

Attachment 4 – Project Description

ATTACHMENT 4 – PROJECT DESCRIPTION

- *Provide a complete, detailed description of the proposed project, including the goals of the project, needed facilities and their location, and the area covered.*
- *Describe how the project supports the goals and objectives of the GWMP. Applicant must clearly explain the relevance of project to the GWMP.*
- *Describe the quality and usefulness of the information that will be obtained using technically feasible methods. Include a discussion of data, technical methods, and analyses to be used.*
- *Describe how the applicant collaborates with other local public agencies with regard to the management of the affected groundwater basin. Discuss and provide evidence that a process is or will be in place that informs groundwater users, stakeholders, and the general public about the project to be funded with the proposed grant and disseminates relevant reports and data.*
- *Explain and document how federal and other State agencies will be contacted.*
- *Explain how ongoing use of the products derived from the proposed project will be funded after grant funds are expended*
- *Provide examples of how often and under what funding mechanism monitoring wells will continue to be monitored, models maintained and used in the future, automated monitoring equipment maintained, or data management systems be updated and maintained. Include a discussion of measures that will be used to evaluate data and mechanisms to adapt the data collection process as new information is obtained.*

Water has played a central role to the residents within the Antelope Valley Region. Extensive groundwater pumping for agriculture during the period 1952 to 1968 has played a significant role in the development of more than 6 feet of land subsidence measured between 1926 and 1992 in the Antelope Valley. Although currently less than at any time since the 1940's, annual groundwater extraction still exceeds the estimated mean natural recharge to the valley by nearly two-fold. As a result, groundwater levels, historically depleted throughout the central part of the valley, continue to decline in urban and isolated agricultural areas where groundwater use is high.

In addition, the population of Antelope Valley is projected to grow from 260,400 in 1990 to 690,000 by 2010, and water demand is expected to exceed projected supplies by the year 2035. Groundwater supplies have satisfied 50 to 90 percent of the annual water demand in Antelope Valley during this period of development, and will constitute a substantial component of the future water supply. If groundwater levels are maintained at approximately their historic low

The applicant proposes to investigate the effects of the Amargosa Project across the fault boundaries through the measurement of groundwater levels and through the collection of water quality samples. This data will be derived from multiple monitoring wells throughout the basin that will help stakeholders in the region identify changes in water quality, document baseline water level conditions and track changes in water levels as recharge occurs as later stages of the project are implemented. Another significant benefit is that the data through this project will help to validate the actual “safe yield” in the basin. This is a critical piece of information for all stakeholders in the Antelope Valley given that the basin is in the process of adjudication.

Figure 2 below illustrates some of stakeholders within the proposed project area. One of the major stakeholders in the region includes the Los Angeles County Water Works (LACWD). LACWD is a network of public water systems formed pursuant to Division 16, County Waterworks Districts of the California Water Code. There are five Los Angeles County Waterworks Districts that provide retail water service to Kagel Canyon, Malibu, Val Verde, Acton, and the Antelope Valley. LACWD supplies water to about 200,000 people within these Waterworks Districts, of which 87% of the population resides within the Antelope Valley Region alone. As such, there is clear support by both LACWD and an array of other stakeholders of any project that better quantifies the conditions within the Antelope Valley Region including increasing water supplies, improving groundwater quality, recording baseline groundwater level conditions, and determining actual basin safe yields. This project study will ultimately help to track changes in water quality and levels as recharge in the region occurs. As such, this Project Study and data generated by it will provide the largest benefit to the region.

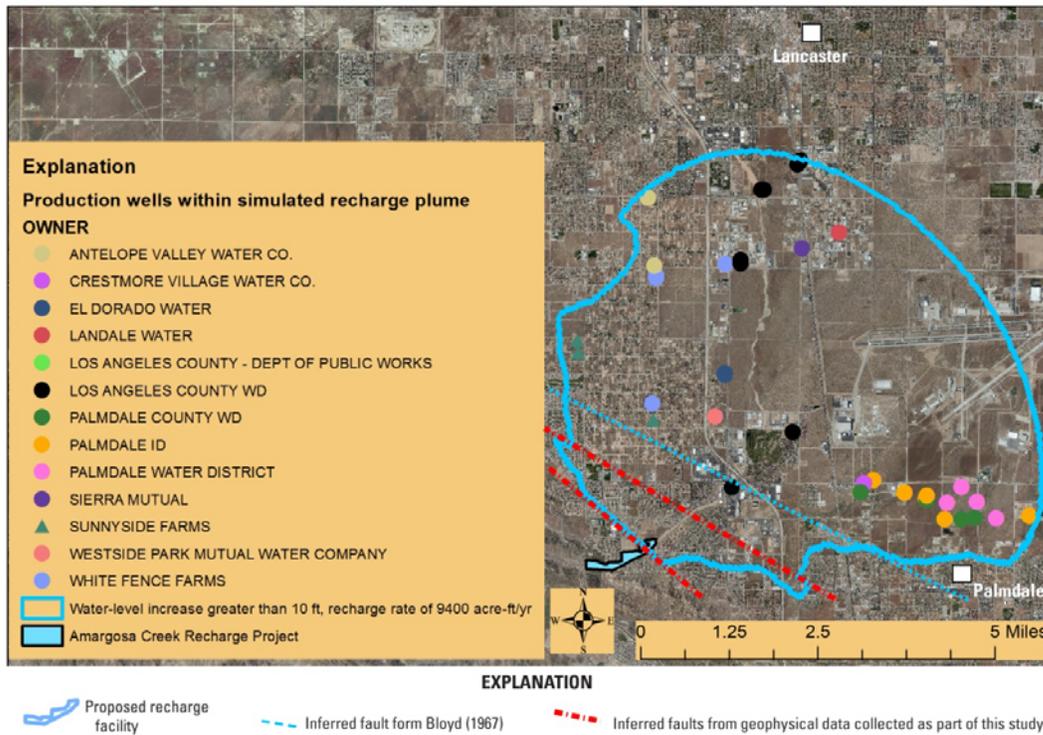


Figure 2: Map illustrating production wells/Stakeholders within the Project Area

The ultimate goals of the Amargosa Project is to implement a groundwater monitoring program and modeling study that will inform stakeholders of the region of the feasibility of one of the largest groundwater recharge projects in the region. Developing new water supplies and the need to maintain the groundwater levels, is crucial to successfully meeting the future water demands within the Antelope Valley Region. As such, it becomes more and more crucial to identify and document existing groundwater level and water quality changes to help stakeholders with future water resource planning and to develop realistic water budgets.

Letters of support from both Los Angeles County Water Works District 40 and the United States Geological Survey are included in this attachment.

Moreover, the Amargosa Project will provide a local and regional water supply benefit, and it will help to meet the State of California’s most important Water Management Strategies (groundwater banking/recharge and increased water supply reliability, as identified within the AV IRWMP).

The Amargosa Project will help to identify the potential for recharge of stormwater from the Amargosa Creek Watershed. Additionally, the Amargosa Project is situated ideally to receive State Water Project (SWP) supplies for groundwater recharge.

Table 7-2 Prioritized Project List				
Priority	Project	Responsible Entity	Project Status	Project Schedule
Water Supply Groundwater Recharge/Banking Infrastructure Projects				
High	Antelope Valley Water Bank	WDS	Design	2001 to 2008
	Aquifer Storage and Recovery Project - Injection Well Development	LACWWD 40	Planning	2007 to 2010
	Upper Amargosa Creek Recharge, Flood Control & Riparian Habitat Restoration Project	Palmdale, AVEK	Planning	2006 to 2010

Goals and Objects – GWMP

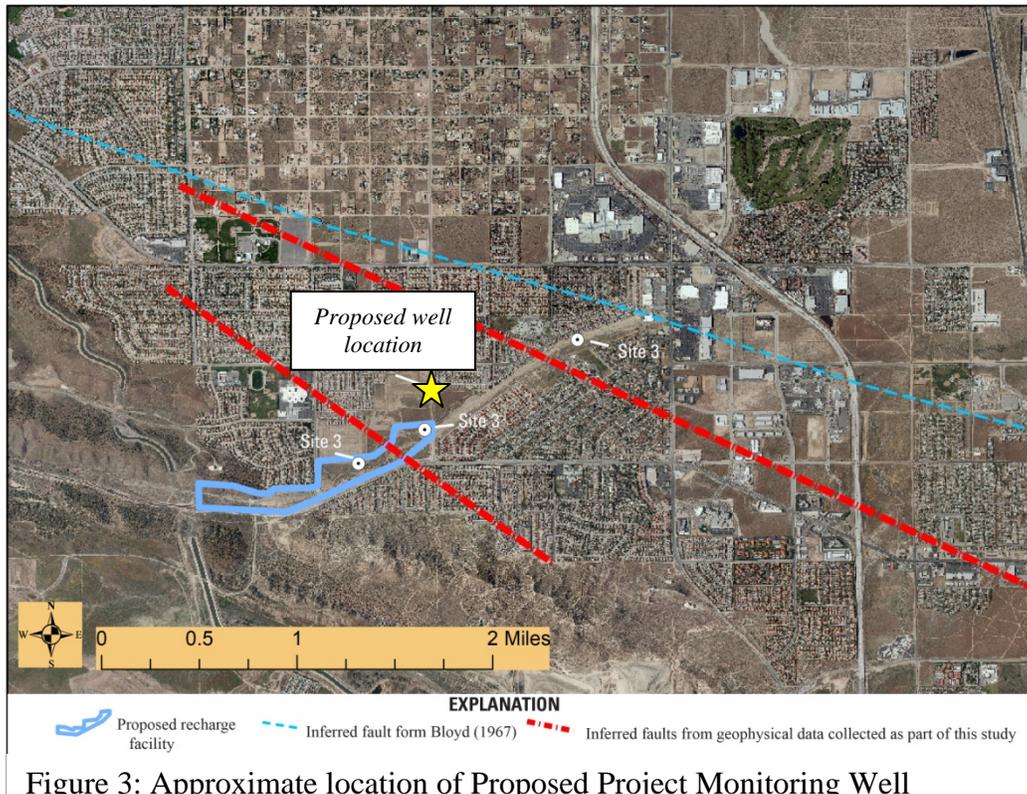
The Proposed Project helps to meet the goals identified in the AV IRWMP/GWMP. These include:

- Increase Water Supply Reliability
- Stabilize groundwater levels at current conditions
- Reduce negative impacts of storm water
- Preserve natural habitats

Water supply reliability is the acceptable level of supply shortage that is acceptable during a drought. The IRWMP identifies the need to provide adequate reserves to meet demands during a single-dry year (50,600 to 57,400 AF) and to supplement average conditions to meet demands during multi-dry year conditions (up to 62,000 over a 4-year period). The Amargosa Project will help to meet this need by recharging additional storm runoff from the Amargosa Watershed and SWP supplies when available. The Amargosa Project is projected to supply an average of 9,400 AFY. The monitoring and modeling program associated with the proposed project will help to verify this recharge potential. As such, the proposed project helps to meet the goals and objectives of GWMP which aim to improve groundwater supply reliability in the region.

Monitoring Well

The applicant proposes the installation of a monitoring well for the collection of water levels and water quality samples. This newly constructed well, along with existing wells will be used to gather data to provide better information on the movement of water across the fault system in the upper 100 to 150 feet of the aquifer. Previous studies have shown that water from lower portions of the aquifer have been impeded by the fault system. The location of the new well is identified in Figure 3.



Groundwater Monitoring Program

The applicant will implement a robust groundwater monitoring program that will not only utilize data from the newly constructed monitoring well, but will incorporate monitoring data from two existing monitoring wells. The wells will be equipped with instrumentation that includes pressure transducers to measure changes in water level and temperature probes installed at various depths within the wellbore to measure changes in temperature as result of movement of natural and proposed artificial recharge. All data from these instruments will be downloaded quarterly and entered into the USGS database with appropriate quality assurance.

In addition, the applicant will collect water quality samples from the monitoring well sites to document current water-quality conditions, which will be used to compare and contrast with changes in water quality. This data will be useful in documenting baseline conditions in the basin prior to recharge activity occurring. Water quality sampling will occur on an annual basis and will be ramped up to quarterly once recharge commences. Changes in water chemistry will be

used to help track the movement of artificial water. The quality control will include analyzing duplicate samples and/or field blanks.

In addition to water quality, water level measurements will also be collected. Once collected this data will be documented by the stakeholders in the region and will also be forwarded to the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. The Antelope Valley State Water Contractor Association (AVSWCA), of which the City of Palmdale is part of, is an approved CASGEM “Monitoring Entity.” As such, the additional data provided through the Proposed Project will be beneficial in providing supplementary regional representation.

Groundwater Modeling Study

The applicant proposes to generate data from both the groundwater monitoring program to updated the groundwater model developed by USGS. This local groundwater model will be modified to address regional water-level changes as simulated by the regional groundwater-flow model. This modification will improve the ability to make more reasonable predictive scenarios and assist in providing improved data for use in recharge management decisions both locally and regionally. This includes a better understanding about how the water-level changes will occur at nearby wells within the Antelope Valley groundwater basin near the cities of Palmdale and Lancaster.

Data Usefulness and Collaboration

The applicant will collaborate with multiple entities during the course of this project. These include:

- **USGS:** Involved in implementation of Monitoring Program, Well Construction and Groundwater Modeling Study. Groundwater levels will be measured by means of transducers placed in each well and personnel will follow the appropriate water quality and assurance procedures as mentioned in Attachment 8. The data collected will provide the ability to calibrate the model for the local groundwater basin in order to examine different scenarios for groundwater recharge. This will enable better siting and operation of the recharge facilities.
- **Antelope Valley Water Management Group/Antelope Valley Integrated Water Management Group/Plan (AVIRWMP):** In 1991, the AVWG was formed as a means of communication for the parties with an interest in water. The City of Palmdale is a member of AVWG. The AVIRWMP prepared the AV IRWMP in 2007 to manage the water resources of the Region. The City will ensure that data generated by the Proposed Study will be presented on a regular basis to the stakeholders in the region through regular presentations at the AV IRWMP Monthly meetings. This data presentation will ensure all stakeholders are up to date on the status of the project and will help to ensure relevant information is shared to all entities. Coordination with the AV IRWMP will occur to ensure presentations are made available electronically and announced in the corresponding agendas.

- **Antelope Valley State Water Contractor Association:** The applicant will ensure that data is shared with the AVSWCA's for inclusion in the CASGEM Program. Data collected on a quarterly basis will be delivered to the AVSWCA's General Manager, Matthew Knudsen.

Continued Monitoring

The City will work collaboratively with the USGS to continue the monitoring of the well network. The City understands the importance of implementing this project and has made a financial commitment to continue a cooperative agreement with USGS to maintain the groundwater modeling study and execute the groundwater monitoring program. The City has forecasted the Proposed Project in its Capital Improvement Plan budget for the continued implementation of this program.



GAIL FARBER, Director

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

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July 2, 2012

IN REPLY PLEASE

REFER TO FILE:

WW-1

Mr. Tom Lutterman
California Department of Water Resources
Division of Integrated Regional Water Management
Regional Planning Branch
1416 9th Street, Room 338
Sacramento, CA 942836-001

Dear Mr. Lutterman:

GRANT APPLICATION - UPPER AMARGOSA CREEK RECHARGE PROJECT GROUNDWATER MODEL AND MONITORING STUDY - AMARGOSA PROJECT

The Los Angeles County Waterworks Districts (Districts) is a network of public water systems formed pursuant to Division 16, County Waterworks Districts of the California Water Code. There are five Los Angeles County Waterworks Districts that provide retail water service to Kagel Canyon, Val Verde, Acton, the Antelope Valley, Malibu, and Marina del Rey. The Districts supply water to about 200,000 people, of which 85 percent of the population resides within the Antelope Valley region alone.

The Districts' goal is to provide reliable, high quality water to its customers. To further that goal, the Districts joined both the Antelope Valley Water Partners District and efforts to develop the Antelope Valley Integrated Regional Water Management Plan (IRWMP), also known as the AV Water Plan. This plan is a multicounty collaborative effort developed to address regional concerns about water supply reliability, water quality, flood protection, environmental resources, and land use management in the Antelope Valley. The Amargosa Project has been identified as a priority project within the Antelope Valley IRWMP and is an essential component to satisfy the growing water supply needs and targets of the region. The Amargosa Project is proposed to be one of the largest contributors toward helping to stabilize and improve the overall health of the groundwater basin. In addition, the Amargosa Project is anticipated to contribute 40 to 50 percent of supplemental water supply to help meet targets proposed within the Antelope Valley IRWMP.

We are clearly interested in and supportive of any project that better quantifies the conditions within the Antelope Valley region, including increasing water supplies, improving groundwater quality, recording baseline groundwater level conditions, and determining actual basin safe yields. This project study will ultimately help to track changes in water quality and levels as recharge occurs. More importantly, the Palmdale

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region is an area with the largest water level depression and highest pumping demands, and is the largest area in the region where recharge can occur. As such, this Project Study and the data generated by it will provide the largest benefit to the region.

Finally, we hope that our expression of support is helpful in your evaluation of the City's grant application to secure grant funding assistance to implement the Amargosa Project.

If the funding agency would like to discuss our interests and support for your project, they can contact Ms. Jessica Bunker at (626) 300-3315 or at jbunker@dpw.lacounty.gov.

Very truly yours,

GAIL FARBER
Director of Public Works

FOI 
ADAM ARIKI
Assistant Deputy Director
Waterworks Division

JB:kk
LTS582_Letter of Support



IN REPLY REFER TO:

United States Department of the Interior

U. S. GEOLOGICAL SURVEY

California Water Science Center

6000 J Street, Placer Hall

California State University

Sacramento, California 95819-6129

Phone: (916) 278-3026 Fax: (916) 278-3045

<http://water.wr.usgs.gov>

July 2, 2012

Mr. Tom Lutterman
California Department of Water Resources
Division of Integrated Regional Water Management
Regional Planning Branch
1416 9th Street, Room 338
Sacramento, CA 942836-001

RE: Grant Application- Upper Amargosa Creek Recharge Project – Groundwater Model and Monitoring Study (Amargosa Project)

Dear Mr. Lutterman:

The United States Geological Survey (USGS) is a science organization that provides impartial, relevant information on the nation's water, energy and minerals, natural hazards, environmental health, ecosystems, and climate and land use change. As such, the USGS is interested in providing information on groundwater basin conditions that are of concern to the State of California and regional agencies.

The proposed Amargosa Project has been identified in the Antelope Valley Integrated Regional Water Management Plan (AV IRWMP) as a high-priority project that will aid in meeting future water supply needs. The USGS has begun a multi-phase study that will provide the City of Palmdale and the stakeholders in the Antelope Valley Region with useful data that is relevant to this Project. These data will help to better manage the groundwater basin, assess recharge potential, and characterize fault properties and boundaries. Phase 1 of the study involved collecting gravity data and developing an alluvial thickness model to help determine changes in the basement geometry and identify features such as faults, which might influence groundwater flow. Phase 2 involved constructing monitoring sites, collecting water-quality, water-level, and geophysical data in the area of the Amargosa Project to help characterize the aquifer conditions. These data were used to develop a local-scale numerical groundwater-flow model of the groundwater system and to simulate the effects of various recharge scenarios. Data collected and results of the local-scale numerical groundwater-flow model are documented in the USGS

Scientific Investigations report “Feasibility and Potential Effects of the Proposed Amargosa Creek Recharge Project, Palmdale, California” (Christensen and others, in review).

Phase 3 of the study, the work proposed for this grant funding, involves the drilling and constructing of a monitoring well near the proposed recharge project to improve the understanding of aquifer; continuing the collection of water-level, water-quality and temperature data; and updating the local-scale groundwater-flow model. The model will be modified to address regional water-level changes as simulated by a regional-scale groundwater-flow model. This modification will improve the ability of the local-scale model to simulate the impacts of water-management scenarios, including water-level changes at wells near the cities of Palmdale and Lancaster.

The monitoring and modeling in the proposed study will improve the quantification of groundwater conditions within the Antelope Valley Region, including groundwater quality and baseline groundwater-level conditions. This study will ultimately help to monitor changes in water quality and levels as recharge occurs. The study focuses on the Palmdale region, as it is the area with the greatest water-level declines, highest pumping demands, and greatest potential for artificial recharge. The data generated by this study will be forwarded by the City to the California Statewide Groundwater Elevation Monitoring Program (CASGEM) to aid in the tracking of California’s 515 alluvial groundwater basins.

We hope that this information is helpful in your evaluation of the City’s grant application to secure grant funding assistance to implement the Amargosa Project. If the funding agency would like to learn more about this study or the USGS, please let us know.

Sincerely,

A handwritten signature in cursive script, appearing to read "Eric G. Reichard".

Eric G. Reichard Ph.D.

Director,

USGS California Water Science Center