costs has to include a component of property owner support and willingness for implementation of the program objectives. Only through the property owner actions, can the physical benefits of the project be achieved. If successful, this program will provide lasting water quality benefits and significant progress toward watershed goals listed in TMDLs and watershed plans.

Costs to implement this 10-year program are attributed to the initial efforts in the first 3 years to be funded by the grant. The initial stakeholder outreach, education, assessment and implementation phase is designated as the Project in this analysis. Operations cost will be attributed to the seven (7) year monitoring and evaluation program which follows to assess and quantify the project benefits. Monitoring costs for purposes of grant reporting are not included in this portion of the program cost.

The primary physical benefit attributed to this project is as follows (also shown in **Table 1-5**):

- **Water Quality Benefits:** 30% reduction in pollutant loading to surface waters.

3.1 Project Utilization

Through site visits, landowners will have one-on-one interaction with conservation planners who will provide site assessments, detailed recommendations and design assistance. Three to eight priority sites will be selected among livestock facility applicants to implement water quality projects. Specific BMPs implemented and natural resource improvements will vary based on on-site need and projects selected and will be designed by project sponsors or their consultants. Landowners receiving cost share funding for their participation in implementation will enter into an agreement with the project sponsor to maintain the practice as designed.

After the selection of landowners who agree to participating in the Project program, construction of needed structural BMPs will be completed.

3.2 Project Budget

Based on Attachment 4 – Budget, the total project budget is estimated to total \$317,784 with a 14 percent local cost share, used to satisfy the Proposal’s need to meet or exceed the minimum 25 percent local funding match requirement for non-DAC projects. **Table 2-11**, (also included in Attachment 4 – Budget), and Attachment 5 – Schedule are used to spread grant costs over the expected grant implementation timeline.

Table 2-11. Livestock and Land Program Budget (Table 7 of 2012 Round 2 PSP)

Project serves a need of a DAC?: Yes No		No			
Funding Match Waiver request?: Yes No		No			
		(a)	(b)	(c)	(d)
Category		Requested Grant Amount	Cost Share: Non-State Fund Source* (Funding Match)	Cost Share: Other State Fund Source**	Total Cost
(a)	Direct Project Administration	\$48,604	\$0	\$0	\$48,604
(b)	Land Purchase/ Easement	\$0	\$0	\$0	\$0
(c)	Planning/ Design/ Engineering/ Environmental Documentation	\$8,400	\$0	\$0	\$8,400
(d)	Construction/ Implementation	\$157,244	\$42,800	\$0	\$200,044
(e)	Environmental Compliance/ Mitigation/ Enhancement	\$0	\$0	\$0	\$0
(f)	Construction Administration	\$52,736	\$0	\$0	\$52,736
(g)	Other Costs	\$0	\$0	\$0	\$0
(h)	Construction/Implementation Contingency	\$8,000	\$0	\$0	\$8,000
(i)	Grand Total (Sum rows (a) through (h))	\$274,984	\$42,800	\$0	\$317,784
*					

3.0 Benefits and Cost

Of the DWR methods for quantifying benefits, method Section D2 – Non-Monetized Benefits Analysis has been selected for the Water Quality benefits. The ability to assign benefits is tied to the ability to specifically measure the pollutant load reductions due to BMP implementation on project sites. However, given the larger uncontrolled watershed, of which the Project is a small portion, it is extremely difficult due to the nature and diversity of variables not only on the site, but also because the target pollutants have other sources upstream in the watershed (landslide loading of sediment for example).

Participating landowners are typically very dedicated to the success and long-term management of the practices implemented on their property. The benefits therefore will occur and can be quantified using mass balance modeling of reduced loading of pollutants resulting from BMP implementation. Some water quality monitoring will be done to establish baseline and “with” project differences, but it is uncertain how much influence will occur from upstream pollutant sources.

Project Costs will be based on the five (5) cost elements described in **Table 2-1**.

3.0.1 Description of Non-Monetized Benefits

With Water Quality as a non-monetized benefit, Table 12 of the 2012 PSP for Round 2 is used to provide a description of the Project’s Community/Social, Environmental Stewardship and Sustainability Benefits.

Community/Social benefits include stakeholder outreach and public educational materials, and promotes a community working together to clean up local creeks and streams for the health and safety of their environment and reduced risk of human exposure to harmful contaminants. As a community, the traditional finger pointing of the cause of pollution in local creeks and streams will be reduced as education increases

Environmental Stewardship benefits include habitat preservation and improve water quality to sustain the wildlife living on or migrating through the lands benefiting from the project.

Sustainability benefits include long-term groundwater protection by reducing the vertical movement of contaminants on-site through use of positive barriers, and movement off-site into surface waters which recharge the local and regional groundwater basins. Given the high likelihood of private wells located in areas of concern, reduced long-term groundwater exposure to livestock contaminants provides both a health and safety benefit and sustainability benefit on maintaining a source of clean drinking water.

3.0.2 Description of Project Costs

One-time Project costs include the administrative efforts to manage the program over the three year implementation period and project reporting requirements. Additional costs include the construction costs for implementation of the BMPs. Annual operations costs, related to monitoring and reporting, are nominal and include administration, general oversight and monitoring, and any maintenance activities to implemented control measures.

Cost Category	Description	Frequency of Occurrence
---------------	-------------	-------------------------

Grant Costs	Implement the Livestock and Land Program	Over Three Year Period
Administrative	General oversight program implementation	Continuous
Operation	Annual monitoring and reporting	Continuous
Maintenance	Minor repair of any structural BMPs	Continuous
Replacement	None	

Grant Costs (first row) are based on **Table 2-11** and distributed over the project schedule starting in October 2013 with initial stakeholder outreach and public education, and ending in August 2016. The monthly distribution of the Grant costs is shown in **Figure 2-6** below.

Administrative costs are quantified based on the administrative actions pertaining to implementing the program. Labor costs include at least one administrative position and two (2) technicians.

Operations costs include nominal expenses related to monitoring and reporting for the project.

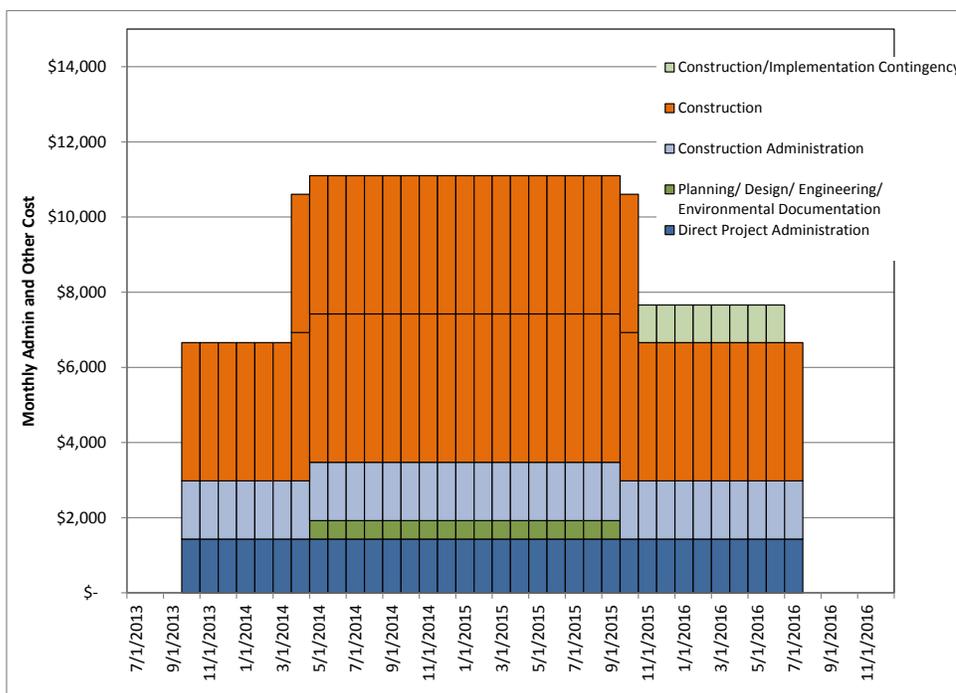


Figure 2-6. Livestock and Land Program Cost Distribution

Maintenance costs include keeping constructed BMPs in working order throughout the 10-year liver of the program.

3.0.1 Benefits and Cost Tables

Below is the non-monetized benefits table (**Table 2-12**) and annual cost table (**Table 2-13**) for the Livestock and Land Program project.

Table 2-12. Non-Monetized Benefits of Livestock and Land Program (Table 12 of 2012 Round 2 PSP)

Table 12 – Non-monetized Benefits Checklist		
No.	Question	Enter “Yes”, “No” or “Neg”
	Community/Social Benefits Will the proposal	
1	Provide education or technology benefits?	Yes
	Public outreach will consist of focused meetings with a high level of education regarding the problem and how property owners with managed livestock can be part of the solution in cleaning up water quality in local creeks and streams and to protect groundwater resources. A mass balance model will illustrate the magnitude of change as a result of implementing BMPs on properties where assessments are performed.	
2	Provide social recreation or access benefits?	No
3	Help avoid, reduce or resolve various public water resources conflicts?	Yes
	Through education, the traditional finger pointing on who is causing the problem will be replaced with “how do we fix the problem?”	
4	Promote social health and safety?	Yes
	Promotes a community working together to clean up local creeks and streams for the health and safety of their environment and reduced risk of human exposure to harmful contaminants.	
5	Have other social benefits?	No
	Environmental Stewardship Benefits: Will the proposal	
6	Benefit wildlife or habitat in ways that were not quantified in Attachment 7?	Yes
	Improves water quality to sustain the wildlife living on or migrating through the lands benefiting from the project.	
7	Improve water quality in ways that were not quantified in Attachment 7?	Yes
	Improves public education on the need to protect the water quality of local creeks and streams, regardless of livestock uses taking place. Groundwater quality benefits are a secondary benefit to creating positive barrier control measures.	
8	Reduce net emissions in ways that were not quantified in Attachment 7?	No
9	Provide other environmental stewardship benefits, other than those claimed in Sections D1, D3, or D4?	No
	Sustainability Benefits: Will the proposal	
10	Improve the overall, long-term management of California groundwater resources?	Yes
	Long-term benefits include groundwater protection by reducing the vertical movement of contaminants on-site through use of positive barriers, and movement off-site into surface waters which recharge the local and regional groundwater basins of San Luis Obispo County.	
11	Reduce demand for net diversions for the regions from the Delta?	No
12	Provide a long-term solution in place of a short-term one?	Yes
	Given the high likelihood of the public’s increased understanding of sources of pollution through education and reporting, the BMP program measures will become voluntary in their implementation as a standard practice for livestock managers in perpetuity.	
13	Promote energy savings or replace fossil fuel based energy sources with renewable energy and resources?	No
14	Improve water supply reliability in ways not quantified in Attachment 7?	Yes
	Provides long-term protection of local groundwater supplies which yield drinking water supplies for private domestic wells.	
15	Other (If the above listed categories do not apply, provide non-monetized benefit description)?	Neg

Table 2-13. Annual Cost of Livestock and Land Program Project (Table 19 of the 2012 Round 2 PSP)

(All costs should be in 2012 Dollars)										
Livestock and Land Program										
YEAR	Initial Costs		Annual Costs						Discounting Calculations	
	Grant Costs		Operations and Maintenance Costs					Total Costs (a) +...+ (g)	Discount Factor (i)	Discounted Costs(h) x (i) (j)
	(row (i), column(d))	Adjusted Grant Costs	Admin	Operation	Maintenance	Replacement	Other			
	(a)	(b)	(c)	(d)	(e)	(f)	(g)			
2012	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	1.00	\$0
2013	\$8,678	\$0	\$0	\$0	\$0	\$0	\$0	\$8,678	0.943	\$8,186
2014	\$8,678	\$0	\$0	\$0	\$0	\$0	\$157,200	\$165,878	0.890	\$147,630
2015	\$8,312,585	\$0	\$0	\$0	\$0	\$0	\$0	\$8,312,585	0.840	\$6,979,407
2016	\$0	\$0	\$87,579	\$0	\$28,138	\$0	\$0	\$115,716	0.792	\$91,658
2017	\$0	\$0	\$90,206	\$0	\$28,982	\$0	\$0	\$119,188	0.747	\$89,064
2018	\$0	\$0	\$92,912	\$0	\$29,851	\$0	\$0	\$122,764	0.705	\$86,543
2019	\$0	\$0	\$95,700	\$0	\$30,747	\$0	\$0	\$126,446	0.665	\$84,094
2020	\$0	\$0	\$98,571	\$0	\$31,669	\$0	\$0	\$130,240	0.627	\$81,714
2021	\$0	\$0	\$101,528	\$0	\$32,619	\$0	\$0	\$134,147	0.592	\$79,401
2022	\$0	\$0	\$104,573	\$0	\$33,598	\$0	\$0	\$138,171	0.558	\$77,154
2023	\$0	\$0	\$107,711	\$0	\$34,606	\$0	\$0	\$142,317	0.527	\$74,971
2024	\$0	\$0	\$110,942	\$0	\$35,644	\$0	\$0	\$146,586	0.497	\$72,849
2025	\$0	\$0	\$114,270	\$0	\$36,713	\$0	\$0	\$150,984	0.469	\$70,787
2026	\$0	\$0	\$117,698	\$0	\$37,815	\$0	\$0	\$155,513	0.442	\$68,784
2027	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.417	\$0
2028	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.394	\$0
2029	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.371	\$0
2030	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.350	\$0
2031	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.331	\$0
2032	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.312	\$0
2033	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.294	\$0
2034	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.278	\$0
2035	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.262	\$0
2036	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.247	\$0
2037	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.233	\$0
2038	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.220	\$0
2039	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.207	\$0
2040	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.196	\$0
2041	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.185	\$0
2042	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.174	\$0
2043	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.164	\$0
2044	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.155	\$0
2045	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.146	\$0
2046	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.138	\$0
2047	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.130	\$0
2048	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.123	\$0
2049	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.116	\$0
2050	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.109	\$0
2051	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.103	\$0
2052	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.097	\$0
2053	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.092	\$0
2054	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.087	\$0
2055	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.082	\$0
2056	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.077	\$0
2057	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.073	\$0
2058	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.069	\$0
2059	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.065	\$0
2060	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.061	\$0
2061	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.058	\$0
2062	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.054	\$0
2063	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.051	\$0
Total Present Value of Discounted Costs (Sum of Column (j))										\$8,012,243

Project 4. Shandon State Water Turnout Project

Brief Project Description: San Luis Obispo County (County) is proposing to construct a \$325,000 water turnout facility that will connect the water distribution system for County Service Area 16 (CSA 16) in Shandon, CA to the State Water Project pipeline. The Shandon State Water Turnout Project will allow CSA 16 to access and distribute its State Water allocation of 100 acre-feet per year to the community of Shandon, providing increased water supply reliability and relief to the stressed Paso Robles groundwater basin.

Below is the development of a present worth evaluation of the project and its incremental increase in administrative, and operations and maintenance costs, and monetized benefits. The monetized water supply and energy benefits for the Shandon Project totals \$.920M, and the total cost is \$3.0M, resulting in a project benefit / cost ratio of 0.31.

4.0 Background

The community of Shandon currently relies solely on groundwater from the overdrafted Paso Robles Groundwater Basin (Paso Basin) as its only water supply. From 2005 to 2012, CSA 16's average yearly water demand, comprised entirely of pumped groundwater, was 149 acre-feet.

The County is proposing to construct a water turnout facility that will connect the water distribution system for County Service Area 16 (CSA 16) in Shandon to the existing Coastal Branch, Phase II State Water Project pipeline (48-inch, steel) near the intersection of San Juan Road and Toby Way in Shandon. The Shandon State Water Turnout Project will allow CSA 16 to access and distribute its State Water allocation of 100 acre-feet per year that was obtained in 1992.

The Shandon State Water Turnout Project will import State Water into the community of Shandon. This new water supply source will improve regional water supply reliability and security by reducing pumping from the Paso Basin, which has reached its yield and whose water levels have been declining. It will also diversify Shandon's water portfolio so that it has a source other than groundwater, which is susceptible to drought impacts, declining water levels and well contamination.

The primary physical benefits attributed to this project are as follows (also shown in **Table 1-5**):

- **Water Supply Benefits:** Delivers 100 AFY of critical water supply.
- **Water Reliability Benefits:** Eliminates the need to pump from the overdrafted Paso Robles Groundwater Basin where Shandon relies on subordinate water rights. In-lieu recharge of the groundwater basin will provide the benefit of conjunctive use opportunities for drought year protection.
- **Reduced Energy Benefits:** Replaces energy inefficient groundwater pumps with an energy efficient water delivery system; reduces annual energy consumption by approximately 60,000 Kwh.

4.1 Project Utilization

The primary use of the project water will be to replace a good portion of the groundwater currently being extracted from two municipal wells. The existing water demand of 147 AFY will be apportioned based on using surface water (100 AFY) as the priority supply and groundwater (47 AFY) to meet maximum month, along with storage and peak hour demands. This is illustrated in **Figure 2-7** where surface water fills in the baseline supply with groundwater on top reacting more to the peaking effects throughout the wet and dry seasons. Because groundwater will still be required, the two existing wells will continue to operate on most days but will be cycled based on system pressures and storage levels.

4.2 Project Budget

Based on Attachment 4 – Budget, the total project budget is estimated to total \$515,000 with a 74 percent local cost share. **Table 2-14**, (also included in Attachment 4 – Budget), and Attachment 5 – Schedule are used to spread grant costs over the expected grant implementation timeline.

Table 2-14. Shandon State Water Turnout Budget (Table 7 of 2012 Round 2 PSP)

Project serves a need of a DAC?: Yes No		No			
Funding Match Waiver request?: Yes No		No			
Category		(a)	(b)	(c)	(d)
		Requested Grant Amount	Cost Share: Non-State Fund Source* (Funding Match)	Cost Share: Other State Fund Source**	Total Cost
(a)	Direct Project Administration	\$13,000	\$15,000	\$0	\$28,000
(b)	Land Purchase/ Easement	\$0	\$0	\$0	\$0
(c)	Planning/ Design/ Engineering/ Environmental Documentation	\$0	\$74,000	\$0	\$74,000
(d)	Construction/ Implementation	\$223,125	\$44,000	\$0	\$267,125
(e)	Environmental Compliance/ Mitigation/ Enhancement	\$0	\$0	\$0	\$0
(f)	Construction Administration	\$64,000	\$0	\$0	\$64,000
(g)	Other Costs	\$0	\$0	\$45,000	\$45,000
(h)	Construction/Implementation Contingency	\$36,875	\$0	\$0	\$36,875
(i)	Grand Total (Sum rows (a) through (h))	\$337,000	\$133,000	\$45,000	\$515,000

*The source of the Non-State share (Funding Match) is secured by CSA 16 collected from water rate charges as approved by County of San Luis Obispo.
**Other funding source include in-kind services from Central Coast Water Authority on behalf of the County to administer the labor compliance program, construction management and project oversight.

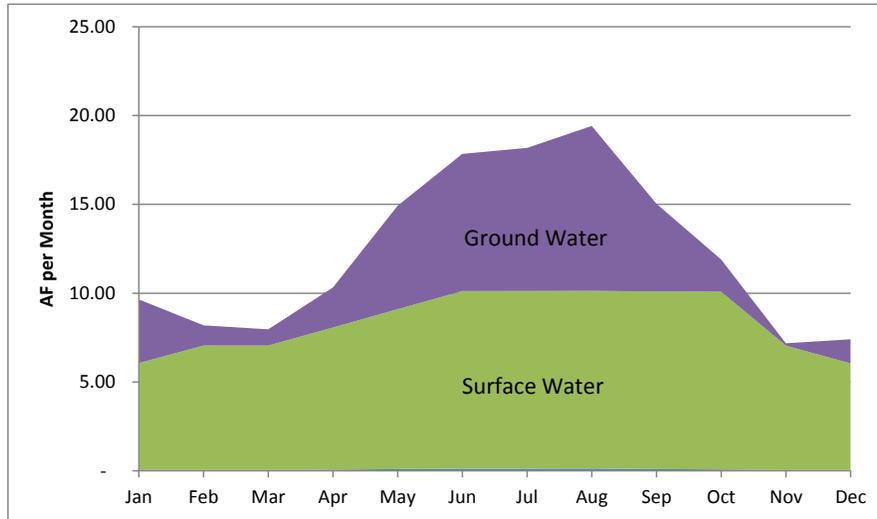


Figure 2-7. Shandon Water Demand and Supplies (with Project)

4.0 Benefits and Cost

Measurement and initial quantification of the physical benefits is provided in Attachment 7 – Technical Justification. In summary, Water Supply benefits will be measured using standard flow measuring devices with real-time telemetry. Water Reliability Benefits will be monitored through groundwater elevations at nearby dedicated monitoring wells, with any long-term average increase in groundwater elevations being associated with increased drought year storage. Reduced Energy Benefits will be calculated from energy metering of existing groundwater wells.

Of the DWR methods for quantifying benefits, method Section D3 – Monetized Benefits Analysis has been selected based on the grant amount and the ability to monetize the benefits in terms of an annual dollar value for each year of the project’s operation.

4.0.1 Description of Monetized Benefits

For the Shandon State Water Turnout project, the physical benefits include: 1) increased surface water into the Paso Robles Groundwater Basin, 2) storage of drought year supplies, and 3) the reduction of energy costs in groundwater pumping. Each will be monitored and reported annually. Of these three physical benefits, the benefits of stored water as a drought year supply and the reduction in groundwater pumping energy can be monetized.

4.0.1.1 Water Supply Benefit Approach

Securing drought year water is considered to be similar to a water district constructing a recycled water treatment plant for outdoor irrigation use. Recycled water is drought proof and is a viable cost effective alternative to banking water in a community with a wastewater treatment facility. To provide an equivalent amount of supply as stored groundwater resulting from the Project, a small 0.2 mgd recycled water treatment plant would be required at an estimated capital cost of \$440,000. Based on a detailed assessment of the current administrative, and operations and maintenance staff, the additional annual costs to operate the recycled water treatment plant start out at initially \$20,793. The annualized capital cost for a 30 year repayment period is \$25,445.

4.0.1.2 Reduced Energy Benefit Approach

Energy reductions from decreased power requirements to lift water approximately 140 feet will reduce from less reliance on groundwater. Due to the nominal annualized benefit from power reductions, the small variation in use of the two existing groundwater wells over time with changing water demands (assuming no growth), and hydrologic wet and dry periods is neglected. A fixed savings of 60,000 Kwh¹³ is assumed to occur every year with an assumed energy cost of \$0.10 per Kwh (2012 dollars).

4.0.2 Description of Project Costs

Monetizing costs is done by accounting for changes in expenditures that are the direct result of the project. For the Shandon State Water Turnout project the following table summarizes the different cost categories and how they apply to the project:

Cost Category	Description	Frequency of Occurrence
Grant Costs	Plan, design, and construct the turnout structure, and manage the grant requirements including labor compliance and grant reporting	Over Period of Construction
Administrative	Additional oversight costs to manage the long-term operations and maintenance of the turnout structure	Continuous
Operation	Operate the valves and electrical equipment	Continuous
Maintenance	Scheduled and unscheduled maintenance	Continuous
Replacement	Replacement after 30 year lifecycle for valves and electrical equipment. (Piping assumed to have 50+ year lifecycle and is not included as a replacement item.)	30 years

Grant Costs (first row) are based on **Table 2-14** and distributed over the project schedule starting in July 2012 with initial planning studies and design reports and ending in August 2014. The monthly distribution of the Grant costs is shown in **Figure 2-8** below.

Administrative costs are quantified based on the incremental increase in administrative actions pertaining to the turnout and the purchase of State Water Project water. This includes a small amount of time for management and clerical staff at a burdened rate commensurate with the position titles.

Operations costs include the cost of the treated State Water Project water priced at \$1,000/AF with an inflationary escalation factor of 3% a year. All energy and treatment related costs are included in

¹³ CSA 16's two well pumps consumes an average annual 90,000 Kilowatt-hours (Kwh) of energy. Taking 100 AFY of State Water would reduce groundwater pumping to an average 49 AFY, a 67 percent reduction. It is estimated that CSA 16 will experience a directly proportional reduction of energy consumption for groundwater pumping, resulting in an approximate average annual energy usage of approximately 30,000 Kwh.

this unit cost amount. Any in-system energy costs resulting from the project are considered to be nominal.

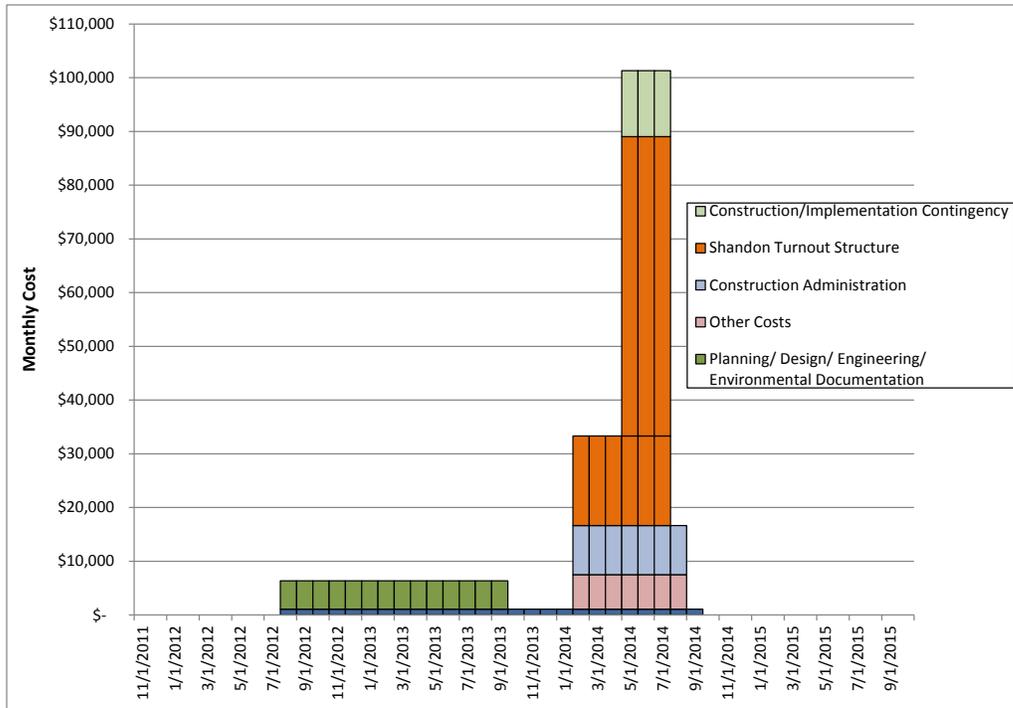


Figure 2-8. Shandon State Turnout Project Cost Distribution

Maintenance costs stem from scheduled and unscheduled maintenance over each annual period.

Replacement assumes the lifecycle of the project is 50 years. Replacement costs assume that valves and electrical equipment will need to be replaced at the end of 30 years. A replacement fund is started 10 years prior to the assumed replacement event at a cost of 15 percent of the total grant construction cost.

4.0 Benefits and Cost Tables

Below is the annual benefits table (Table 2-16) and annual cost table (Table 2-17) for the Shandon State Water Turnout Project.

Table 2-15. Annual Avoided Costs of Recycled Water Treatment Plant for Shandon Community (Table 16 of 2012 Round 2 PSP)

(a)	Costs				Discounting Calculations	
	(b)	(c)	(d)	(e)	(f)	(g)
Year	Alternative (Avoided Project Name): Shandon Avoided Recycled Water Treatment Plant Avoided Project Description: Construct 0.2 mgd recycled water treatment plant for use as a dry month, drought year supply to meet outdoor irrigation water demands.				Discount Factor	Discounted Costs (e) x (f)
	Avoided Capital Costs	Avoided Replacement Costs	Avoided Operations and Maintenance Costs	Cost Avoided for Individual Alternatives (b) + (c) + (d)		
2012	\$0.00	\$0.00	\$0.00	\$0.00	1.00	\$0.00
2013	\$0.00	\$0.00	\$0.00	\$0.00	0.94	\$0.00
2014	\$0.00	\$0.00	\$0.00	\$0.00	0.89	\$0.00
2015	\$25,445.24	\$0.00	\$22,681.58	\$48,126.82	0.84	\$40,408.21
2016	\$25,445.24	\$0.00	\$23,349.43	\$48,794.67	0.79	\$38,649.95
2017	\$25,445.24	\$0.00	\$24,037.31	\$49,482.55	0.75	\$36,976.24
2018	\$25,445.24	\$0.00	\$24,745.83	\$50,191.07	0.70	\$35,382.73
2019	\$25,445.24	\$0.00	\$25,475.61	\$50,920.85	0.67	\$33,865.27
2020	\$25,445.24	\$0.00	\$26,227.27	\$51,672.52	0.63	\$32,419.98
2021	\$25,445.24	\$0.00	\$27,001.49	\$52,446.74	0.59	\$31,043.14
2022	\$25,445.24	\$0.00	\$27,798.94	\$53,244.18	0.56	\$29,731.27
2023	\$25,445.24	\$0.00	\$28,620.30	\$54,065.55	0.53	\$28,481.06
2024	\$25,445.24	\$0.00	\$29,466.31	\$54,911.56	0.50	\$27,289.36
2025	\$25,445.24	\$0.00	\$30,337.70	\$55,782.95	0.47	\$26,153.22
2026	\$25,445.24	\$0.00	\$31,235.23	\$56,680.48	0.44	\$25,069.83
2027	\$25,445.24	\$0.00	\$32,159.69	\$57,604.93	0.42	\$24,036.53
2028	\$25,445.24	\$0.00	\$33,111.88	\$58,557.13	0.39	\$23,050.79
2029	\$25,445.24	\$0.00	\$34,092.64	\$59,537.88	0.37	\$22,110.25
2030	\$25,445.24	\$0.00	\$35,102.82	\$60,548.06	0.35	\$21,212.64
2031	\$25,445.24	\$0.00	\$36,143.30	\$61,588.55	0.33	\$20,355.82
2032	\$25,445.24	\$0.00	\$37,215.00	\$62,660.24	0.31	\$19,537.76
2033	\$25,445.24	\$0.00	\$38,318.85	\$63,764.09	0.29	\$18,756.55
2034	\$25,445.24	\$0.00	\$39,455.82	\$64,901.06	0.28	\$18,010.38
2035	\$25,445.24	\$0.00	\$40,626.89	\$66,072.13	0.26	\$17,297.50
2036	\$25,445.24	\$0.00	\$41,833.10	\$67,278.34	0.25	\$16,616.31
2037	\$25,445.24	\$0.00	\$43,075.49	\$68,520.73	0.23	\$15,965.24
2038	\$25,445.24	\$0.00	\$44,355.16	\$69,800.40	0.22	\$15,342.83
2039	\$25,445.24	\$0.00	\$45,673.21	\$71,118.45	0.21	\$14,747.69
2040	\$25,445.24	\$0.00	\$47,030.81	\$72,476.05	0.20	\$14,178.50
2041	\$25,445.24	\$0.00	\$48,429.13	\$73,874.37	0.18	\$13,634.01
2042	\$25,445.24	\$0.00	\$49,869.40	\$75,314.65	0.17	\$13,113.04
2043	\$25,445.24	\$0.00	\$51,352.89	\$76,798.13	0.16	\$12,614.46
2044	\$25,445.24	\$0.00	\$52,880.87	\$78,326.12	0.15	\$12,137.21
2045	\$25,445.24	\$0.00	\$54,454.70	\$79,899.94	0.15	\$11,680.27
2046	\$0.00	\$0.00	\$56,075.74	\$56,075.74	0.14	\$7,733.49
2047	\$0.00	\$0.00	\$57,745.41	\$57,745.41	0.13	\$7,512.98
2048	\$0.00	\$0.00	\$59,465.18	\$59,465.18	0.12	\$7,298.80
2049	\$0.00	\$0.00	\$61,236.53	\$61,236.53	0.12	\$7,090.77
2050	\$0.00	\$0.00	\$63,061.03	\$63,061.03	0.11	\$6,888.71
2051	\$0.00	\$0.00	\$64,940.26	\$64,940.26	0.10	\$6,692.45
2052	\$0.00	\$0.00	\$66,875.86	\$66,875.86	0.10	\$6,501.82
2053	\$0.00	\$0.00	\$68,869.54	\$68,869.54	0.09	\$6,316.65
2054	\$0.00	\$0.00	\$70,923.03	\$70,923.03	0.09	\$6,136.79
2055	\$0.00	\$0.00	\$73,038.12	\$73,038.12	0.08	\$5,962.07
2056	\$0.00	\$0.00	\$75,216.66	\$75,216.66	0.08	\$5,792.37
2057	\$0.00	\$0.00	\$77,460.56	\$77,460.56	0.07	\$5,627.52
2058	\$0.00	\$0.00	\$79,771.78	\$79,771.78	0.07	\$5,467.38
2059	\$0.00	\$0.00	\$82,152.33	\$82,152.33	0.06	\$5,311.83
2060	\$0.00	\$0.00	\$84,604.30	\$84,604.30	0.06	\$5,160.73
2061	\$0.00	\$0.00	\$87,129.83	\$87,129.83	0.06	\$5,013.94
2062	\$0.00	\$0.00	\$89,731.13	\$89,731.13	0.05	\$4,871.36
2063	\$0.00	\$0.00	\$92,410.46	\$92,410.46	0.05	\$4,732.84
Total Present Value of Discounted Costs (Sum of column (g))						\$819,980.55
(%) Avoided Cost Claimed by Project						100%
Total Present Value of Discounted Avoided Project Costs Claimed by Alternative Project (Total Present Value of Discounted Costs x % Avoided Cost Claimed by Project)						\$819,980.55
Comments: None						

Table 2-16. Annual Benefits of Shandon State Water Turnout Project (Table 19 of 2012 Round 2 PSP)

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Year	Type of Benefit	Measure of Benefit (Units)	Without Project	With Project	Change Resulting from Project (e)-(d)	Unit \$ Value	Annual \$ Value (f) x (g)	Discount Factor	Discounted Benefits (h) x (i)
2012	Energy Savings - Groundwater Pumping	Kwh	-	-	-	\$0.100	\$0	1.00	\$0
2013	Energy Savings - Groundwater Pumping	Kwh	-	-	-	\$0.103	\$0	0.94	\$0
2014	Energy Savings - Groundwater Pumping	Kwh	-	-	-	\$0.106	\$0	0.89	\$0
2015	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.109	\$6,556	0.84	\$5,505
2016	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.113	\$6,753	0.79	\$5,349
2017	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.116	\$6,956	0.75	\$5,198
2018	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.119	\$7,164	0.70	\$5,051
2019	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.123	\$7,379	0.67	\$4,908
2020	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.127	\$7,601	0.63	\$4,769
2021	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.130	\$7,829	0.59	\$4,634
2022	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.134	\$8,063	0.56	\$4,503
2023	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.138	\$8,305	0.53	\$4,375
2024	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.143	\$8,555	0.50	\$4,251
2025	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.147	\$8,811	0.47	\$4,131
2026	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.151	\$9,076	0.44	\$4,014
2027	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.156	\$9,348	0.42	\$3,901
2028	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.160	\$9,628	0.39	\$3,790
2029	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.165	\$9,917	0.37	\$3,683
2030	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.170	\$10,215	0.35	\$3,579
2031	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.175	\$10,521	0.33	\$3,477
2032	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.181	\$10,837	0.31	\$3,379
2033	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.186	\$11,162	0.29	\$3,283
2034	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.192	\$11,497	0.28	\$3,190
2035	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.197	\$11,842	0.26	\$3,100
2036	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.203	\$12,197	0.25	\$3,012
2037	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.209	\$12,563	0.23	\$2,927
2038	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.216	\$12,940	0.22	\$2,844
2039	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.222	\$13,328	0.21	\$2,764
2040	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.229	\$13,728	0.20	\$2,686
2041	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.236	\$14,139	0.18	\$2,610
2042	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.243	\$14,564	0.17	\$2,536
2043	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.250	\$15,000	0.16	\$2,464
2044	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.258	\$15,450	0.15	\$2,394
2045	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.265	\$15,914	0.15	\$2,326
2046	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.273	\$16,391	0.14	\$2,261
2047	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.281	\$16,883	0.13	\$2,197
2048	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.290	\$17,390	0.12	\$2,134
2049	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.299	\$17,911	0.12	\$2,074
2050	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.307	\$18,449	0.11	\$2,015
2051	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.317	\$19,002	0.10	\$1,958
2052	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.326	\$19,572	0.10	\$1,903
2053	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.336	\$20,159	0.09	\$1,849
2054	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.346	\$20,764	0.09	\$1,797
2055	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.356	\$21,387	0.08	\$1,746
2056	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.367	\$22,029	0.08	\$1,696
2057	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.378	\$22,690	0.07	\$1,648
2058	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.390	\$23,370	0.07	\$1,602
2059	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.401	\$24,071	0.06	\$1,556
2060	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.413	\$24,794	0.06	\$1,512
2061	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.426	\$25,537	0.06	\$1,470
2062	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.438	\$26,303	0.05	\$1,428
2063	Energy Savings - Groundwater Pumping	Kwh	(90,000)	(30,000)	60,000	\$0.452	\$27,093	0.05	\$1,388
Total Value of Monetized Benefit									\$146,865

Table 2-17. Annual Cost of Shandon State Water Turnout Project (Table 19 of 2012 Round 2 PSP)

(All costs should be in 2012 Dollars)											
Shandon State Water Turnout											
YEAR	Initial Costs		Annual Costs						Discounting Calculations		
	Grant Costs		Operations and Maintenance Costs					Total Costs (a) +...+ (g)	Discount Factor	Discounted Costs(h) x (i)	
	(row (i), column(d))	Adjusted Grant Costs	Admin	Operation	Maintenance	Replacement	Other				
	(a)	(b)	(c)	(d)	(e)	(f)	(g)				(h)
2012	\$31,813	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$31,813	1.00	\$31,813
2013	\$60,495	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$60,495	0.943	\$57,070
2014	\$340,817	\$0	\$0	\$0	\$0	\$0	\$0	\$81,875	\$422,692	0.890	\$376,195
2015	\$0	\$0	\$0	\$109,273	\$3,278	\$0	\$0	\$0	\$112,551	0.840	\$94,500
2016	\$0	\$0	\$0	\$112,551	\$3,800	\$0	\$0	\$0	\$116,351	0.792	\$92,161
2017	\$0	\$0	\$0	\$115,927	\$3,914	\$0	\$0	\$0	\$119,842	0.747	\$89,553
2018	\$0	\$0	\$0	\$119,405	\$4,032	\$0	\$0	\$0	\$123,437	0.705	\$87,018
2019	\$0	\$0	\$0	\$122,987	\$4,153	\$0	\$0	\$0	\$127,140	0.665	\$84,555
2020	\$0	\$0	\$0	\$126,677	\$4,277	\$0	\$0	\$0	\$130,954	0.627	\$82,162
2021	\$0	\$0	\$0	\$130,477	\$4,406	\$0	\$0	\$0	\$134,883	0.592	\$79,837
2022	\$0	\$0	\$0	\$134,392	\$4,538	\$0	\$0	\$0	\$138,929	0.558	\$77,577
2023	\$0	\$0	\$0	\$138,423	\$4,674	\$0	\$0	\$0	\$143,097	0.527	\$75,382
2024	\$0	\$0	\$0	\$142,576	\$4,814	\$0	\$0	\$0	\$147,390	0.497	\$73,248
2025	\$0	\$0	\$0	\$146,853	\$4,959	\$0	\$0	\$0	\$151,812	0.469	\$71,175
2026	\$0	\$0	\$0	\$151,259	\$5,107	\$0	\$0	\$0	\$156,366	0.442	\$69,161
2027	\$0	\$0	\$0	\$155,797	\$5,261	\$0	\$0	\$0	\$161,057	0.417	\$67,204
2028	\$0	\$0	\$0	\$160,471	\$5,418	\$0	\$0	\$0	\$165,889	0.394	\$65,302
2029	\$0	\$0	\$0	\$165,285	\$5,581	\$0	\$0	\$0	\$170,866	0.371	\$63,453
2030	\$0	\$0	\$0	\$170,243	\$5,748	\$0	\$0	\$0	\$175,992	0.350	\$61,658
2031	\$0	\$0	\$0	\$175,351	\$5,921	\$0	\$0	\$0	\$181,271	0.331	\$59,913
2032	\$0	\$0	\$0	\$180,611	\$6,098	\$0	\$0	\$0	\$186,710	0.312	\$58,217
2033	\$0	\$0	\$0	\$186,029	\$6,281	\$0	\$0	\$0	\$192,311	0.294	\$56,569
2034	\$0	\$0	\$0	\$191,610	\$6,470	\$0	\$0	\$0	\$198,080	0.278	\$54,968
2035	\$0	\$0	\$0	\$197,359	\$6,664	\$5,150	\$0	\$0	\$209,173	0.262	\$54,761
2036	\$0	\$0	\$0	\$203,279	\$6,864	\$5,150	\$0	\$0	\$215,293	0.247	\$53,173
2037	\$0	\$0	\$0	\$209,378	\$7,070	\$5,150	\$0	\$0	\$221,597	0.233	\$51,632
2038	\$0	\$0	\$0	\$215,659	\$7,282	\$5,150	\$0	\$0	\$228,091	0.220	\$50,137
2039	\$0	\$0	\$0	\$222,129	\$7,500	\$5,150	\$0	\$0	\$234,779	0.207	\$48,686
2040	\$0	\$0	\$0	\$228,793	\$7,725	\$5,150	\$0	\$0	\$241,668	0.196	\$47,278
2041	\$0	\$0	\$0	\$235,657	\$7,957	\$5,150	\$0	\$0	\$248,764	0.185	\$45,911
2042	\$0	\$0	\$0	\$242,726	\$8,196	\$5,150	\$0	\$0	\$256,072	0.174	\$44,585
2043	\$0	\$0	\$0	\$250,008	\$8,442	\$5,150	\$0	\$0	\$263,600	0.164	\$43,298
2044	\$0	\$0	\$0	\$257,508	\$8,695	\$5,150	\$0	\$0	\$271,353	0.155	\$42,048
2045	\$0	\$0	\$0	\$265,234	\$8,956	\$5,150	\$0	\$0	\$279,339	0.146	\$40,836
2046	\$0	\$0	\$0	\$273,191	\$9,224	\$0	\$0	\$0	\$282,415	0.138	\$38,948
2047	\$0	\$0	\$0	\$281,386	\$9,501	\$0	\$0	\$0	\$290,887	0.130	\$37,846
2048	\$0	\$0	\$0	\$289,828	\$9,786	\$0	\$0	\$0	\$299,614	0.123	\$36,775
2049	\$0	\$0	\$0	\$298,523	\$10,080	\$0	\$0	\$0	\$308,602	0.116	\$35,734
2050	\$0	\$0	\$0	\$307,478	\$10,382	\$0	\$0	\$0	\$317,860	0.109	\$34,723
2051	\$0	\$0	\$0	\$316,703	\$10,694	\$0	\$0	\$0	\$327,396	0.103	\$33,740
2052	\$0	\$0	\$0	\$326,204	\$11,014	\$0	\$0	\$0	\$337,218	0.097	\$32,785
2053	\$0	\$0	\$0	\$335,990	\$11,345	\$0	\$0	\$0	\$347,335	0.092	\$31,857
2054	\$0	\$0	\$0	\$346,070	\$11,685	\$0	\$0	\$0	\$357,755	0.087	\$30,956
2055	\$0	\$0	\$0	\$356,452	\$12,036	\$0	\$0	\$0	\$368,487	0.082	\$30,079
2056	\$0	\$0	\$0	\$367,145	\$12,397	\$0	\$0	\$0	\$379,542	0.077	\$29,228
2057	\$0	\$0	\$0	\$378,160	\$12,769	\$0	\$0	\$0	\$390,928	0.073	\$28,401
2058	\$0	\$0	\$0	\$389,504	\$13,152	\$0	\$0	\$0	\$402,656	0.069	\$27,597
2059	\$0	\$0	\$0	\$401,190	\$13,546	\$0	\$0	\$0	\$414,736	0.065	\$26,816
2060	\$0	\$0	\$0	\$413,225	\$13,953	\$0	\$0	\$0	\$427,178	0.061	\$26,057
2061	\$0	\$0	\$0	\$425,622	\$14,371	\$0	\$0	\$0	\$439,993	0.058	\$25,320
2062	\$0	\$0	\$0	\$438,391	\$14,802	\$0	\$0	\$0	\$453,193	0.054	\$24,603
2063	\$0	\$0	\$0	\$451,542	\$0	\$0	\$0	\$0	\$451,542	0.051	\$23,126
Total Present Value of Discounted Costs (Sum of Column (j))										\$3,005,626	

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Project 5. San Miguel Community Services District Critical Water System Improvements

Brief Project Description: The San Miguel Community Services District Critical Water System Improvements project (Project) is seeking funding for six of the highest priority, critical water supply projects as listed below. San Miguel Community Services District (SMCSD) is the water service provider for the disadvantaged community (DAC) of San Miguel, and needs to implement all six of these identified projects in the immediate future, or they will be faced with continued deterioration of an already deficient, critical water system, and may not be able to support even limited beneficial growth with the identified deficiencies that face the District's water system.

1. New Fire Hydrants and Wharf Head Replacements – Thirteen (13) new fire hydrants to replace inadequate and aging hydrants.
2. Well 3 Rehabilitation - Well 3 is over 40 years old and requires upgrades in the well motor housing, disinfection system, electrical wiring, backup power generation and the protective structural building.
3. New Water Well Siting Study – Respond to the urgent need of replacing the San Lawrence Terrace Well, taken out of service because of high arsenic concentrations, and providing water supply redundancy in the event of an emergency shutdown of any three existing wells.
4. Emergency Backup Power – Equip Well 3 and Well 4 with power generators in the event of power failures to maintain a minimum supply of water during widespread power outages.
5. New Water Storage Tank – Construct the San Lawrence Terrace Water Storage Tank with 0.25 million gallons for capacity and water quality improvements
6. 12th and K Street Water Main Upgrades – Replace old and undersized piping at 12th Street and K Street.

To finance existing system improvements, SMCSD recently increased rates to pay the debt service for the 0.65 million gallon tank and begin a sinking fund for replacement/rehabilitation of the aging water system. This was the SMCSD's first water and sewer rate increases in over a decade. Being a DAC, this was extremely hard on the majority of the community's residents.

The total present worth cost of the Project, including added administration, and operations and maintenance, is **\$903,000**.

5.0 Background

As per the Proposition 84 Round 2 Proposal Solicitation Package, DACs are given special consideration in showing benefits and cost for DAC projects up to a total project cost of \$1M. In such cases, the proposal can opt to complete a Cost Effectiveness Analysis, evaluating whether the physical benefits provided by the project are provided at the least possible cost, or not. In the case of the San Miguel Project, the individual projects stem from capital projects identified in the 2002 Water Master Plan as critical system needs, improvements, and upgrades deferred due to a lack of funding.

Since 2002, there has been little in the way of updating the plan since unfunded projects were not feasible for the DAC unless outside support became available. An update to the project definitions, costs, and benefits analysis has been done as a part of this project implementation grant submittal with most of its findings documented herein. Since all six projects are aimed at replacement and on-site upsizing, no cost effectiveness analysis was completed; furthermore, throughout the 10 years since the 2002 Water Master Plan, no lesser cost alternatives have been found or recommended.

The project cost will yield the following three primary physical benefits:

- **Critical Water Supply Benefits:** Collectively, the projects included in the Critical Water System Improvements will upgrade the water system to a minimum level of performance, including certification of Title 22 water treatment, required by CDPH.
- **Critical Water System Reliability Benefits:** Greatly reduces concerns with the possibility of losing additional wells, operating during emergency conditions, and the inability to operate storage facilities to meet fire code requirements.
- **Reduced Energy Benefits:** Replaces energy inefficiencies in Well 3's groundwater motor and electrical components with current-day energy efficient equipment. The new well siting will ultimately lead to the construction of a new primary well using the same energy efficient equipment.

5.1 Project Utilization

The six projects together will ensure the SMCSO's existing immediate and critical water system deficiencies are addressed. The benefits will include immediate improvement in fire-fighting capability by replacing inadequate fire hydrants, ensuring existing water supply reliability by siting a new well location of suitable groundwater quantity and quality and by upgrading existing water supply well facilities at Well 3 (pumping capacity, disinfection, electrical controls housed in a deteriorated building)¹⁵, providing emergency backup power for two wells, adding the additional fire storage needed (0.25 million gallons) for the existing community (the recent 0.65 million gallon USDA water tank project met only a portion of the needed storage to meet existing needs), and improving deficient water distribution piping currently being experienced in the community to ensure adequate service pressure and fire flows.

5.2 Project Budget

Based on Attachment 4 – Budget, the total project budget is estimated to total \$950,000. **Table 2-2**, (also included in Attachment 4 – Budget), and Attachment 5 – Schedule are used to spread grant costs over the expected grant implementation timeline.

Table 2-18. San Miguel Community Services District Critical Water System Improvements Budget (Table 7 of 2012 Round 2 PSP)

¹⁴ The California Fire Code (CFC 903.2, 903.4.2), which is the adopted fire code for San Luis Obispo County (Title 16.10), expressly states the fire flow requirements.

¹⁵ See **Error! Reference source not found.** - Questions on Condition of Well 3

Project serves a need of a DAC?: Yes No		No			
Funding Match Waiver request?: Yes No		No			
Category		(a)	(b)	(c)	(d)
		Requested Grant Amount	Cost Share: Non-State Fund Source (Funding Match)	Cost Share: Other State Fund Source	Total Cost
(a)	Direct Project Administration	\$19,958	\$0	\$0	\$19,958
(b)	Land Purchase/ Easement	\$16,388	\$0	\$0	\$16,388
(c)	Planning/ Design/ Engineering/ Environmental Documentation	\$166,039	\$0	\$0	\$166,039
(d)	Construction/ Implementation	\$571,365	\$0	\$0	\$571,365
(e)	Environmental Compliance/ Mitigation/ Enhancement	\$5,000	\$0	\$0	\$5,000
(f)	Construction Administration	\$123,750	\$0	\$0	\$123,750
(g)	Other Costs	\$0	\$0	\$0	\$0
(h)	Construction/Implementation Contingency	\$47,500	\$0	\$0	\$47,500
(i)	Grand Total (Sum rows (a) through (h))	\$950,000	\$0	\$0	\$950,000

5.0.1 Description of Project Costs

Costs associated with the Project’s implementation will only be qualitatively described for this DAC Project. None of the expected costs will place any risk of undue burden upon the SMCSO or its rate payers. The following table summarizes the different cost categories and how they apply to the Project:

Cost Category	Description	Frequency of Occurrence
Grant Costs	Plan, design, and construct the six water facility projects (includes well siting)	Over Period of Construction
Administrative	Additional oversight costs to manage the long-term operations and maintenance of the new facilities	Continuous
Operation	Operation of any new valves and electrical equipment	Continuous
Maintenance	Scheduled and unscheduled maintenance	Continuous
Replacement	Replacement of project elements after 30 year lifecycle for valves, generators and electrical equipment. (Piping and fire hydrants assumed to have 50+ year lifecycle and is not included as a replacement item.)	30 years

Grant Costs (first row) are based on **Table 2-18** and distributed over the project schedule starting in July 2012 with initial planning studies and design reports and ending with finished construction in August 2014. The monthly distribution of the Grant costs is shown in **Figure 2-9** below.

Administrative costs are quantified based on the incremental increase in administrative actions pertaining to the addition of the new water system facilities and well site. No expected increase in administrative oversight will be required beyond the current SMCSO administrative staff and functions.

Operations costs include any added cost resulting from the operations of the water system facilities. No expected increase in operations costs will occur as a result of the new facilities. Energy efficiencies from the installation of new electrical equipment will be monitored as a physical benefit to the Project.

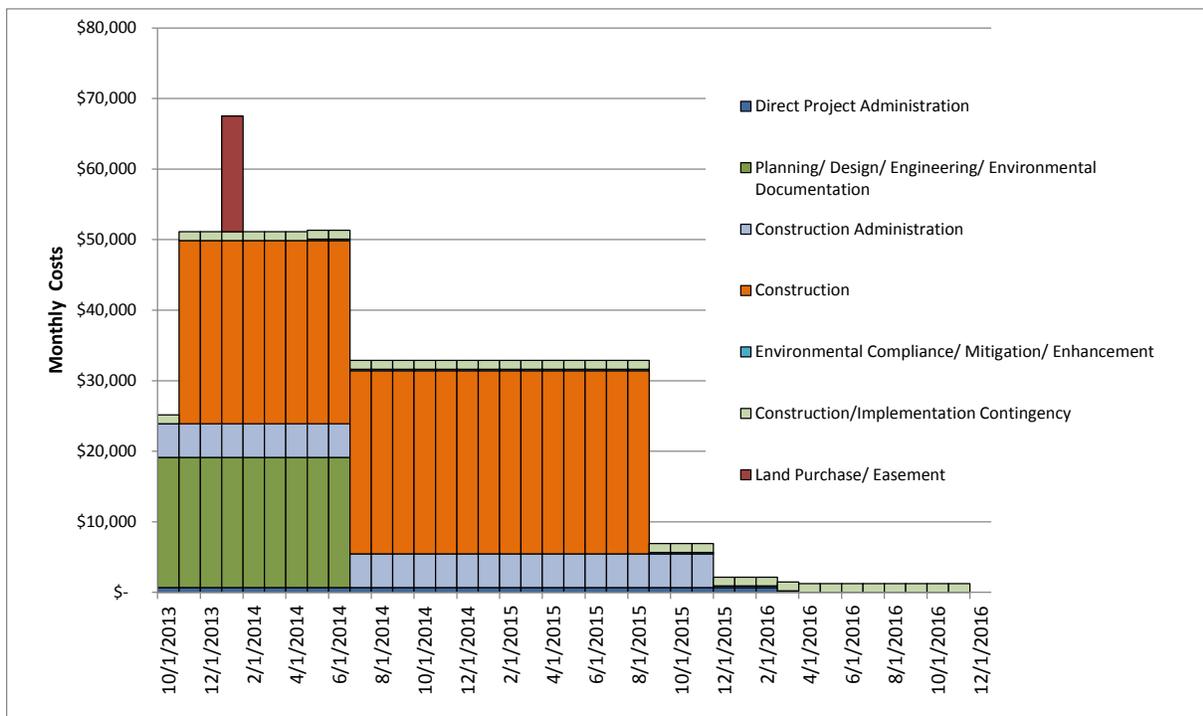


Figure 2-9. San Miguel Critical Water System Improvements Project Cost Distribution

Maintenance costs stem from scheduled and unscheduled maintenance over each annual period as a result of the new facilities. New back-up generators will add a nominal increase in routine maintenance each year.

Replacement assumes a 50-year lifecycle for the piped systems of the project. Replacement costs assume that any new valves and electrical equipment associated with the well rehabilitation, fire hydrants, and generators will need to be replaced at the end of 30 years. A replacement fund should be started 10 years prior to the assumed replacement event.

5.0 Statement of Cost Effectiveness

As stated above, this DAC project of less than \$1M is opting to complete a statement of cost effectiveness. The benefits of the project are quantified based on the health and safety benefits of having an uninterrupted drinking water supply system which can also meet required fire flow regulations. These benefits are reflected in **Table 2-19** below.

Table 2-19. San Miguel Community Services District Critical Water System Improvements Statement of Cost Effectiveness (Table 11 of 2012 Round 2 PSP)

Question 1	<p>Types of benefits provided:</p> <ul style="list-style-type: none"> • Increase water supply reliability and uninterrupted water service • Adequate fire flow for the protection of property and life • Safe drinking water supplies meeting Title 22 Drinking Water Standards • Increased economic growth to continue with improvements to the water system • Steady water rates based on planned capital improvements versus reacting to emergency replacement projects
Question 2	<p>Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified? No</p> <p>If no, why? The six sub-projects defining “critical” system improvements have been studied as part of a water master planning effort which assessed the condition of the existing San Miguel Water System. As a suite of improvements to address the critical problem areas, each sub-project is benefiting a defined need based on the standard engineering and business practice of rehabilitating or replacing aging system components (e.g., water mains, well pumps and motors, fire hydrants, etc.) and increasing capacity and reliability as the regulations requiring both change over time (e.g. increased storage and backup water supplies).</p> <p>If yes, list the methods (including the proposed project) and estimated costs. NA</p>
Question 3	<p>If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods. NA</p>
<p>Comments:</p>	

Table 2-20. Annual Cost of Shandon State Water Turnout Project (Table 19 of 2012 Round 2 PSP)

(All costs should be in 2012 Dollars)										
Shandon State Water Turnout										
YEAR	Initial Costs		Annual Costs						Discounting Calculations	
	Grant Costs		Operations and Maintenance Costs					Total Costs (a) +...+ (g)	Discount Factor	Discounted Costs(h) x (i)
	(row (i), column(d))	Adjusted Grant Costs	Admin	Operation	Maintenance	Replacement	Other			
	(a)	(b)	(c)	(d)	(e)	(f)	(g)			
2012	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	1.00	\$0
2013	\$123,632	\$0	\$0	\$0	\$0	\$0	\$0	\$3,750	0.943	\$120,172
2014	\$506,717	\$0	\$0	\$0	\$0	\$0	\$0	\$15,000	0.890	\$464,326
2015	\$270,775	\$0	\$0	\$0	\$0	\$0	\$0	\$15,000	0.840	\$239,942
2016	\$1,376	\$0	\$0	\$0	\$2,251	\$0	\$0	\$13,750	0.792	\$13,765
2017	\$0	\$0	\$0	\$0	\$2,319	\$0	\$0	\$0	0.747	\$1,733
2018	\$0	\$0	\$0	\$0	\$2,388	\$0	\$0	\$0	0.705	\$1,684
2019	\$0	\$0	\$0	\$0	\$2,460	\$0	\$0	\$0	0.665	\$1,636
2020	\$0	\$0	\$0	\$0	\$2,534	\$0	\$0	\$0	0.627	\$1,590
2021	\$0	\$0	\$0	\$0	\$2,610	\$0	\$0	\$0	0.592	\$1,545
2022	\$0	\$0	\$0	\$0	\$2,688	\$0	\$0	\$0	0.558	\$1,501
2023	\$0	\$0	\$0	\$0	\$2,768	\$0	\$0	\$0	0.527	\$1,458
2024	\$0	\$0	\$0	\$0	\$2,852	\$0	\$0	\$0	0.497	\$1,417
2025	\$0	\$0	\$0	\$0	\$2,937	\$0	\$0	\$0	0.469	\$1,377
2026	\$0	\$0	\$0	\$0	\$3,025	\$0	\$0	\$0	0.442	\$1,338
2027	\$0	\$0	\$0	\$0	\$3,116	\$0	\$0	\$0	0.417	\$1,300
2028	\$0	\$0	\$0	\$0	\$3,209	\$0	\$0	\$0	0.394	\$1,263
2029	\$0	\$0	\$0	\$0	\$3,306	\$0	\$0	\$0	0.371	\$1,228
2030	\$0	\$0	\$0	\$0	\$3,405	\$0	\$0	\$0	0.350	\$1,193
2031	\$0	\$0	\$0	\$0	\$3,507	\$0	\$0	\$0	0.331	\$1,159
2032	\$0	\$0	\$0	\$0	\$3,612	\$0	\$0	\$0	0.312	\$1,126
2033	\$0	\$0	\$0	\$0	\$3,721	\$8,570	\$0	\$12,291	0.294	\$3,615
2034	\$0	\$0	\$0	\$0	\$3,832	\$8,570	\$0	\$12,403	0.278	\$3,442
2035	\$0	\$0	\$0	\$0	\$3,947	\$8,570	\$0	\$12,518	0.262	\$3,277
2036	\$0	\$0	\$0	\$0	\$4,066	\$8,570	\$0	\$12,636	0.247	\$3,121
2037	\$0	\$0	\$0	\$0	\$4,188	\$8,570	\$0	\$12,758	0.233	\$2,973
2038	\$0	\$0	\$0	\$0	\$4,313	\$8,570	\$0	\$12,884	0.220	\$2,832
2039	\$0	\$0	\$0	\$0	\$4,443	\$8,570	\$0	\$13,013	0.207	\$2,698
2040	\$0	\$0	\$0	\$0	\$4,576	\$8,570	\$0	\$13,146	0.196	\$2,572
2041	\$0	\$0	\$0	\$0	\$4,713	\$8,570	\$0	\$13,284	0.185	\$2,452
2042	\$0	\$0	\$0	\$0	\$4,855	\$8,570	\$0	\$13,425	0.174	\$2,337
2043	\$0	\$0	\$0	\$0	\$5,000	\$0	\$0	\$5,000	0.164	\$821
2044	\$0	\$0	\$0	\$0	\$5,150	\$0	\$0	\$5,150	0.155	\$798
2045	\$0	\$0	\$0	\$0	\$5,305	\$0	\$0	\$5,305	0.146	\$775
2046	\$0	\$0	\$0	\$0	\$5,464	\$0	\$0	\$5,464	0.138	\$754
2047	\$0	\$0	\$0	\$0	\$5,628	\$0	\$0	\$5,628	0.130	\$732
2048	\$0	\$0	\$0	\$0	\$5,797	\$0	\$0	\$5,797	0.123	\$711
2049	\$0	\$0	\$0	\$0	\$5,970	\$0	\$0	\$5,970	0.116	\$691
2050	\$0	\$0	\$0	\$0	\$6,150	\$0	\$0	\$6,150	0.109	\$672
2051	\$0	\$0	\$0	\$0	\$6,334	\$0	\$0	\$6,334	0.103	\$653
2052	\$0	\$0	\$0	\$0	\$6,524	\$0	\$0	\$6,524	0.097	\$634
2053	\$0	\$0	\$0	\$0	\$6,720	\$0	\$0	\$6,720	0.092	\$616
2054	\$0	\$0	\$0	\$0	\$6,921	\$0	\$0	\$6,921	0.087	\$599
2055	\$0	\$0	\$0	\$0	\$7,129	\$0	\$0	\$7,129	0.082	\$582
2056	\$0	\$0	\$0	\$0	\$7,343	\$0	\$0	\$7,343	0.077	\$565
2057	\$0	\$0	\$0	\$0	\$7,563	\$0	\$0	\$7,563	0.073	\$549
2058	\$0	\$0	\$0	\$0	\$7,790	\$0	\$0	\$7,790	0.069	\$534
2059	\$0	\$0	\$0	\$0	\$8,024	\$0	\$0	\$8,024	0.065	\$519
2060	\$0	\$0	\$0	\$0	\$8,265	\$0	\$0	\$8,265	0.061	\$504
2061	\$0	\$0	\$0	\$0	\$8,512	\$0	\$0	\$8,512	0.058	\$490
2062	\$0	\$0	\$0	\$0	\$8,768	\$0	\$0	\$8,768	0.054	\$476
2063	\$0	\$0	\$0	\$0	\$9,031	\$0	\$0	\$9,031	0.051	\$463
Total Present Value of Discounted Costs (Sum of Column (j))										\$903,210

Project 6. San Simeon Supplemental Water Feasibility Study and Design Project

Brief Project Description: This project is proposing to assist the disadvantaged community, San Simeon, in bringing their critical supplemental water supply needs to the point of resolution where financing can be pursued for construction of the best alternative. The primary technical goal of this project is to find supplemental water supplies to increase San Simeon Community Services District's (SSCSD) safe and sustainable water supplies to average 140 AFY, their existing surface water entitlement.

The total present worth cost of the Project, assuming no added administration, or operations and maintenance costs, is **\$645,426**.

6.0 Background

As per Exhibit E of the Proposition 84 Round 2 Proposal Solicitation Package, DACs are given special preference in permitting the study and planning of critical water supply or water quality needs. This project is submitted under the Expanded Project Eligibility allowance based on the DAC status of the SSCSD service area and the critical water supply, water quality, and water system improvements needed to provide safe, reliable drinking water and fire protection.

In addition, as per the Proposition 84 Round 2 Proposal Solicitation Package, DACs are given special consideration in showing benefits and cost for DAC projects up to a total project cost of \$1M. In such cases, the proposal can opt to complete a Cost Effectiveness Analysis, evaluating whether the physical benefits provided by the project are provided at the least possible cost, or not. In the case of the San Simeon Project, the proposed feasibility study and design report will identify the least cost alternative for meeting their critical supplemental water supply needs

6.1 Project Utilization

The project will consist of engineering, planning, environmental review and project design tasks as needed to result in the most cost effective and beneficial project(s). The grant will address the 30 year building moratorium and severe rationing occurring annually in the dry months, worsening in extended drought conditions.

The project cost will yield the following two benefits:

- **Alternatives Feasibility Study:** The feasibility study will take the necessary steps to gather sufficient data to make a determination of possible alternative project solutions. Completion of an environmental review and recommendation of a preferred alternative will be the threshold for successful completion.
- **Final Design Report:** The final feasibility study will inform the design effort on the recommended alternative and the needed environmental and permitting actions. A 30%, 50% and 90% design report will be evaluated as intermediate monitoring steps. The final design report will indicate completion of the project.

6.2 Project Budget

The project cost is based on a detailed preliminary scope of work to complete the necessary engineering, planning, environmental and design tasks.

Based on Attachment 4 – Budget, the total project budget is estimated to total \$700,000. **Table 2-21**, (also included in Attachment 4 – Budget), and Attachment 5 – Schedule are used to spread grant costs over the expected grant implementation timeline.

Table 2-21. San Simeon Supplemental Water Feasibility Study and Design Project Budget (Table 7 of 2012 Round 2 PSP)

Project serves a need of a DAC?: Yes No		No			
Funding Match Waiver request?: Yes No		No			
		(a)	(b)	(c)	(d)
Category		Requested Grant Amount	Cost Share: Non-State Fund Source* (Funding Match)	Cost Share: Other State Fund Source**	Total Cost
(a)	Direct Project Administration	\$ 39,660	\$0	\$0	\$39,660
(b)	Land Purchase/ Easement	\$0	\$0	\$0	\$0
(c)	Planning/ Design/ Engineering/ Environmental Documentation	\$ 660,340	\$0	\$0	\$660,340
(d)	Construction/ Implementation	\$0	\$0	\$0	\$0
(e)	Environmental Compliance/ Mitigation/ Enhancement	\$0	\$0	\$0	\$0
(f)	Construction Administration	\$0	\$0	\$0	\$0
(g)	Other Costs	\$0	\$0	\$0	\$0
(h)	Construction/Implementation Contingency	\$0	\$0	\$0	\$0
(i)	Grand Total (Sum rows (a) through (h))	\$700,000	\$0	\$0	\$700,000
*The source of the Non-State share (Funding Match) is secured by CSA 16 collected from water rate charges as approved by					

6.0.1 Description of Project Costs

Project costs will be limited to managing and conducting the engineering and scientific analysis for completion of the feasibility study and design report. Costs beyond the grant amount are not foreseen until actual implementation of the design project is constructed. Therefore, no administrative, operation, maintenance or replacement costs are attributed to this project.

Costs are based solely on **Table 2-21** and distributed over the project schedule starting in October 2013 with the development of a Request for Proposals and Scope of Work and ending in March 2014 with the completion of the design report and submittal of the next round of the Proposition 84 Implementation Grant or other grant funding opportunities. The monthly distribution of the Grant costs is shown in **Figure 2-10** below.

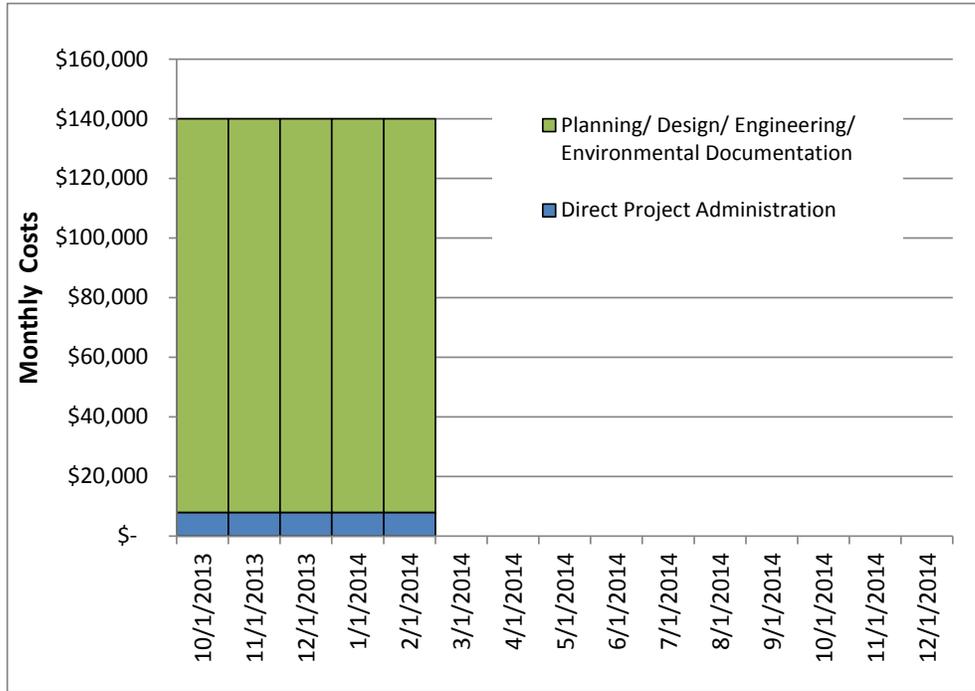


Figure 2-10. San Simeon Supplemental Water Feasibility Study and Design Project Cost Distribution

6.0 Statement of Cost Effectiveness

As stated above, this DAC project is a planning study of an amount less than \$1M. As such, the project is opting to complete a statement of cost effectiveness. The benefits of the project are quantified based on the health and safety benefits of having an uninterrupted drinking water supply system which can also meet required fire flow regulations. These benefits are reflected in **Table 2-22** below. The present worth cost of the project is presented in **Table 2-23**

Table 2-22. San Simeon Supplemental Water Feasibility Study and Design Project Statement of Cost Effectiveness (Table 11 of 2012 Round 2 PSP)

Question 1	<p>Types of benefits provided:</p> <ul style="list-style-type: none"> • Considers water supply opportunities across the entire watershed; • Addresses salinity intrusion into a fresh water aquifer; • Considers a variety of water supply sources including but not limited to groundwater and recycled water; • Designs a project that delivers critical water supply, water quality, and water system improvements needed to provide safe, reliable drinking water and fire protection; and • Allows the community of San Simeon to develop a project that ultimately allows for the elimination of a 30 year building moratorium.
Question 2	<p>Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified? No</p> <p>If no, why? This project is a planning study intended to perform an alternatives analysis for purposes of constructing the most cost effective solution for the San Simeon community. As such, the project cannot satisfy this requirement at this time; however, upon project completion, outside funding will be pursued for implementation of the project solution as stated in the work plan, schedule and budget.</p> <p>If yes, list the methods (including the proposed project) and estimated costs. NA</p>
Question 3	<p>If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods. NA</p>

Table 2-23. Annual Cost of San Simeon Supplemental Water Feasibility Study and Design Project (Table 19 of 2012 Round 2 PSP)

(All costs should be in 2012 Dollars)										
San Simeon Supplemental Water Feasibility Study and Design Project										
	Initial Costs		Annual Costs						Discounting Calculations	
YEAR	Grant Costs		Operations and Maintenance Costs					Total Costs (a) +...+ (g)	Discount Factor	Discounted Costs(h) x (i)
	(row (i), column(d))	Adjusted Grant Costs	Admin	Operation	Maintenance	Replacement	Other			
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
2012	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	1.00	\$0
2013	\$420,000	\$0	\$0	\$0	\$0	\$0	\$0	\$420,000	0.943	\$396,227
2014	\$280,000	\$0	\$0	\$0	\$0	\$0	\$0	\$280,000	0.890	\$249,199
2015	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.840	\$0
2016	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.792	\$0
2017	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.747	\$0
2018	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.705	\$0
2019	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.665	\$0
2020	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.627	\$0
2021	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.592	\$0
2022	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.558	\$0
2023	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.527	\$0
2024	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.497	\$0
2025	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.469	\$0
2026	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.442	\$0
2027	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.417	\$0
2028	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.394	\$0
2029	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.371	\$0
2030	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.350	\$0
2031	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.331	\$0
2032	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.312	\$0
2033	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.294	\$0
2034	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.278	\$0
2035	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.262	\$0
2036	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.247	\$0
2037	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.233	\$0
2038	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.220	\$0
2039	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.207	\$0
2040	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.196	\$0
2041	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.185	\$0
2042	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.174	\$0
2043	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.164	\$0
2044	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.155	\$0
2045	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.146	\$0
2046	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.138	\$0
2047	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.130	\$0
2048	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.123	\$0
2049	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.116	\$0
2050	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.109	\$0
2051	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.103	\$0
2052	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.097	\$0
2053	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.092	\$0
2054	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.087	\$0
2055	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.082	\$0
2056	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.077	\$0
2057	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.073	\$0
2058	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.069	\$0
2059	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.065	\$0
2060	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.061	\$0
2061	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.058	\$0
2062	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.054	\$0
2063	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.051	\$0
Total Present Value of Discounted Costs (Sum of Column (j))										\$645,426