February 2017

DCP-001 Schafter-Wasco Irrigation District on behalf of Poso Creek IRWM Plan Regional Water Management Group

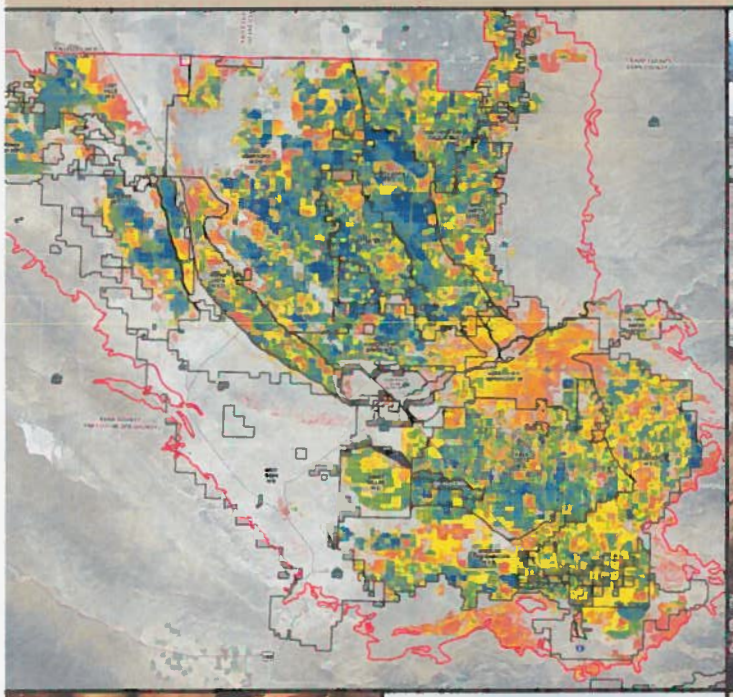
Drought Contingency Plan for

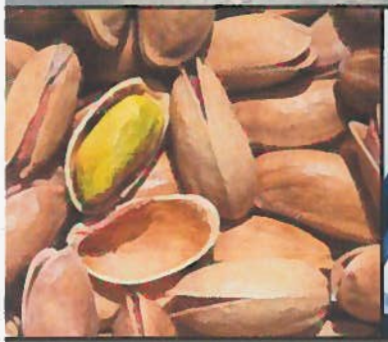
POSO CREEK

IRWM Plan Region

WaterSMART Drought Response Program:
Drought Contingency Planning Grants for Fiscal Year 2017

Funding Opportunity Announcement No. BOR-DO-F009
Project Location - Southern San Joaquin Valley, Kern County, California





Applicant
Shafter-Wasco Irrigation District
On behalf of the Poso Creek IRWM Plan Regional Water Management Group

P.O. Box 1168
Wasco, CA 93280

SWID
Shafter-Wasco Irrigation District

Drought Contingency Plan
for
Poso Creek Integrated Regional Water Management Plan Region

WaterSMART:
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P.O. Box 1168
Wasco, CA 93280

Project Manager: Dana Munn
Email: dmun@swid.org
Phone: (661) 758-5153
Fax: (661) 758-6167

February 14, 2017

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2.0 Table of Contents

SF-424 APPLICATION FOR FEDERAL ASSISTANCE
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3.0 Executive Summary

Date: February 14th, 2017

Applicant Name: Shafter-Wasco Irrigation District, on behalf of the Poso Creek Integrated Regional Water Management Group

City, County, State: Wasco, Kern County, California

Project Summary – The proposed Project is to develop a comprehensive drought plan for the Poso Creek Integrated Regional Water Management Group (RWMG) based on the framework identified in Reclamation's Drought Contingency Planning. The work tasks will include:

1) Establishing a Drought Planning Task Force;
2) Developing a detailed work plan that includes establishing a new drought communication and outreach plan to complement the existing Poso Creek IRWM Plan;
3) Updating information regarding the Poso Creek IRWMP Region's water supply reliability;
4) Updating the estimate of agriculture, urban, and environmental water demand using recent improved GIS based land use data and analysis of actual evapotranspiration (ET) based on satellite images for the past 20 years (this analysis will include the recent multi-year extreme drought period);
5) Incorporating weather, snow survey, and water supply forecasts provided by the California Department of Water Resources (DWR) and the U.S. Bureau of Reclamation;
6) Incorporating climate change findings identified in DWR and Reclamation studies;
7) Developing a drought indicator dashboard for the Poso Creek IRWM Plan RWMG (seven agricultural districts, several communities, and the environmental water uses) that identifies and links the key water supply and demand indicators; and
8) Document communication and outreach methods that were developed with the stakeholders, public, and Drought Task Force as part of this Project.

Length of time and estimated completion date: The proposed length of time to complete the Drought Contingency Plan is 24 months, with a completion date of April, 2019 to complete the draft of all documents, which is 18 months from the proposed start of the drought plan to ensure enough time for Reclamation to review the Plan.

Geographic Area: The proposed Project area covers over 500,000 acres located within the Southern San Joaquin Valley, in California. The area includes seven agricultural water districts, one water conservation district, several economically disadvantaged communities, and a federal wildlife refuge. The seven agricultural water districts are within Reclamation's Central Valley Project place-of-use. Four of the seven districts are Federal water contractors, three CVP-Friant and one CVP-Delta. Two of the seven districts are State Water Project contractors and one is a

Kern River water contractor; the three non-federal water districts have water banking and groundwater storage facilities that are utilized in agreements with the federal water districts. All of the districts are part of the Poso Creek Integrated Regional Water Management Plan: 25-Year Groundwater Banking, Transfer and Exchange Program (EA-09-121).

3.1 Background Data

Provide a general description of the area to be addressed in the proposed Drought Contingency Plan. Identify any past working relationships with Reclamation.

3.1.1 Plan Area

The Drought Contingency Plan Area is the Poso Creek IRWM Plan boundary, which includes the areas of the seven member Districts of the Poso Creek IRWM Regional Water Management Group (Group). The Group is governed by the Poso Creek IRWM Memorandum of Understating (MOU) of which each district is a voting member along with a disadvantaged community representative. The Group adopted the Poso Creek IRWM Plan in 2007, updated it in 2014, and is scheduled to complete the next IRWM Plan Update in 2019.

The Plan Area is located within the Kern County Subbasin, at the southern end of the San Joaquin Valley, surrounded by a horseshoe-shaped ring of mountains with the Sierra Nevada Mountains to the east and a series of coastal mountains to the west. Figure 3-1 shows the location of the Plan Area, Group, each member, their primary water contract source, and the major water conveyance facilities in the region. The Plan Area is located at the crossroads of the California Aqueduct, Friant-Kern Canal, and the Kern River. Thus the potential for increased conjunctive us or surface water and groundwater supplies is a valuable, practiced asset to the Plan Area.

Irrigated agriculture is the main land use in the Region. Prior to formation of the agricultural water management districts (decades ago), water for irrigation was obtained almost exclusively from groundwater sources, resulting in a rapid decline in static groundwater levels. To mitigate the impacts of declining groundwater levels, the districts were formed to provide public entities for entering into water supply contracts and provide supplemental surface water supplies from State, Federal, and/or local watershed sources.

Since California experiences a range of wet or dry years, the groundwater basin acts as a large regulating reservoir. The conjunctive use operation in the Plan Area has been practiced for over 60 years and has been expanded since the Poso Creek IRWM Plan as adopted in 2007 by adding interconnections and promoting water supply banking/exchanges between districts that allow more flexibility in the Region's water supply, which adds drought resiliency. Due to the severity of the recent drought, a chapter focused on drought planning would benefit the Plan Area to evaluate how to make additional use of the Region's assets of federal, state, and local water supplies, dewatered groundwater storage, and evaluate the irrigation demand. The Region is an ideal location to regulate surface supplies conjunctively to benefit the agricultural based economy and the economically disadvantaged communities.

The member Districts and their areas are provided below along with an estimate of the average annual irrigation demand within each district (Note: the demand numbers are from the Poso Creek IRWM Plan and are in need of updating as part of this proposed work plan).

Table 1. Poso Creek IRWMG Member Overview

	Area		Demand
District	**Total Area (acres)**	**Irrigated Area (acres)**	**Volume (AF)**
Cawelo WD	44,700	34,800	75,000
Delano-Earlimart ID	56,500	48,000	135,000
Kern-Tulare WD	22,200	17,000	45,000
North Kern WSD	67,400	55,400	140,000
Semitropic WSD	221,000	126,300	310,000
Shafter-Wasco ID	37,500	30,300	70,000
Southern San Joaquin MUD	58,000	48,200	125,000
Total	**507,300**	**360,000**	**900,000**

Principal sources of surface water supplies to the Region include the Kern River (local); Poso Creek (local); State Water Project (SWP) with deliveries via the California Aqueduct; and the Central Valley Project (CVP) with deliveries via the Friant-Kern Canal and the California Aqueduct. The following table quantifies the volume of water diverted into the region. Note that the historical average reflects the amount of water actually diverted into the Region, and not the amount available for irrigation. Owing to mismatches between availability and demand, it is not practicable to utilize all of the available supply.

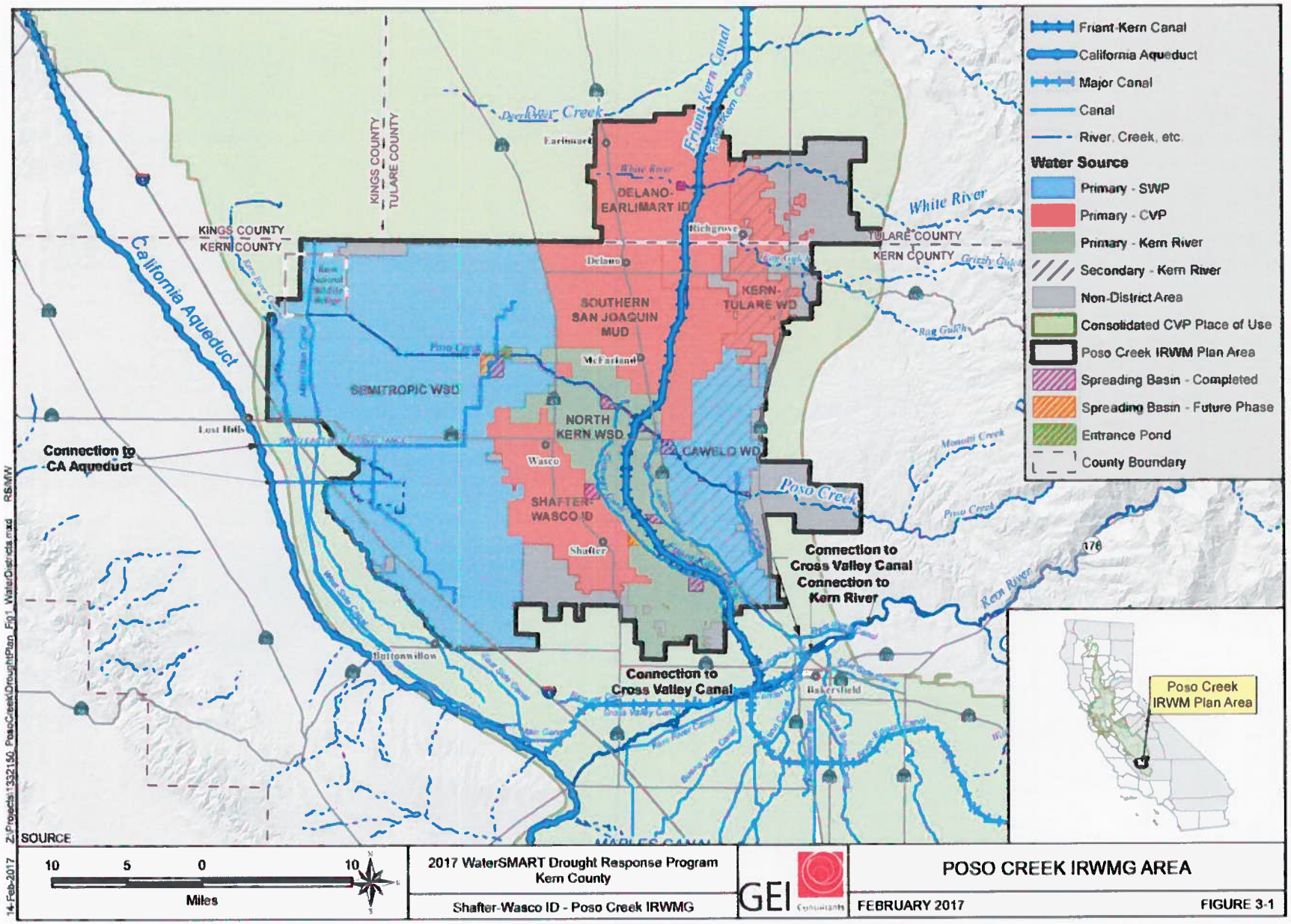
Friant-Kern Canal
California Aqueduct
Major Canal
Canal
River, Creek, etc.
Water Source
Primary - SWP
Primary - CVP
Primary - Kern River
Secondary - Kern River
Non-District Area
Consolidated CVP Place of Use
Poso Creek IRWM Plan Area
Spreading Basin - Completed
Spreading Basin - Future Phase
Entrance Pond
County Boundary
KINGS COUNTY
TULARE COUNTY
KERN COUNTY
DELANO-EARLIMART ID
SOUTHERN SAN JOAQUIN MUD
KERN-TULARE WD
SEMITROPIC WSD
NORTH KERN WSD
CAWELO WD
SHAFTER-WASCO ID
Connection to CA Aqueduct
Connection to Cross Valley Canal
Connection to Kern River
Connection to Cross Valley Canal
Poso Creek IRWM Plan Area
SOURCE
10 5 0 10
Miles
2017 WaterSMART Drought Response Program
Kern County
Shafter-Wasco ID - Poso Creek IRWMG
GEI Consultants
POSO CREEK IRWMG AREA
FEBRUARY 2017
FIGURE 3-1
14-Feb-2017 Z:\Projects\1332150_PosoCreekDroughtPlan\Fig1_WaterDistricts.mxd RSMW

Table 2. Poso Creek Region – Diverted Supplies

Source of Supply	1981-2005 Average (AF)	Projected Supply (AF)[1]
Local	252,000	198,000
State (SWP)	213,000	123,000
Federal (CVP)	310,000	320,000
Total	**775,000**	**641,000**

[1]20-year average projection, as estimated by the 2014 update.

Diverted supplies are used to irrigate crops such as almonds, pistachios, and grapes during the irrigation season and to divert water to spreading basins when the irrigation demand is low. The large percentage of permanent crops is the result of a persistent trend of converting row crop fields (such as cotton) to fruit and nut trees. This trend toward permanent crops represents a "hardening" of the total crop water requirement, meaning that the demand must be met year in and year out, as compared to an annual crop where there is some choice to plant or not to plant in any given year depending on hydrologic conditions or other considerations. Table 3 presents a detailed overview of crop patterns within the region.

Table 3. Crop Pattern within the Poso Creek Region

	2013 Crop Pattern	
Crop Category[2]	**Percent**	**Approx. Acres**
Citrus and Subtropical*	7%	25,200
Deciduous Fruits and Nuts*	51%	183,600
Field Crops	5%	18,000
Grain and Hay Crops	14%	50,400
Truck, Nursery, and Berry Crops	3%	10,800
Vineyards*	21%	75,600

* Permanent crops.

[1] Based on crop surveys conducted by each district in the Region.

[2] Percentages are based on the total for the crop categories shown in the table.

Collectively, the cities of Delano, McFarland, Shafter, and Wasco include the majority of the Region's population. Three of these four cities are required to prepare Urban Water Management Plans (UWMPs) every 5 years, the latest update were prepared in 2015. Each of these plans includes a projection of gross water use at 5-year time steps for the next 20 years. The following Table presents the municipal and industrial demands, as available from each cities respective UWMP that was reported in the 2014 Poso Creek IRWM Plan or in the 2015 UWMPs.

Table 4. Municipal and Industrial Demands in Region

Year	Shafter (AF)[1]	Delano (AF)2	Wasco (AF)3	Total (AF)
2010	4,738	9,272	4,681	18,691
2015	4,260	10,666	6,661	22,363
2020	4,702	11,786	8,925	25,774
2025	5,193	13,023	11,469	29,662
2030	5,733	14,391	14,293	34,392
2035	6,328	15,902	17,397	39,601

[1] Data taken from Tables 12 through 14 of 2010 & 2015 Shafter UWMP.

[2] Data taken from Table 3-13 of 2010 Delano UWMP

[3] Data taken from Table 4-4 of 2010 Wasco UWMP.

3.1.2 Past Working Relationships with Reclamation

The Poso Creek IRWMG and its members have worked with Reclamation on a variety of occasions and project types. These projects include regional planning efforts, Friant-Kern Canal diversion modifications, Reclamation approved banking agreements, and environmental assessments. Below is a brief and non-comprehensive summary of past working relationships.

Various: Many Poso Creek IRWMG members have entered into Warren Act contracts for the wheeling of agricultural water supplies with and between Federal CVP surface water contractors in Kern and Tulare Counties. The three party agreements facilitating these transfers were signed between the Group member, the counter-party, and the USBR.

2002 North Kern WSD entered into a long-term water banking agreement with Kern-Tulare Water District to regulate CVP supplies available to Kern-Tulare. This agreement was approved by Reclamation.

2002-2003 North Kern WSD constructed a turnout from the Friant-Kern Canal, which provides for the diversion of water from the Friant-Kern Canal into North Kern's 8-1 Lateral and thence into North Kern's Calloway Canal. The design and rights-of-way were approved and permitted by Reclamation.

2004-2005 North Kern WSD constructed four deep wells and installed piping on Friant-Kern Canal rights-of-way to route the discharge from these wells into the Friant-Kern Canal. The design and rights-of-way were approved and permitted by Reclamation.

2008-2010: The Semitropic WSD, acting as lead agency for the *Poso Creek IRWM Group*, was awarded a USBR WaterSMART Grant in fall 2008 to prepare a System Optimization Review (i.e., analysis of system-wide efficiency for the Region). In this regard, the IRWM Group worked with the USBR to prepare an Environmental Assessment (EA) to cover long-term

groundwater storage and exchange activities among neighboring districts in the Poso Creek IRWM Plan Area.

2012: In May 2012, Reclamation approved the Final Environmental Assessment EA-09-121, the Poso Creek IRWM Plan: 25-Year Groundwater Banking, Transfer, and Exchange Program, to enable better conservation and management of the region's decreasing water resources.

2015: In June 2015, Semitropic WSD was awarded an Agricultural Water Conservation and Efficiency Grant, administered by both Reclamation and the USDA Natural Resource Conservation Service (NRCS). Semitropic WSD also entered into a grant agreement with Reclamation (Agreement No. R13AP00203) for the Groundwater Well Operational Data Acquisition and Solar Power Project, for groundwater well operation data acquisition and solar power energy upgrade.

2012-2016: Cawelo WD and North Kern WSD received funding from multiple USBR grants to concrete line consecutive reaches of the Calloway Canal.

3.2 Project Description

This section describes the anticipated steps that will be taken in developing the Drought Contingency Plan, and the targeted outcome. It also serves as a commitment by the Poso Creek IRWM Group to meet the required elements of Drought Contingency Plans as set forth by Reclamation. As such, it is a close reflection of the information provided in the FOA and Dr. Wilhite's (et al) research, also mentioned in the FOA. The Drought Contingency Plan is new, making the Project a Task A project.

3.2.1 Planning Steps

The Poso Creek IRWM Group will follow the required Drought Contingency Planning Steps, as detailed in this Section.

Establishment of a Drought Planning Task Force. — The Shafter-Wasco Irrigation District is identified to receive funding as the planning lead on behalf of the Poso Creek RWM Group. At the outset of the planning process, the planning lead will develop a Drought Planning Task Force (Task Force) consisting of interested stakeholders within the planning area that want to actively participate in developing the Drought Contingency Plan. **The Task Force will be initiated by the membership representing multiple interests in the Poso Creek IRWM Plan. The Poso Creek RWM Group will reach out to add additional diversity through the established relationships developed in the IRWM planning process.** Outreach will occur to other groups in Kern and Tulare counties, such as the Kern Groundwater Authority who is activity meeting to form Groundwater Sustainability Authority under the recent change to California groundwater law. The Poso Creek RWM Group anticipates they will be able to quickly develop and form a diverse representation on the Task Force.

- **Development of a detailed work plan.** — An outline of the proposed work plan is presented in this application that describes the development of the Drought Contingency Plan, tasks to be accomplished, a proposed schedule, and identified responsibilities for Reclamation (Reclamation will provide input on this element), the planning lead, the Task Force, and other interested stakeholders. Further details will be developed by the planning lead working with the Poso Creek IRWM RWMG in consultation with Reclamation. Since inception 11 years ago, members within the Poso Creek RWMG have implemented $135 million in IRWM activity involving federal, state, and local funds towards implementation and planning activities. During this time, the Poso Creek RWMG has retained a consultant who functions as an IRWM Plan Facilitator for the RWMG. The IRWM Plan Facilitator has consistently been involved with development and implementation of the Plan since the initial IRWM Plan development in 2006. The work plan will be submitted to Reclamation for review and acceptance before substantive work on the Drought Contingency Plan begins, and may be updated as conditions warrant.

- **Development of a communication and outreach plan.** — As part of the detailed work plan, the planning partners will develop a communication and outreach plan that serves two purposes; developing the Drought Contingency Plan and implementation once a drought is recognized. The Poso Creek RWM Group anticipates participation by representatives from the District's Board of Directors who are growers in the region, stakeholders representing communities with land-use other than agricultural, federal wildlife refuge managers, and the public. The Poso Creek RWM Group maintains an e-mail list for interested parties who reside outside of the Poso Creek IRWM Plan area since all three sources of supplemental surface supply delivered to the region originate from outside the region. The Poso Creek RWM Group is committed to being involved in the planning process, including providing input on the drafting of the Drought Contingency Plan and providing feedback to the Task Force. Participation will occur through public meetings, webinars, public notices, and other forums or approaches.

The Poso Creek RWMG anticipates the Draft drought contingency plan to be submitted to Reclamation for review and acceptance at least 90 to 180 days before completion of the period of performance. It is understood that the purpose of Reclamation's review is to ensure that the plan or plan update meets program requirements.

3.2.2 Required Elements in New Plans

This section describes the detailed work and the specific activities to be accomplished for the Project. This Proposal addresses the requirements for conducting a drought contingency plan, including the six required elements for Drought Contingency Plans as follows:

Drought Monitoring. — The Plan will establish a process for monitoring near and long-term water availability, and document a framework for predicting the probability of future droughts or confirming when experiencing an existing drought. This includes documenting the process for the collection, analysis, and dissemination of water availability and other drought-

related data (e.g., precipitation, temperature, and streamflow levels, among other indicators). The Plan will identify the data used to predict or confirm droughts in this planning area, including identifying metrics and triggers that are specific to the region and its water uses to define stages of drought. Successfully defining the different stages or levels of severity of drought is critical to successfully triggering mitigation or response actions. In particular, the following tasks will be completed:

- Identify existing hydrology indexes used for determining the type of water year for this area in terms of the three major water supplies (SWP, CVP, and Kern River).
- Describe water reliability forecasting for SWP, CVP, and Kern River. DWR and Reclamation release forecasts on certain dates and then update periodically.
- Analyze methods used for predicting the type of water year (such as, graphs of accumulated rainfall in comparison to historic years).

Identifying dashboard indicators for drought stages based on links to available data and connection to specific drought.

Vulnerability Assessment. — The Plan will include a vulnerability assessment evaluating the risks and impacts of drought. The assessment will determine the risks to critical resources within the planning area and the factors contributing to those risks. Assessments will drive the development of potential mitigation and response actions. The assessment will be based on a range of future conditions, including the effects of climate change.

The assessment will assess current agricultural and municipal water quality and systems with the goal of:

- Conduct background water quality assessment of the region.
- Assess agricultural water source quality as it pertains to drought.
- Identify the public water systems that have current violations especially for constituents stated in California legislation, AB 1249, and their susceptibility to further violations due to drought indicators.
- Identify possible solutions to resolve violations.
- Meet with each municipal water system to discuss their needs and potential solutions to remain in compliance with Title 22 regulations.
- Assess environmental water supplies, existing or potential impacts to endangered, threatened or candidate species, and possible mitigating actions during drought.

Mitigation Actions. — The Plan will identify, evaluate, and prioritize mitigation actions to build long-term resiliency to drought and mitigate the risks posed by drought. The findings of the above vulnerability assessment will be used to develop mitigation actions for implementation

prior to presence of drought indicators. The actions will include programs and strategies specific to the Project area and its vulnerabilities.

Mitigating actions will be assessed, organized, and categorized based on a number of factors including the cost to benefit ratio, feasibility, and sensitivity to environmental conditions. Mitigating actions that will be considered include but is not limited to the development of a monitoring network, evaluation of ground water use, evaluation of surface water quantity and quality, water conveyance improvement opportunities.

Response Actions. — The plan will identify, evaluate, and prioritize response actions and activities that can be implemented quickly during a drought. The response actions will be evaluated and chosen based on their feasibility and effectiveness at meeting an existing stage of drought (as identified in drought monitoring) as well as expected drought stages in the immediate future.

Municipal and agricultural response actions will be developed by stakeholders in the context of regional and basin water use management, with the goal of minimizing the impact of drought to the environment and economy.

Operational and Administrative Framework. — The operational and administrative framework will be closely tied to the stakeholders and leaders within their organizations. The framework will identify who is responsible for undertaking the actions necessary to implement drought monitoring, mitigation actions, response actions, plan updates, and facilitation of communication between within the drought management effort and public. The framework will likely formalize the lines communication currently utilized within the Poso Creek IRWMG, while providing the structure to coordinate drought management efforts as needed.

Plan Update Process. — The plan will describe the process and schedule for evaluating and updating the plan. The Poso Creek IRWM Group will include the Drought Contingency Plan as part of the Poso Creek IRWM Plan. Currently, the Group updates the plan every 5 to 7 years to meet various grant program eligibility criteria (such as the Department of Water Resources IRWM planning program or Reclamation's WaterSMART program). As such, there is an expectation that the Group will incorporate a new Drought Contingency Plan as a new chapter in the next IRWM Plan update.

The Drought Contingency Plan will allow stakeholders within the Poso Creek IRWM region the framework for a more effective transition into drought water management once a drought is identified. During the recent drought, the Poso Creek IRWM Group and other basin stakeholders were not in a good position for revenue expenditures and were not able to allocate the resources required to compile and analyze the data that would allow a comprehensive understanding of the recent drought and their effectiveness within it. Therefore, Poso Creek IRWM Group, as part of the Drought Contingency Plan effort, would use these grant funds to develop the following in support of the above elements:

- **Drought Monitoring, Dashboard** – Develop an interface which inputs data from various drought indicators (to be identified by the Project), and outputs information regarding

drought risk and in the context of response actions. Would be tailored to the region and stakeholders using information from the vulnerability assessment.

- **Vulnerability Assessment, Water Supply Reliability** – Develop a water supply reliability assessment concerning imports of the State Water Project (California State), Central Valley Project (USBR), and Kern River. The effort would process data regarding supplies from these sources, through the recent drought to estimate future constraints on importing supplies into the region.

- **Vulnerability Assessment, Water Demand** – Develop an updated agricultural water demand estimate, using representative years during the recent drought, based on the Kern Groundwater Water Authority's recent purchase of satellite images being processed by the Cal Poly Irrigation and Training Research Center.

- **Vulnerability Assessment, Municipal Water Supply and Quality** – Develop a more thorough assessment of water quality and supply issues as they relate to drought indicators. Recent municipal water supply issues in the Central Valley will be discussed as they relate to drought impacts, such as, the work being led by CA DWR and GEI in Porterville, CA.

3.3 Evaluation Criteria

The evaluation criteria are addressed in this section of the application. Paragraphs in blue mark text taken from the FOA and placed here for reference.

3.3.1 Criterion A - Need for a Drought Contingency Plan

Describe the severity of the risks to water supplies that will be addressed in the Drought Contingency Plan, and whether there are public health concerns or social concerns associated with existing or potential drought conditions. Are there local economic losses) associated with drought conditions (e.g., business, agriculture, reduced real estate values)?

The Poso Creek IRWM Group, and Kern County in general, recently experienced an exceptional drought which highlighted the regions vulnerability to drought, and need for a Drought Contingency Plan. The National Drought Mitigation Center (NMDC) recognized the Project area as undergoing some intensity of drought for nearly the entirety of the previous decade[1]. The near constant state of drought has recently been punctuated by an exceptional drought (category D4) or extreme drought (category D3) over the previous 2 years. In times of drought, irrigation and municipal agencies often meet shortfalls in surface supplies by pumping groundwater. The sustained need to pump has contributed to a number of drought indicators within the Kern Subbasin, including:

- Nearly 2 inches of subsidence in the nearby City of Delano between 2008 and 2010[2].

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[1] NMDC-University of Nebraska-Lincoln (droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?CA).
[2] USGS, CV Drought Indicators (ca.water.usgs.gov/land_subsidence/central-valley-subsidence-data.html)

- A 160-foot decrease in groundwater elevation within the Poso Creek IRWMP area between 1970 and 2015[1].
- About 1.5 billion dollars in lost labor income, taxes, profits, and output[2].

Without further improvements and planning in water management infrastructure, these trends will continue in future dry years and potentially affect municipal drinking water systems and state and federal water conveyance infrastructure.

What are the risks to water supplies within the applicable geographic area that will be addressed in the plan, and how severe are those risks?

In addition to the above impacts, risks to water supplies, as observed through the recent drought include:

- Increasing municipal and agricultural water quality issues as the result of decreasing groundwater levels[3].
- Reduced conveyance capacity in regional infrastructure such as the Friant-Kern Canal and California Aqueduct[4]
- Likely irreversible subsidence, which reduces regional groundwater storage capacity[5].

Are there public health concerns or social concerns associated with existing or potential drought conditions? For example, are there water quality concerns including past or potential violations of drinking water standards, increased risks of wildfire, or past or potential shortages of drinking water supplies? Does the community have another water source available to them if their water service is interrupted?

Public health concerns related to small disadvantaged community (DAC) water supplies in the Poso Creek IRWM Plan area will be assessed for drought affects, mainly due to lowering water tables that can have the effect to increase in the occurrences of drinking water violations. DACs rely on the shared groundwater resource of the basin and are affected by drought as water levels in wells are lowered during droughts. The DAC communities do not have another water source available without incurring significant additional expenses of developing a surface supply in place of the groundwater source.

The Poso Creek RWMG will develop a new section on water quality of the groundwater as part of the funded Poso Creek IRWM Plan update. A technical memorandum describing the water quality overview of DACs within the Poso Creek IRWM Plan with an initial list of past violations to drinking water standards was compiled by the Group in September 2016. The

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[1] USGS, CV Drought Indicators (Well 27S26E21F001M).
[2] UC Davis, Economic Analysis of the 2015 Drought for California Agriculture, 2015.
[3] Stanford Woods Institute, Understanding California's Groundwater, 2015
[4] USBR, Friant-Kern Canal Capacity Restoration Draft Environmental Assessment, 2011
[5] USGS, Water availability and land subsidence in the Central Valley, 2015

proposed scope of work to complete the water quality assessment was developed as part of the DWR funded planning grant update.

Are there environmental concerns, such as existing or potential impacts to endangered, threatened or candidate species?

Environmental water uses within the Poso Creek IRWM Plan area are relatively minor in comparison to the environmental water supply requirements of the San Joaquin River Restoration and the Sacramento-Bay Delta. CVP and SWP contractors contribute to environmental water supplies needs outside of the Plan area, which has had an additional effect on the water supply shortage within the Plan area at times of drought.

Are there other drought-related risks not identified above (for example, tensions over water that could result in a water-related crisis or conflict, or risks to tribes).

Water use in Kern County is under stress due to reliance on groundwater use in the basin to reduced supplemental water supplies from SWP and CVP contracts. California recently passed significant groundwater law in 2014. The law, called the Sustainable Groundwater Management Act (SGMA), requires that groundwater management areas to be formed though the initial step of forming a Groundwater Sustainability Agency (GSA). Entities within the Poso Creek IRWM Plan are participants in the Kern Groundwater Authority's GSA and will need to complete Groundwater Management Plans (GMP) by 2020.

The multi-year long drought in CA has exacerbated the local effects to groundwater levels. The Poso Creek IRWM RWMG will evaluate the recent drought effects on the district operations and consider actions that may help alleviate the future drought effects.

Describe existing or potential drought conditions to be addressed in the Drought Contingency Plan. Include documentation of the recent multi-year drought and describe the past 10 years. Describe any projected increases to the frequency, severity, or duration of drought in the geographic area resulting from climate change.

The Drought Contingency Plan will directly address observed drought indicators mentioned in the first paragraph of this criterion evaluation. Climate change has and is expected to continue to have a significant impact within the Tulare Lake Region. Drought related impacts include loss of snowpack storage resulting in greater groundwater demand and infrequent but larger rain events[1]. The overall impact of climate change is expected to increase extreme climatic events such as drought[2,3].

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[1] CA Department of Water Resources, California Climate Science and Data, 2015
[2] CA Department of Water Resources, Climate Change Adaptation Strategies for California's Water, 2008
[3] USBR, Sacramento and San Joaquin Rivers Basin Study, 2016

Describe the status of any existing planning efforts. Explain how this Project relates to other planning efforts ongoing or recently completed in the planning area and how this effort will complement, not duplicate ongoing or completed planning efforts.

This Drought Resiliency Plan will capture the operations and actions considered in the Poso Creek IRWM Plan area during the recent drought and become a much-needed chapter in the Poso Creek IRWM Plan Update. This Drought Contingency Plan will complement, not duplicate the on-going planning effort of the Kern Groundwater Authority as it moves into development of multiple GSPs coordinated within the Kern GSA. The existing Poso Creek IRWM Plan and the SGMA Groundwater Sustainability Plans will provide opportunity for collaboration on the background and planning structure to allow stakeholders to monitor, mitigate, and respond to drought.

3.3.2 Criterion B—Inclusion of Stakeholders

Demonstrate that the planning process will be inclusive and incorporate input and participation by a diverse range of stakeholders. Describe the stakeholders to be involved in the planning process.

As part of its IRWM Plan, the Poso Creek RWMG maintains a list of regional stakeholders and plan participants. The list was developed to include public and private interests at the local and State level. Since the lists initial compilation in 2007, most all of the stakeholders have attended at least one of the regular scheduled Poso Creek IRWM Group meetings in support of some regional issue. Beyond the Poso Creek IRWM Group members, agencies on the list include:

Regional Stakeholders and Participants in addition to the Poso Creek RWMG

Allensworth Community Services District
Buena Vista Water Storage District
California Water Institute, CSU Fresno
Cal Poly, ITRC Center, San Luis Obispo
City of Buttonwillow
City of Delano
City of McFarland
City of Shafter
City of Wasco
Community Water Center
Federal Kern National Wildlife Refuge
Friant Water Users Authority
Lost Hills Water District
Kern County Water Agency
Kern County
Kern National Wildlife Refuge
Lost Hills Utility District
The Wonderful Company
R.L. Schafer and Associates
Rosedale-Rio Bravo Water Storage District
Self-Help Enterprises
Semitropic Wildlife Improvement District
Sequoia River Lands
Sunworld
Tulare Basin Wildlife Partners

State and Federal Agencies

California Department of Fish and Game
California Department of Water Resources
U.S. Bureau of Reclamation

The Poso Creek RWMG maintains contact with stakeholders through an e-mail list to provide notices for their public meetings. A sign-in attendance sheet records the attendance for each meeting. Each District has a Board of Directors consisting of landowners or residents of local

communities who will have the opportunity to be involved. The DWR and Reclamation interact with the RWM Group districts since they represent SWP Contractors and federal CVP Contractors. The federal Kern National Wildlife Refuge and Tulare Basin Wildlife Partners are active participants in the Poso Creek IRWM Plan. Both the Community Water Center and Self-Help Enterprises work with the small, unincorporated DACs. Several of the larger DAC have their own staff to participate in the long-range planning within the IRWM Plan.

Describe their commitment, e.g., will they participate on the Task Force, contribute funding or in-kind services, or otherwise engage in the planning process?

The Poso Creek RWMG voted during their January, 2017 meeting to submit this application for funding a Drought Contingency Plan. The Poso Creek RWMG has identified on-going related studies for the larger Kern and Tulare county areas for planning and technical work items that will compliment this Drought Contingency Plan effort of this Plan Area. These related studies, which have over a million in state grant funds committed to the larger area, will complement, not duplicate this focused effort to complete a Drought Contingency Plan and incorporate the new chapter into the Poso Creek IRWM Plan Update.

Do these stakeholders represent diverse interests (e.g., agricultural, municipal, environmental, recreation, tribal)?

Yes. The majority of the water use within the Plan area is for agricultural use. The remaining uses are split between DAC communities and the environmental uses. Due to the competing needs for environmental water use outside of this Plan area, approximately 10 to 15 percent of the SWP and CVP surface water supply delivered to the Plan area in recent history have been reduced with the affects felt by all water users who share the common groundwater basin.

Describe stakeholders in the planning area who have expressed their support for the planning process, whether or not they have committed to participate. Support can include letters of support from stakeholders or a description of feedback from interested stakeholders; such letters should identify the stakeholder's specific interest.

The executive leadership group within the Poso Creek IRWM RWMG have signed a letter of support stating the commitment of the Group to participate. Several of the stakeholders, including large growers within the Plan Area, have expressed a desire to participate once the funding in secured and the Drought Task Force is formed.

Describe what efforts that you will undertake to ensure participation by a diverse array of stakeholders in the development of a plan.

Once funding is secured for the Drought Contingency Plan component of the Poso Creek IRWM Plan, communication using the existing e-mail, phone contacts maintained by the Poso Creek IRWM Group, and the related water groups in Kern County, such as the Water Association of Kern County (http://www.wakc.com) will be utilized to communication with a diverse set of

interested stakeholders. The Water Association of Kern County maintains a "Who's Who" list of water interests in Kern County and will help complement the existing list of stakeholders.

3.3.3 Criterion C—Project Implementation

Describe the approach for addressing the six required elements of a Drought Contingency Plan within the two-year timeframe. Please address the following:

Prior to writing the Plan, efforts will be made to engage experts in fields related to water use in the Region. Currently, the Poso Creek IRWM Group is looking to engage the following experts:

- Land IQ and Joel Kimmelshue; Soil and Agricultural Scientist – May assist in GEI compiling the Land Use data (Land IQ is under an existing contract to provide GIS based land use data for all of the Central Valley to the CA DWR), analyzing past evapotranspiration trends, and evaluating the effectiveness of future mitigation and response actions.
- North West Kern River Conservation District Mobile Lab – Presently provides water districts and agricultural stakeholders in assessing existing on-farm efficiencies and possible future improvements.
- Sunworld, Maricopa Orchards, Wonderful Orchards, etc. – Large commercial growers offer the opportunity to interact with their on-going field efforts to efficiently assess agricultural water use and future management actions for irrigation practices.
- Irrigation Training and Research Center (ITRC), Cal Poly – Is currently under contract with the Kern Groundwater Authority to process 20 years of ET satellite imagery and involved in with stakeholders (large commercial growers and the Poso Creek IRWM Group) to investigate evapotranspiration and yield relationships throughout the Kern subbasin. Continued involvement the ITRC will benefit the Drought Contingency Plan. Appendix C provides an example of past data output using ITRC data, as well as the current task order in effect with the Kern Groundwater Authority. Note that the ITRC task order includes land within the Kern County Subbasin and outside of the Poso Creek IRWM Plan Area. Only data relevant to the Poso Creek IRWM Group will be submitted for review and reimbursement.

Describe how each of the six required elements of a Drought Contingency Plan, as applicable, will be addressed within the two-year timeframe. Include an estimated project schedule that shows the stages and duration of the proposed work including major tasks, milestones, and dates.

The following table and figure describes the Project schedule and milestones.

Table 5. Milestone Dates

Milestone No.	Description	Date
1	Project awarded Reclamation funds.	June 2017
2	Agreement with Reclamation signed.	September 2017

Milestone No.	Description	Date
3	Drought Task Force formed.	October 2017
4	Detailed Work Plan complete.	November 2017
5	Draft document communication plan.	December 2017
6	Draft Drought Contingency Plan complete.	April 2019
7	Final Drought Contingency Plan complete.	July 2019
8	Agreement End Date.	December 2019

Plan Section/Task	Start Date	End Date
Resource/Stakeholder Outreach	September 2017	November 2017
Drought Monitoring	December 2017	March 2019
Vulnerability Assessment	January 2017	March 2019
Mitigation Actions	February 2017	March 2019
Response Actions	March 2017	March 2019
Operation and Administrative Framework	March 2017	April 2019
Plan Update Process	January 2018	January 2019
USBR Review	April 2019	July 2019

Describe the availability and quality of existing data and models applicable to the proposed plan.

Data gathering will be an essential part of anticipating future droughts and estimating water supplies, demands, and trends. The following bullets are a preliminary list of data that will be considered for use in the Drought Contingency Plan.

- DWR land use information is being updated in 2017 to provide agriculture land use throughout the San Joaquin Valley.
- Kern County 2016 land and crop use data, to provide a parcel wise breakdown of particular crops and land use.
- Cal Poly ITRC is processing 20 years of satellite imagery evapotranspiration data to provide a region wide assessment of agricultural water use with 30-meter resolution.
- Various Management Plans: Agricultural Water Management Plans, Reclamation Water Conservation Plans, and Urban Water Management Plans (or newer data from Cities), provide water conservation and use measures and numbers that may be integrated into the Drought Contingency Plan.
- DWR's Integrated Water Flow Model – Demand Calculator tools may be utilized for data organization and computing applied water estimates.

Identify staff with appropriate technical expertise and describe their qualifications. Describe any plans to request additional technical assistance from Reclamation, or by contract.

The representatives of member districts within the Poso Creek IRWM Group consist of the Professional Engineers and general managers form each District. Each district consists of individuals with decades of engineering experience managing water supplies in coordination with State and Federal regulators, local governments, growers, with municipal and water quality professionals.

The staff of Poso Creek IRWM Group members will be assisted, as they have been in previous IRWM efforts, by experts in water and agricultural management. These experts have extensive experience in groundwater modeling, water rights, agricultural and municipal water management, water quality, conveyance design, and climate change. Example of the types of experts include:

- Dr. Daniel Howes, PE, Senior Irrigation Engineer, Cal Poly ITRC.
- Dr. Joel Kimmelshue, Soil and Agricultural Scientist, LandIQ.
- Dave Dorrance, MS, Vice President of the Renewable Resource Group, Texas.

The Poso Creek IRWM Group currently has a professional services contract and receives support from GEI Consultants, Inc. (GEI). GEI performs group management and facilitation services for the Group, in addition to various as-needed engineering and water management services to individual districts. Professionals within GEI that will be engaged as part of the Drought Contingency Plan effort include:

- Sam Schaefer, MS, PE, Poso Creek IRWM Plan Facilitator and agricultural engineer, United State Committee on Irrigation and Drainage Board Member.
- Dr. Satya Gala, PE, Senior Planner and coordinating DAC, Porterville assistance.
- Stephanie Hearn, MS, Senior Water Quality and Water Systems Specialist.
- Chris Petersen, PG, C.Hg, Principal Hydrogeologist, GRA President.
- Dr. Asante Kwabena, PE, Senior Environmental and Climate Change Advisor.
- Dr. David Miller, PE, California Irrigation Institute Board of Directors President.
- Dr. Donghai, PE, Web-based application and groundwater modeling expert.

The above professionals and their support staff will work with Reclamation as needed to ensure the Drought Contingency Plan meets or exceeds the expectations set forth in this FOA.

3.3.4 Criterion D—Nexus to Reclamation

Is there a Reclamation project, facility, or activity within the planning area? Is the planning area in the same basin as a Reclamation project, facility, or activity?

The USBR Friant-Kern Canal provides contractual water supplies to four CVP contractors within the Poso Creek IRWM Region (see Background and Plan Area sections). The contractors are: Shafter-Wasco ID, Delano-Earlimart ID, Kern-Tulare WD, and Southern San Joaquin MUD. These districts have contractual water rights to Class 1 and Class 2 water supplies on the CVP. All Poso Creek IRWM Group districts have received CVP surplus floodwater (Section 215) when available. Each district is allowed to bank contract water SWP and CVP water supplies as part of the Poso Creek IRWM Plan 25-Year Groundwater Banking, Transfer, and Exchange Program (EA-09-121).

In what way will the proposed Project benefit a basin where a Reclamation project, facility, or activity is located?

The proposed Project will help document the available supplemental supplies for all uses and refine the estimated demand using actual satellite ET data. This information, in conjunction with evaluating operations scenarios that include recent prolonged drought, will enable critical contingency planning for drought to evolve. Moreover, the successful coordination and implementation of drought mitigation and response actions will work to combat the causes of decreased capacity along the Friant-Kern Canal, and the associated repair and maintenance costs.

4.0 Letter of Support and Financial Commitment

Below is a Letter of Support and Financial Commitment from the Poso Creek IRWM Group to Shafter-Wasco Irrigation District.

POSO CREEK IRWMP
Management Group

1101 Central Avenue, Wasco, CA 93280
661-758-5113

February 10, 2017

Mr. Dana Munn
General Manager
Shafter-Wasco Irrigation District
P.O. Box 1168
Wasco, CA 93280

Subject: Proposed Project – Drought Contingency Plan for the Poso Creek IRWM Plan Region

Dear Mr. Munn:

The Poso Creek Integrated Regional Water Management (IRWM) Group is supportive of the application to develop a Drought Contingency Plan for the Poso Creek Integrated Regional Water Management Plan Region. It is understood that the intent of this funding application is to help support the addition of a drought contingency plan as a new chapter to the existing Poso Creek IRWM Plan.

The proposed addition of a drought contingency plan chapter to the Poso Creek IRWM Plan was discussed during the January 3rd, 2017 public meeting of the Poso Creek RWMG. At the meeting, Poso Creek RWMG members voted to financially support this application to Reclamation for securing funding to assist with this drought planning. Should this application be successful, the Poso Creek RWMG is prepared to utilize $200,000 or more in eligible expenses that are incurred in non-federal planning efforts to match federal funding requested.

Recently, in February, 2017, the Poso Creek RWMG received notice from the California Department of Water Resources that it will receive a CA Proposition 1 funded grant award of $250,000. The funds are to be used to update the existing Poso Creek IRWM Plan to maintain compliance with DWR's IRWM Plan standards, which requires some technical analysis of supply and demands very similar and complimentary to what is needed in a drought contingency plan. The Poso Creek RWMG is anticipating aligning part of the scope and budget within DWR's funding with the federal funding to focus on a separate, new chapter on drought contingency planning that will become a component of the overall Poso Creek IRWM Plan. In addition, districts within the Plan Region are incurring expenses updating water supply and demand information to be used meet the needs of the new groundwater regulations in California that will be utilized in the Drought Contingency Plan.

The Poso Creek RWMG recently experienced two exceptionally dry years. Funds awarded under this opportunity will allow the group to document the recent drought and better prepare for future droughts. The Poso Creek RWMG has met regularly for over 11 years, with members and non-member regional stakeholders alike. Properly forming and executing a drought contingency plan will work to the benefit of both groups within the basin.

We hope that our expression of support is helpful in your efforts to secure grant funding assistance to implement your plans. If the funding agency would like to discuss our interest and support of your project, we would be happy to do so.

Sincerely,

Ram Venkatesan
Vice-Chairman
Poso Creek IRWMG

Isela Medina
Treasurer
Poso Creek IRWMG

Semitropic WSD • Shafter-Wasco ID • North Kern WSD • Cawelo WD • Delano-Earlimart ID • North West Kern RCD
Kern-Tulare WD • Southern San Joaquin MUD • Disadvantaged Communities Representative

5.0 Required Permits or Approvals

No permits or approvals are required in creation of the Drought Contingency Plan. The implementation of drought mitigation or response actions may require that Board Resolutions, memorandums of understanding, or other agreements be executed. In those cases, such memorandums will be developed and provided for in the Drought Contingency Plan and Poso Creek IRWM Plan Update.

6.0 Official Resolution

At the time of this application, The Board of Directions of Shafter-Wasco Irrigation District was to meet on February 14, 2017 to approve a Resolution to enter into a grant agreement with Reclamation. The following text is the draft of the Resolution, the executed version of which the Board will submit to Reclamation within the application deadline.

RESOLUTION OF THE BOARD OF DIRECTORS
OF THE SHAFTER-WASCO IRRIGATION DISTRICT

IN THE MATTER OF: RESOLUTION NO. 17-X

IN SUPPORT OF FILING AN APPLICATION WITH THE BUREAU OF RECLAMATION FOR A GRANT UNDER THE *WATERSMART: DROUGHT RESPONSE PROGRAM: DROUGHT CONTINGENCY PLANNING GRANTS FOR FISCAL YEAR 2017*

WHEREAS, the Shafter-Wasco Irrigation District (District or Applicant) partnered with several neighboring water districts and formulated the Poso Creek Integrated Regional Water Management Plan (Plan), adopted in July 2007 and updated in 2014 by each of the districts for their collective area; and

WHEREAS, the Poso Creek Integrated Regional Water Management Plan, Regional Water Management Group (RWMG), in conjunction with surrounding water districts, communities, and stakeholders, has formulated a plan of improvements; and

WHEREAS, the Plan identified regional projects that, once implemented, would improve the water management of the Region and the ability to regulate water supplies available to the districts; and

WHEREAS, the Plan promotes a regional recharge, reduction of overdraft, and operation changes in responding to reductions in water supply reliability to the region; and

WHEREAS, the RWMG has identified the need to add drought planning to the Plan to help coordinate drought contingency planning in the Poso Creek IRWM Plan Region; and

WHEREAS, the Shafter-Wasco District Manager, Dana Munn, serves as the Chairman of the Poso Creek IRWM Plan RWMG and has worked with the RWMG to formulate an approach to add a new chapter to the Poso Creek IRWM Plan focused on *Drought Contingency Planning*; and

WHEREAS, the new chapter, *Drought Contingency Planning*, has the support of the RWMG and will be funded by a combination of matching funds being received through state grant funds and in-kind services; and

WHEREAS, the United States Bureau of Reclamation is currently soliciting proposals for grant funding assistance under their *WaterSMART: Drought Response Program: Drought Contingency Planning Grants for Fiscal Year 2017* (Funding Opportunity No. BOR-DO-17-F009; and

WHEREAS, District staff has prepared a grant application under Reclamation's *WaterSMART* program.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Shafter-Wasco Irrigation District as follows:

1. The District's Board of Directors has reviewed and supports the submission of a grant application to Reclamation for the *Drought Contingency Plan for Poso Creek Integrated Regional Water Management Plan Region*;
2. The District's General Manager, Dana Munn, is directed to submit the grant application and is authorized to enter into an agreement with Reclamation on behalf of Shafter-Wasco Irrigation District and the Poso Creek IRWM Plan RWMG for grant funding under Reclamation's *WaterSMART: Drought Contingency Planning Grants for Fiscal Year 2017* program;
3. The Applicant is capable of providing the amount of funding and in-kind contributions specified in the application; and
4. The Applicant will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

ALL THE FOREGOING, being on motion of _____, Director and seconded by _____, Director was authorized by the following vote:

AYES:
NOES: None
ABSENT: None
ABSTAIN: None

7.0 Project Budget

This section describes the preliminary Project budget by addressing the relevant bullets in the FOA. The Poso Creek IRWM Group recognizes the value in the scrutiny Reclamation applies to grant applications, and is prepared to refine the following information to the satisfaction of Reclamation personnel. As the planning effort gets underway, the complementary efforts between existing agency task orders and the Drought Contingency Planning effort will be become clearer, and will allow for more efficient management of funds.

7.1 Funding Plan

Describe how the non-Federal share of Project costs will be obtained, the amount of funding commitment, the date the funds will be available to the applicant, and any time constraints on the availability of funds.

The non-Federal share of Project costs will be met by the Poso Creek Integrated Regional Water Management Group (Poso Creek Group, Group). A letter of support and financial commitment from the Poso Creek Group to Shafter-Wasco ID is provided with this application. The Group was recently awarded a $250,000 State planning grant to update the 2014 Poso Creek IRWM Plan (Appendix B). The Poso Creek Group is prepared to match the $200,000 of federal funding with approximately $250,000 of non-federal funds. The group will pay all funds spent in excess of either grant. The State grant funding was obtained through the State of California's Water Bond funds. Funds of either grant will be used to complement, not duplicate, ongoing or completed planning efforts.

The seven districts within the Poso Creek RWMG operate under a MOU that has a cost-sharing formula for core planning activities benefitting the whole RWMG. Each district is billed for their share towards the activity voted on at the Poso Creek IRWM Plan Implementation meetings, which are scheduled for the first Tuesday of each month, as needed. The Poso Creek RWMG has been actively working in this manner for 11 years.

The Drought Contingency Plan would be a new chapter of the IRWM Plan. The individual districts and communities within the Poso Creek Group are working within the Kern Groundwater Authority on technical tasks to quantify water demands for meeting new groundwater law requirements in CA. Additionally, the Poso Creek IRWM Plan update is to be completed by 2019 and a new regional disadvantaged community groundwater quality assessment has been funded. Utilizing the funds awarded under this FOA would allow the Group and Regional stakeholders to develop a more comprehensive Drought Contingency Plan.

Are there any other contingencies associated with the funding commitment?

There are no contingencies associated with the funding commitment.

Describe any costs incurred before the anticipated Project start date that you seek to include as costs. For each cost, identify:

Costs incurred before July 1, 2016 will not be submitted for cost share. Invoices from the following efforts may be submitted for cost share, provided they are dated after July 1, 2016.

- A disadvantaged community (DAC) groundwater quality characterization technical memo. The memo describes recent multi-year drought groundwater quality issues.

- Work related to Cal Poly ITRC processing of satellite imagery of crop ET data for Kern County area. The data shows agricultural water use over the last 20 years for Kern County. Select years will be used in the Drought Contingency Plan and for a subset of the entire area being processed. An example of satellite imagery crop ET data is provided in Appendix C.

- Land IQ work with Semitropic WSD. Land IQ is conducting an ongoing study to investigate the use of surface renewal, ET stations to calibrate satellite imagery crop ET data. The study area covers Semitropic WSD. Land IQ is also providing updated GIS land use to CA DWR, which will be available to update the Semitropic GW model that covers parts of Southern San Joaquin MUD, North Kern WSD, and Shafter-Wasco ID.

- Semitropic WSD groundwater model and data management. Similar to the above, Semitropic WSD is developing a groundwater model and data management system. Improvements to the model and management system may allow the system to be expanded to the eastern portions of the Region.

The following table presents the summary of funding sources.

Table 6. Summary of Funding Sources

Funding Sources	**Funding Amount**
Local and State Funding (***SEE* NOTE**)	$ 256,500
Reclamation Funding	$ 200,000
Total Project Funding:	***$ 456,500***

NOTE: The Local and State (Poso Creek IRWM Group) share is comprised of three other DWR planning grants and the Group. The three grants consist of:

- DWR - Poso Creek IRWM Plan Update Grant. Total allowable reimbursement equals $250,000.00.

- DWR - Semitropic WSD Agricultural Water Use Efficiency Grant (Land IQ ET effort). Total allowable reimbursement amount equals $303,500.00.

- DWR - Kern Groundwater Authority ITRC ET Data Processing. Total allowable reimbursement amount equals $235,000.00.

The sum of the reimbursable amount of these three grants $788,500.00. Each grant requires no less than 50 percent cost match by the Group, requiring more than $1.5 million in effort. Though the total reimbursable amount exceeds the $456,500 budget in this proposal, a portion of the scope of each on-going grant scope will complement the Drought Contingency Plan effort. As such, the Poso Creek IRWM Group is expecting to align portions of each of the on-going local and state-funded efforts to meet the total $450,000 budget. There are no issues concerning the timing of incurred costs, provided an agreement could be entered into with Reclamation in 2017.

7.2 Budget Proposal

The Project Description section identifies and describes following Project tasks:

1. Administration and Reporting
2. Establishing Drought Planning Task Force
3. Creating a Detailed Work Plan
4. Creating a Communication & Outreach Plan
5. Development of Six Required Elements

The estimated project budget for these tasks is presented in the table on the following page.

7.3 Budget Narrative

The following text provides the Budget Narrative for the Project.

Salaries and Wages – Dana Munn, General Manager for Shafter-Wasco Irrigation District and Kern River Water Master, will provide overall Project Management with the assistance of the Poso Creek IRWM Groups engineering consultant. While Project management tasks will be done by Drought Contingency Plan stakeholders, the costs of agricultural and water consultants contributing to the plan will make up the vast majority of the Project budget. As such, in-kind costs on behalf of the Plan stakeholders will not be submitted for reimbursement. The contractual costs of the supporting consultants are detailed below in the 'Contractual' section.

Fringe Benefits – Because no in-kind costs will be submitted for reimbursement, no fringe benefits are presented in this application.

Travel – No travel costs are anticipated in the effort to create the Drought Contingency Plan. As a planning document, the Poso Creek IRWM Group recognizes the opportunity to minimize travels costs by meeting remotely when possible.

Equipment – No equipment is planned to be purchased to develop the Drought Contingency Plan.

Materials and Supplies – No materials and supplies are currently identified as needing purchase to develop the Drought Contingency Plan.

Contractual – The Poso Creek IRWM Group and Dana Munn will facilitate the development of the Drought Contingency Plan through its engineering consultant GEI Consultants Inc. (GEI). GEI currently serves the group as an engineering consultant under a professional services contract. GEI will provide administrative and reporting assistance, as well as overall Project management assistance and facilitation. However, other consultants (*see* Project Description) will be involved. Because the salary and wages of other non-GEI consultants were not certain at the time of this application, the rates of other consultants were assumed to be roughly equal to that of GEI. Hours were then assigned for each task based on the grade of personnel within GEI that would be suitable to do the work. In any case, invoices showing the salary, wages, and hours worked by GEI and other consultants will be submitted to Reclamation for review and reimbursement.

Other Expenses – Possible other expenses include relatively minor items, such as the cost of public notices for drought management meetings, or the cost printing and sending informative material for distribution to stakeholders. These costs will likely be absorbed by the stakeholders or consultants, and are not reported here.

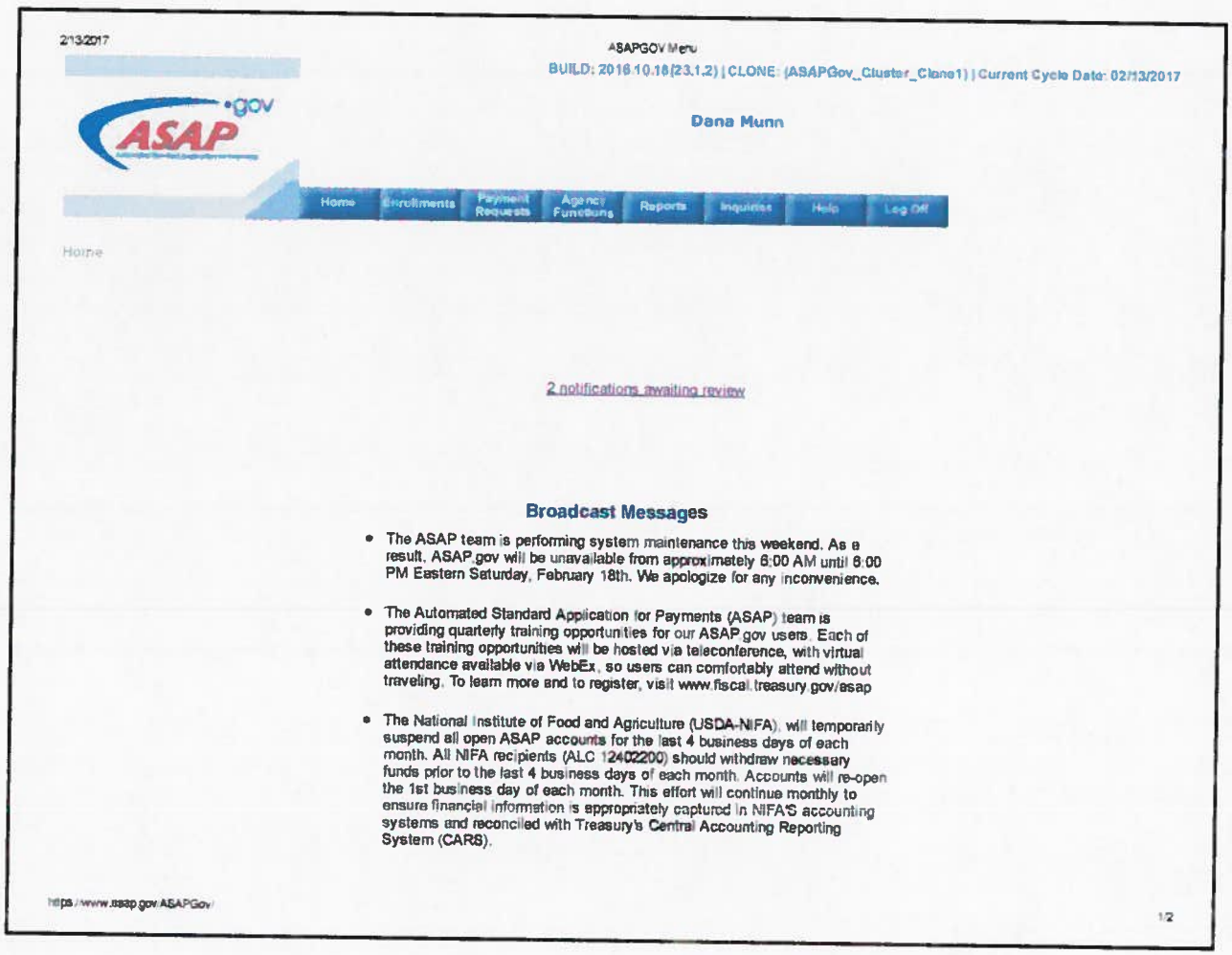
Indirect Costs – No indirect costs are anticipated.

8.0 System of Award Management (SAM) Registration

Note: At the time of this report, Shafter-Wasco ID does not have verification of an active SAM account. The District will provide the required unique entity identifier within the allowed 30 days after the application deadline.

9.0 Automated Standard Application for Payments Registration

Verification of Shafter-Wasco ID's account is provided below, in the following screen shot.



APPENDIX A – Representative Consultant Fee Schedule

FEE SCHEDULE AND PAYMENT TERMS

GEI

FEE SCHEDULE

Personnel Category	*Hourly Billing Rate* $ per hour
Staff Professional – Grade 1	$ 110
Staff Professional – Grade 2	$ 121
Project Professional – Grade 3	$ 133
Project Professional – Grade 4	$ 149
Senior Professional – Grade 5	$ 176
Senior Professional – Grade 6	$ 201
Senior Professional – Grade 7	$ 238
Senior Consultant – Grade 8	$ 267
Senior Consultant – Grade 9	$ 330
Senior Principal – Grade 10	$ 330
Senior CADD Drafter and Designer	$ 133
CADD Drafter / Designer and Senior Technician	$ 121
Field Professional	$ 100
Technician, Word Processor, Administrative Staff	$ 99
Office Aide	$ 77

These rates are billed for both regular and overtime hours in all categories.
Rates will increase up to 5% annually, at GEI's option, for all contracts that extend beyond twelve (12) months after the date of the contract. Rates for Deposition and Testimony are increased 1.5 times.

OTHER PROJECT COSTS

Subconsultants, Subcontractors and Other Project Expenses - All costs for subconsultants, subcontractors and other project expenses will be billed at cost plus a 15% service charge. Examples of such expenses ordinarily charged to projects are subcontractors; subconsultants: chemical laboratory charges; rented or leased field and laboratory equipment; outside printing and reproduction; communications and mailing charges; reproduction expenses; shipping costs for samples and equipment; disposal of samples; rental vehicles; fares for travel on public carriers; special fees for insurance certificates, permits, licenses, etc.; fees for restoration of paving or land due to field exploration, etc.; state sales and use taxes and state taxes on GEI fees.

Billing Rates for Specialized Technical Computer Programs - Computer usage for specialized technical programs will be billed at a flat rate of $10.00 per hour in addition to the labor required to operate the computer.

Field and Laboratory Equipment Billing Rates – GEI-owned field and laboratory equipment such as pumps, sampling equipment, monitoring instrumentation, field density equipment, portable gas chromatographs, etc. will be billed at a daily, weekly, or monthly rate, as needed for the project. Expendable supplies are billed at a unit rate.

Transportation and Subsistence - Automobile expenses for GEI or employee owned cars will be charged at the rate per mile set by the Internal Revenue Service for tax purposes plus tolls and parking charges or at a day rate negotiated for each project. When required for a project, four-wheel drive vehicles owned by GEI or the employees will be billed at a daily rate appropriate for those vehicles. Per diem living costs for personnel on assignment away from their home office will be negotiated for each project.

PAYMENT TERMS

Invoices will be submitted monthly or upon completion of a specified scope of service, as described in the accompanying contract (proposal, project, or agreement document that is signed and dated by GEI and CLIENT).

Payment is due upon receipt of the invoice. Interest will accrue at the rate of 1% of the invoice amount per month, for amounts that remain unpaid more than 30 days after the invoice date. All payments will be made by either check or electronic transfer to the address specified by GEI and will include reference to GEI's invoice number.

APPENDIX B – DWR IRWM Plan Update Funding Letter

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

EDMUND G. BROWN JR., Governor

February 7, 2017

Mr. Ram Venkatesan
North Kern Water Storage District
33380 Cawelo Avenue
Bakersfield, California 93308

Commitment Letter – 2016 Proposition 1 Integrated Regional Water Management (IRWM) Planning Grant Award

Dear Mr. Venkatesan:

We are pleased to inform you that the proposal, Poso Creek IRWM Update, filed by North Kern Water Storage District has been awarded funding by the Department of Water Resources (DWR). This letter serves as DWR's conditional commitment of $250,000.00 in Proposition 1IRWM Planning grant funding for the proposal. This award is conditioned upon the execution of a Grant Agreement between DWR and your agency. A copy of the Grant Agreement template is available at the following website: http://www.water.ca.gov/irwm/grants/resources_contracttemp.cfm.

The conditions that must be met before DWR will enter into a Grant Agreement with your agency are listed in Attachment 1. Your timely attention to these conditions is critical to execute the Grant Agreement.

Please return the requested information within the time periods listed in Attachment 1, to Mr. Dan Gamon, Project Manager at:

Department of Water Resources
Post Office Box 942836
Sacramento, California 94236-0001

If you have any questions, please contact Mr. Gamon, Project Manager at (916) 651-0839 or daniel.gamon@water.ca.gov.

Sincerely,

Tracie L. Billington, P.E., Chief
Financial Assistance Branch
Division of Integrated Regional Water Management

Attachment

Attachment 1

Grant Agreement Execution Conditions

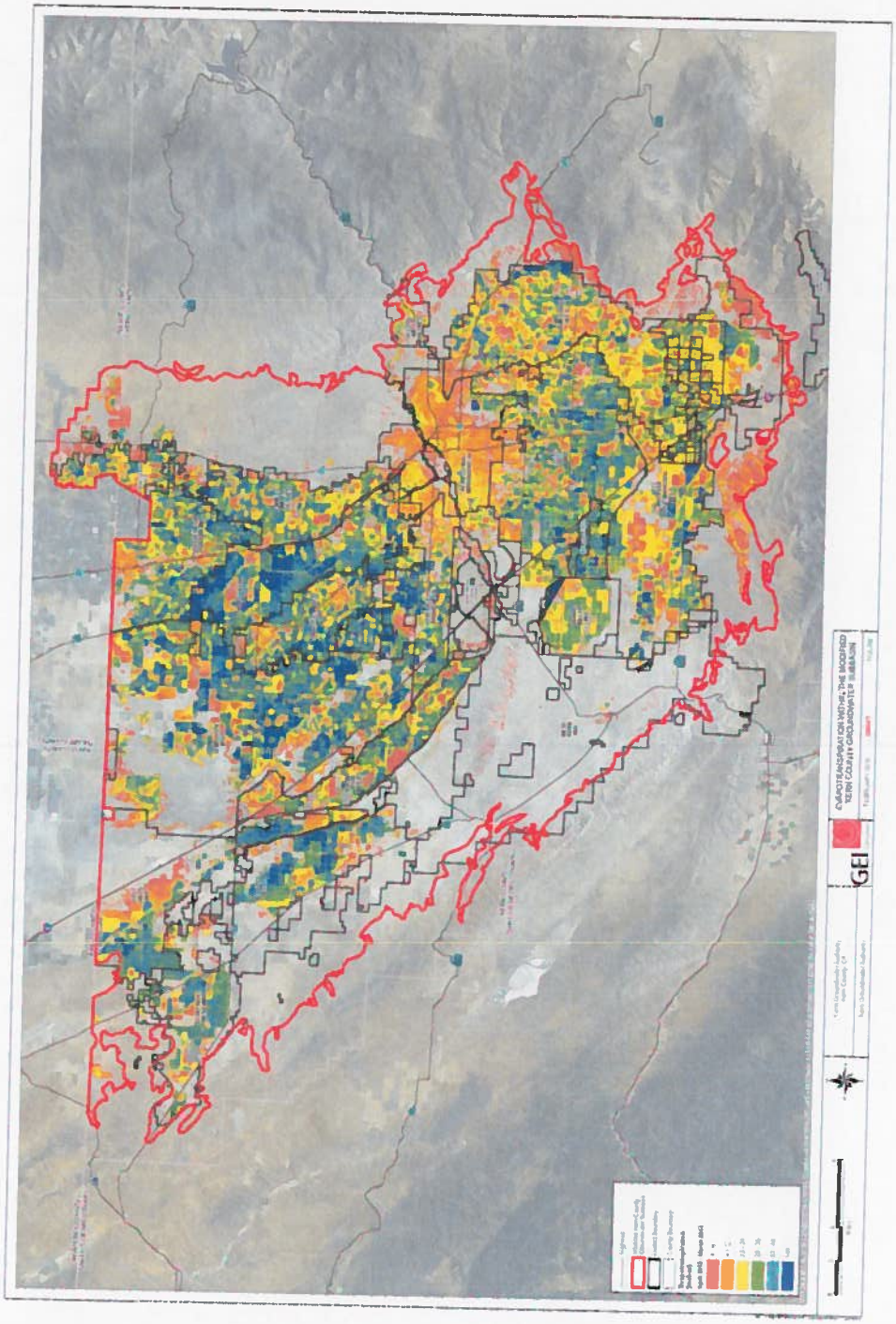
The following conditions must be met before DWR will execute the Grant Agreement.

- Within 14 calendar days of the date of this letter, submit a letter or send an e-mail confirming that your agency is willing to accept the grant award in the amount of $250,000.00.
- Within 30 calendar days of the date of this letter:
  - Fill out and submit the "Audited Financial Statement Summary Form", which is available at the following link:
    http://www.water.ca.gov/irwm/grants/resources_forms.cfm
  - Submit any changes to the work plan, budget, or schedule since the grant application was submitted. Any proposed changes should be submitted as track changes to the original document (work plan, budget, or schedule). Changes will only be considered acceptable by DWR if the project maintains or increases the level of quality and benefits as compared to the original application.
  - Grantee must complete an Environmental Information Form for the project and submit to DWR. Electronic fillable form is available at the following link:
    http://www.water.ca.gov/irwm/grants/resources_forms.cfm

Continuing Obligations to Maintain Eligibility for Grant Reimbursements

- All Grantees that are Urban Water Suppliers must meet the Urban Water Management Planning (UWMP) Act requirements (Water Code, section 10610 et seq.) and Sustainable Water Use and Demand Reduction, Part 2.55 of Division 6 (Water Code, section 10608 et seq.) by doing the following:
  - Have submitted their 2015 UWMP and had it deemed consistent by DWR. If the 2015 UWMP has not been submitted to DWR funding disbursements to the urban water supplier will cease until the 2015 UWMP is submitted. If the 2015 UWMP is deemed inconsistent by DWR, the urban water supplier will be ineligible to receive funding disbursements until the inconsistencies are addressed and DWR deems the UWMP consistent. For more information, visit the following website:
    http://www.water.ca.gov/urbanwatermanagement.
  - Submit documentation that demonstrates they are meeting the 2015 interim gallons per capita per day (GPCD) target. If not meeting the interim target, also include a schedule, financing plan, and budget for achieving the GPCD target, as required pursuant to Water Code section 10608.24. Starting June 30, 2017, those urban water suppliers that did not meet their 2015 GPCD target must also submit, by June 30, annual reports that include a schedule, financing plan, and budget for achieving the GPCD target (Water Code, section 10608.24).
- All Grantees that are Agricultural Water Suppliers must:
  - Comply with water conservation requirements outlined in Part 2.55 (commencing with §10608) of Division 6 of the Water Code. Submit a schedule, financing plan, and budget for implementation of the efficient water management practices, required pursuant to Water Code §10608.48, for inclusion in the grant agreement as an Exhibit.
  - Have their Agricultural Water Management Plan (AWMP) deemed consistent by DWR. The 2015 AWMP update was due December 31, 2015. For more information visit the following website:
    http://www.water.ca.gov/wateruseefficiency/agricultural/agmgmt.cfm

APPENDIX C – ITRC Task Order and Past ET Data



Note: The ITRC Task Order and data cover portions of the Kern Subbasin that are outside the Poso Creek IRWM Plan Area, as shown here. Only the portions of the Task Order that are relevant to the Poso Creek IRWM Plan Area will be submitted for review and reimbursement.

ITRC
moving water in new directions
IRRIGATION TRAINING & RESEARCH CENTER
BioResource & Agricultural Engr. Dept.
California Polytechnic State University
San Luis Obispo, CA 93407-0730
Phone: (805) 756-2434
FAX: (805) 756-2433
www.itrc.org

Date: May 19, 2016

To: Eric Averett
General Manager, Rosedale-Rio Bravo WSD
Representative for the Kern Groundwater Authority
Phone: 661-589-6045
Cell: 661-332-1551
eaverett@rrbwsd.com

From: Dan Howes, Ph.D. P.E.
Associate Professor, BRAE, Cal Poly San Luis Obispo
Senior Engineer, ITRC
Office phone: 805-756-2347, Cell phone: 858-354-0504
djhowes@calpoly.edu

The Irrigation Training and Research Center (ITRC) hereby agrees with, **Kern Groundwater Authority**, to determine the actual evapotranspiration within and around the Kern Groundwater Basin using remote sensing of ET (ITRC-METRIC) for 1993 through 2015. This work will include:

1) Computing actual evapotranspiration from fields (30 meter pixel resolution) within LandSAT 5, 7, or 8 row/path (42/35 and 42/36) for at least 1 image per month (if usable images are available) from January 1993 through December 2012 and January-December 2015. 2013 and 2014 have already been completed and will be included.
2) Ground based weather data is important for determining the evapotranspiration between image dates. Data from CIMIS weather stations throughout the southern San Joaquin Valley will be quality controlled and corrected for the timeframe of this project.
3) If images are not available for a month because of heavy cloud cover or fog, the monthly ET will be estimated by interpolating between months where images are available. In 2012 only LandSAT 7 is available which has band gaps with missing data in each image. ITRC will use our band gap correction to estimate the evapotranspiration in these gaps but this year will likely have a higher level of uncertainty than the other years evaluated.
4) Monthly and annual (seasonal) evapotranspiration maps will be provided in GIS format covering the Valley Floor of the Kern Groundwater Basin and surrounding areas. The final maps will have 30 meter pixel resolution.
5) Images will be processed from the most recent to the most historical. A final report describing the process and results will be provided at the end of the project.

Cost for 1993-2012 and 2015 Evapotranspiration Data: **$245,000**
Estimated date of completion March 31, 2017

The parties agree as follows:

1. Kern Groundwater Authority, for and in consideration of the service to be provided by ITRC, hereby agrees to reimburse ITRC on a time and materials basis for the services rendered. Some explanation of the charges are as follows:
   a. ITRC rates for hotels, per diem, and mileage are based on Cal Poly Corporation, state approved rates.
   b. A 15% charge is attached to all non-time expenses (travel, large copying, purchases)
   c. Travel time is charged.
   d. Example hourly rates (include phone, computer, overhead, etc.) are:
      - Dr. Charles Burt $215
      - Dr. Dan Howes $155
      - Staff Engineer $135
      - Editor $ 95
      - Support Technician $ 62

2. This Agreement is subject to ITRC's standard terms and conditions (see attached).

Invoicing and Payment

Not more frequently than monthly, ITRC will submit to Eric Averett, representative of the Kern Groundwater Authority, an invoice showing costs incurred in performance of work under this Agreement. The invoice will specify the expenses for major cost categories such as salaries and wages, materials and supplies, travel and other direct costs.

Payment should be made payable to "Cal Poly Corporation" and sent to

Dr. Daniel Howes, Senior Engineer
Irrigation Training and Research Center (ITRC)
California Polytechnic State University
San Luis Obispo, CA 93407-0730

For *Eric Averett, Kern Groundwater Authority or Representative:*

(Signature) Name: Eric Averett Date: 5/19/16

For ITRC:

Name: Daniel J. Howes Date: 5/19/2016

Irrigation Training & Research Center (ITRC)
Standard Terms and Conditions

THIS AGREEMENT is between Eric Averett, representative of Kern Groundwater Authority (**"Client"**) and the Cal Poly Corporation, a separate non-profit auxiliary organization for the California Polytechnic State University, hereinafter referred to as **"ITRC."**

1) **Ordering**. Clients may order services (specify a "Scope of Work") by submitting a written purchase order, a written request for services, by sending confirming e-mail, or by placing a telephone order. The Client must subsequently confirm all telephone orders in writing or via e-mail confirmation.

2) **Suspending or Stopping ITRC's Performance**: The Client may direct ITRC to suspend a portion or all of the work to be performed. In such case, the Client will remain responsible for all work performed up until the time ITRC became aware of Client's desire to discontinue the services. Any uncompleted services in progress at the time of discontinuation will be billed on a prorated basis, as determined by ITRC.

3) **Confidentiality:** ITRC shall keep Client documents and information confidential to the extent permitted by law, and will not disclose any such information to third parties. ITRC may publish announcements and summaries containing *non-confidential information* about this project in campus newsletters and annual report and other published documents on campus.

4) **Warranties:** Client understands that ITRC performs services only as specified by Client in the Services Agreement accepted by ITRC. ITRC does not make any express or implied warranties or guarantees of any kind to the Client. By their very nature, technical services, testing, analysis and other ITRC services are limited to expected measurement variability. ITRC represents that the Services shall be performed within the limits agreed with Client, and in a manner consistent with the level of care and skill ordinarily exercised by other providers of similar services under similar circumstances.

5) **Ownership of Data**: Data or information provided to ITRC by the Client shall remain the Client's property. Upon full payment to ITRC for all services provided by ITRC, data or information generated by ITRC for the Client shall become the Client's property. ITRC will retain exclusive ownership of any and all analytical methods, Quality Assurance/Quality Control protocols, and equipment developed by ITRC for performance of work by ITRC. ITRC Reports are for the exclusive use of the Client to whom they are addressed. The name of ITRC, Cal Poly Corporation, or California Polytechnic State University, or any symbols of them are not to be used by Client without prior written approval by the appropriate authorized representative.

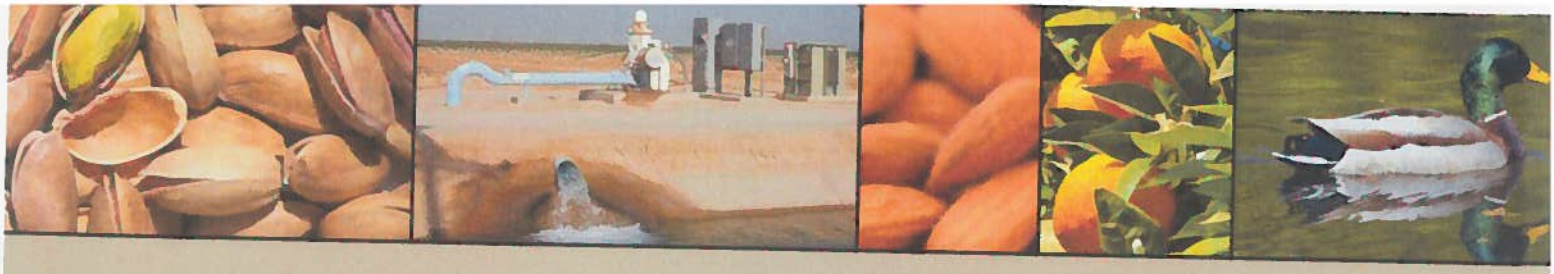
6) **Indemnification:** Client and ITRC agree that by performing services hereunder, ITRC does not assume, shorten, cancel or undertake to discharge any duty or responsibility of Client to any other party or parties. No one other than Client shall have any right to rely on any Report or other representation or conduct of ITRC, and ITRC disclaims any obligations of any nature whatsoever with respect to such person. Client and ITRC agree, in consideration of ITRC under-taking to perform the ordered service(s) to protect, defend, indemnify, same harmless and exonerate each other from any and all claims, damages, expenses, either direct or consequential for injuries to persons or property arising out of or in consequence of the performance of the services hereunder unless caused by the sole negligence of the guilty party.

7) **Insurance:** Cal Poly Corporation maintains insurance coverage for its employees to perform professional services. If Client seeks greater protection than is provided by Cal Poly Corporation insurance, Client should obtain appropriate protection from suppliers or insurers.

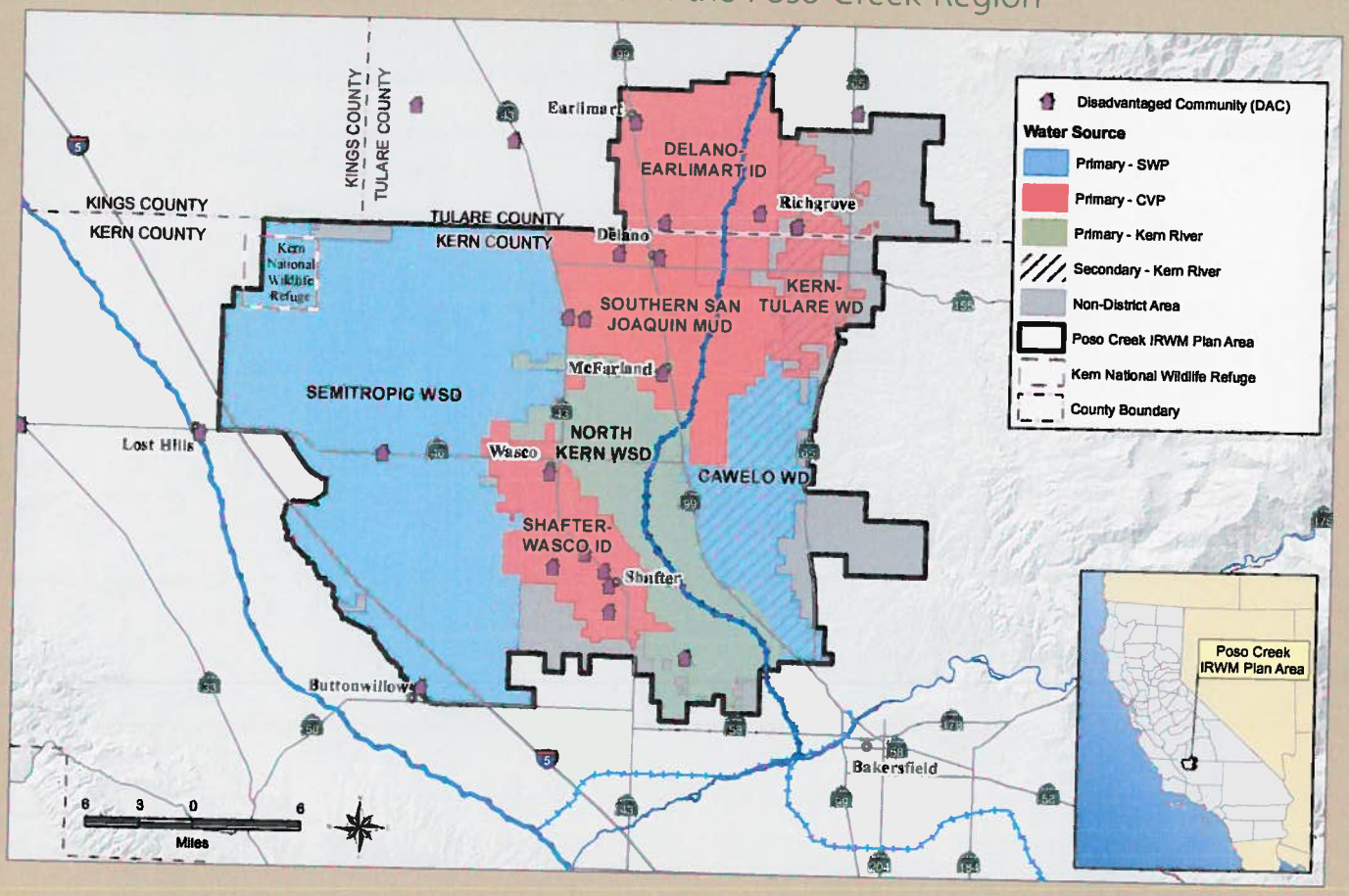
8) **Limitation of Liability:** If ITRC should be found liable for any losses or damages attributable to the services hereunder in any respect, its liability shall in no event exceed the amount of the fee paid by Client for such services and Client's sole remedy at law or in equity shall be the right to recover up to such amount.

9) **Force Majeure:** Whenever performance by either party is delayed or prevented by an extraordinary event beyond the control of Client or ITRC, such delay or prevention shall be excused and the time of performance extended for the duration of the causative factor. In no event shall the occurrence of any such conditions excuse the Client of its obligations hereunder if services have been performed by ITRC.

10) **Payment of Invoices:** Client agrees to pay all invoices, within 30 days of date issued.



Water Districts within the Poso Creek Region



Please contact Mr. Dana Munn, IRWM Chairperson, with the Shafter-Wasco Irrigation District, at (661) 758-5153 for information or to answer questions on behalf of the following entities:

Jason Gianquinto
Isela Medina
Semitropic Water Storage District

Eric R. Quinley
Delano-Earlimart Irrigation District

David R. Ansolabehere
Dave Hampton
Cawelo Water District

Richard Diamond
Ram Venkatesan
North Kern Water Storage District

Steven C. Dalke
Skye Grass
Kern-Tulare Water District

Dana S. Munn
Shafter-Wasco Irrigation District

Roland Gross
Southern San Joaquin Municipal Utility District

Brian Hockett
North West Kern Resource Conservation District