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Attachment 3 – Work Plan

Overall Application

Introduction

The Upper Kings Basin IRWM Authority (Authority) has developed a priority list of projects as described in Attachment 1, that seek to implement the region's priority goals and objectives. This grant application proposal includes five projects from the Upper Kings IRWM region that serve to meet those goals as well as the overall objectives of the State's IRWM effort. The projects included in this application provide many benefits including increasing water supply and reliability, improving water quality, water conservation, helping meet the critical water needs of multiple disadvantaged communities, and providing flood control.

Project List

This application includes five projects. Table 3-1 includes an abstract for each project, the current status of each project in terms of percent completion of design, and implementing agencies.

Table 3-1 Project List

Project	Project Proponent (Implementing Agency)	Project Title	Abstract	Current Status
A	Fresno Irrigation District	Southwest Groundwater Banking Project	Development of a 60-acre groundwater banking facility consisting of reservoirs, recovery and monitoring wells, and canal improvements. The project will recharge approximately 5,500 AF/yr and create an average annual (including dry year) water supply of approximately 5,000 AF. that may be made available to market.	•Feasibility Study, supplemental investigation, interagency MOU and pilot testing at nearby basin complete. •35% Design complete. •Option to purchase property obtained. •Refer to page 3-9 for completed work.
B	Laguna Irrigation District	Recharge Basin 11 Project	Development of a 52-acre groundwater recharge basin and conveyance system improvements to capture floodwater otherwise lost to the region. The project will capture and recharge on average 2,650 AF/year. The project will capture and recharge water in an area with declining groundwater levels, divert floodwater to reduce flood damage along the Kings River corridor, and create a dry-year water supply that can be pumped by private wells and used in droughts. The project will also create a regulation reservoir that can temporarily hold water and deliver it to irrigators. Lastly, the project will improve local groundwater quality by recharging high-quality Kings River water that originates in the Sierra Nevada mountains	•Detailed subsurface investigations, •Regional comparison of recharge basin sites, project feasibility study, •30% design plans, Database searches for endangered species and cultural resources, extensive public outreach •Option to purchase property obtained. •Refer to page 3-29 for completed work
C	Bakman Water Co.	Water Supply Reliability and Conservation Project	The project will provide critical water quality improvements and water supply needs for a DAC. The project includes wellhead treatment and blending to address DBCP and nitrate contamination to improve water quality in an overdrafted aquifer with significant groundwater quality plumes of concern, and water conservation from the installation of approximately 2,400 water meters to extend the limited available suitable supply that this DAC relies on as its sole water supply.	•CDPH Approved Plan •Well Treatment/Blending Design 65% Complete, meter design complete •Refer to page 3-40 for completed work
D	City of San Joaquin	Water Supply Reliability and Conservation Project	The project will provide critically needed augmentation to this DAC water system that has inadequate fire protection flows by rehabilitating a existing well, and provide critical water conservation from the installation of water meters to extend the limited available suitable supply that this DAC relies on as its sole water supply.	•Environmental Complete •Well rehabilitation plan complete, meter design complete •Refer to page 3-52 for completed work.
E	City of Kerman	Residential Water Meter Project	The project will provide needed water conservation through the installation of water meters by this DAC relies on as its sole water supply.	•Environmental Complete •Meter design complete •Refer to page 3-63 for completed work.

Table 3-2 identifies the total project cost, funding request and cost share for each project.

Table 3-2 KBWA IRWM Implementation Round 2 Project List

Project	Project Proponent	Project Title	Requested Grant Funds	Cost Share Commitment	Cost Share %	Project Total
A	Fresno Irrigation District	Southwest Groundwater Banking Project	$3,402,000.00	$1,160,000.00	25%	$4,562,000.00
B	Laguna Irrigation District	Recharge Basin 11 Project	$978,000.00	$326,000.00	25%	$1,304,000.00
C	Bakman Water Co.	Water Supply Reliability and Conservation Project	$2,907,000.00	$0.00	DAC Waiver	$2,907,000.00
D	City of San Joaquin	Water Supply Reliability and Conservation Project	$679,550.00	$0.00	DAC Waiver	$679,550.00
E	City of Kerman	Residential Water Meter Project	$767,450.00	$255,816.67	25%	$1,023,266.67
		Total =	**$8,734,000.00**	**$1,741,816.67**		
		Total DAC Request=	$3,586,550			
		Total Non-DAC Request=	$5,147,450.00			
		Non-DAC Cost Share %=	25%			

If partial funding of less than the total requested is awarded, proponents are interested in partial funding. The projects are listed in a prioritized order, and the decision within the region is to fund the projects in the order shown. However if partial funding is awarded, all of the projects are scalable. Projects A and B would also be able to utilize partial funding, but some of the construction elements make up a more significant portion of the project cost and the Authority would request the ability to discuss the amount of partial funding to determine what level of scalability can be achieved. Projects C-E are significantly scalable and would be able to utilize partial funding.

Goals and Objectives

The goals and objectives of this application are to implement projects that will help the Authority work toward achieving the Goals and Measurable Objectives listed in Section 5 of the adopted IRWMP (**Attachment 1e**). The combined goals of this application are to:

- Address the critical water supply and water quality need of two DACs within the region, including:
  - Wellhead treatment and blending to address a well with nitrates in excess of the maximum contaminant level
  - Well rehabilitation to provide augmentation of inadequate water supply pressure in a public water supply system needed to prevent loss of system integrity and to maintain adequate fire protection flows
- Provide additional groundwater recharge through development of two groundwater recharge/banking facilities
- Implement multiple projects that will help to reduce the groundwater overdraft within the Kings Groundwater Basin by approximately 9,500 acre-feet which has been defined by DWR as critically overdrafted
- Further implementation of priority projects identified in the Authority's IRWMP

The Goals and Objectives of each of the five projects included in this application are detailed under the Workplan for each project later in this Attachment.

Purpose and Need

The projects address multiple Goals and Measurable Objectives and the following tables 3-3 and 3-4 identify which Goals and Measurable Objectives each project will address. The primary and secondary IRWMP Regional Goals that each project addresses are listed below.

Table 3-3 Goals and Measurable Objectives

No.	Proponent - Project	RG 1 - Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater	RG 2 - Increase the water supply reliability, enhance operational flexibility, and reduce system constraints	RG 3 - Improve and protect water quality	RG 4 - Provide additional flood protection	RG 5 - Protect and enhance aquatic ecosystems and wildlife habitat.
A	FID - Southwest Groundwater Banking Project	P	S	S	S	S
B	Laguna ID - Recharge Basin 11 Project	P	S	S	S	S
C	Bakman Water Co. - Water Supply Reliability and Conservation Project	P	S	S		
D	City of San Joaquin - Water Supply Reliability and Conservation Project	P	S	S		
E	City of Kerman - Residential Water Meter Project	P	S	S		

P = Primary. The Primary Regional Goal of the Adopted IRWMP that the project addresses.
S = Secondary. All of the Secondary Regional Goals of the Adopted IRWMP that the project addresses.

The primary and secondary IRWMP Measurable Objectives that each project addresses are listed below.

Table 3-4 Primary and secondary IRWMP Measurable Objectives

No.	Proponent - Project	MO 1 - Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years	MO2 - Identify opportunities and Projects	MO3 - Identify DAC priority needs and promote/support solutions to DAC water issues	MO4 - Increase average annual supply and reduce demand	MO5 - Increase dry year supply	MO6 - Increase regional conveyance capacity	MO7 - Compile baseline water quality data for ground & surface water	MO8 - Encourage Best Management Practices, policies & education that protect water quality	MO9 - Identify sources of water quality problems & promote/support solutions to improve water quality	MO10 - Increase surface storage	MO11 - Sustain the Kings River Fisheries Management Program	MO12 - Pursue opportunities to incorporate habitat benefits into projects	MO13 - Increase public awareness of IRWM Efforts	MO14 - Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.	MO15 - Comply with SBx7-7
A	FID - Southwest Groundwater Banking Project	P	S		S	S	S	S			S	S	S	S		
B	Laguna ID - Recharge Basin 11 Project	P	S	S	S	S	S				S		S	S		
C	Bakman Water Co. - Water Supply Reliability and Conservation Project	S	S	P	S	S		S	S	S				S		S
D	City of San Joaquin - Water Supply Reliability and Conservation Project	S	S	P	S	S		S	S	S				S		S
E	City of Kerman - Residential Water Meter Project	P	S		S	S			S					S		S

P = Primary. The Primary Regional Goal of the Adopted IRWMP that the project addresses.
S = Secondary. All of the Secondary Regional Goals of the Adopted IRWMP that the project addresses.

Consistency with Basin Plan

This application is consistent with the Central Valley Water Quality Control Plan — Tulare Lake Basin (Basin Plan) that covers the Kings Basin IRWM region. From the section of the Basin Plan regarding overdraft on page IV-5:

> *"The elimination of overdraft is an important step in managing the rate of salinity increase in the ground water. Continued overdraft will deplete good quality water supplies and introduce salts from poorer quality aquifers. Continued overdraft has other effects, such as increased costs to overlying landowners from greater pumping lifts, depletion of local ground water, and possible deep subsidence in certain soils with permanent loss of ground water storage capacity.*
>
> *Various measures can reduce overdraft. Measures include improving efficiency of water use by domestic, industrial, and agricultural users; expanded ground water recharge; watershed management; and development of new sources of supply. The solution to the overdraft problem requires a combination of management programs. The Regional Water Board goal is to alleviate overdraft and the water quality problems associated with overdraft, and extend the beneficial uses of the ground water resource for the longest period economically feasible."*

This application provides a "combination of management programs" to help further the Regional Water Board's goal to alleviate overdraft and the water quality problems associated with it. Each of the five projects included in this application will help reduce the overdraft. Later in Section IV-5, the Basin Plan states:

> *"Water used to recharge ground water and imported water supplies must be of the highest quality possible. Banking of water in the ground is encouraged. Construction of storage facilities to store surplus wet-weather basin outflows is also recommended where such facilities do not adversely impact other waters of the state*."

Both Projects A and B of this application will provide groundwater recharge and banking of water in the ground by capturing surplus water during wet-weather. This is encouraged by the Basin Plan as noted above, provided it does not impact other waters of the state. The proposed by Projects A and B are Kings River watershed waters that will be captured by agencies with Kings River water interests.

Projects C, D and E of this application will provide needed conservation within the region, which is consistent with State Water Board policy, described in Resolution No. 77-1, Appendix 4, which encourages water conservation, and encourages other agencies to assist in implementation.

Projects C and D include well modifications that will provide water quality benefits treating existing contamination concerns, which is consistent with the Basin Plan's Water Quality Objectives for Groundwater which as shown on page III-7 states that *"Ground waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses."*

The Authority is also actively engaged with the Board regarding the Basin Plan update and the CV-SALTS effort. The KRCD also serves as the lead agency for the region with the Southern San Joaquin Valley Water Quality Coalition (Coalition) which is a group of agencies formed to

comply with the State's Irrigated Lands Regulatory Program (ILRP). KRCD collects surface water samples and prepares an annual report related to the ILRP requirements. The Basin Plan and its objectives are discussed throughout the adopted IRMWMP (Attachment 1e), including but not limited to Sections 3.3.10, 3.3.16, 3.3.18, 3.5.1, and 6.5.

Integrated Elements of Projects

Although there are no physical connections between the projects, there are linkages between and among the projects selected that are critical to the overall goals of the IRWMP.

- Projects C and D will both provide critical water supply or water quality benefits to Disadvantaged Communities within the region.
- Projects A and B will both capture floodwater lost to the region and put it to beneficial use through groundwater recharge, providing needed groundwater replenishment for the critically overdrafted groundwater basin.
- Projects A and B both include similar recharge basin design, canal conveyance expansion, and the District's have shared information regarding sedimentation basin consideration, turnout design, flowmeter consideration, and funding.
- Projects C, D and E all include meter installation. The three project proponents have met to discuss project alternatives, including meter type, meter reading method, and possible bulk bidding alternatives. The three project proponents have developed a letter of intent to consider further joint efforts to collaborate. A copy of the Letter of Intent is included as **Attachment 3a**.
- All of the projects are similar to other previously implement projects in the region, including projects successfully implemented through the first round of IRWMP Implementation grants, and prior similar grants. The Authority and project proponents have obtained design, implementation, construction, and grant administration information and suggestions from proponent of similar prior projects.
- Development of all of these projects is a further step in implementing the IRWMP and the prior actions to accomplish the goals as identified in the adopted IRWMP.
- All of the projects are consistent with the IRWMP goals and objectives, and are included in the project list. Together, the projects will provide additional water supply, as well as other benefits, to the region, and will help further several objectives of the IRWMP.
- Similar to other recent contracts with DWR, if awarded, the Authority will enter into the contract with DWR, and each project proponent will enter a sub-agreement with the Authority that is expected to be similar to past agreements (see **Attachment 1d**).

The integrated project elements and linkages are described further under each projects individual workplan later in this attachment.

Regional Map

An Authority IRMWP boundary map is included as **Figure 3-1**, showing neighboring IRWMP regions. **Figure 3-2** is a regional map showing the locations of all projects and the current Upper Kings IRWM Authority Boundary is also included. The map includes the location of the project activities within the Kings Groundwater Subbasin and the DACs within the region. Separate maps for each project are included later in this attachment. Proposed monitoring

activities are generally at each project site as described later in this attachment, as well as in Attachment 6.

Figure 3-1 Neighboring IRWMP map from IRWMP

Figure 3-2 Projects location map

Completed Work

Each project has significant work that has already been completed. A more detailed description of the completed work for each project is included under the workplan for each project later in this Attachment.

In preparation for this application submittal, the Authority completed a project vetting process as part of the project prioritization, including assessment of project readiness. The Authority has a proven record of successfully completing similar efforts through this IRWM grant program and other similar grant programs, and understands what is required for the successful implementation projects similar to the projects proposed with this application. The level of effort completed on each project is equivalent of further than projects successfully completed through prior Authority grant programs, and the Authority has determined that the projects can be successfully implemented by each of the project proponents.

Existing Data and Studies

Each of the five projects included in the application have existing data, studies and other information to support the project. Those studies and other supporting information are included within the workplan for each project included later in this Attachment.

Project Map

A project location map for each project is included in the workplan discussion for each project later in this Attachment.

Project Timing and Phasing

None of the projects included in this application are phased, or are dependent on a component of a larger project. A detailed description of each project is included in the Workplan for each project later in this Attachment.

Proposed Work

A separate workplan for each of the projects is included in the following sections of this attachment. Within the workplan for each project, the following items are discussed:

- Goals and Objectives
- Purpose and Need
- Integrated Elements of Projects
- Completed Work
- Existing Data and Studies
- Project Map
- Project Timing and Phasing
- Data Management and Monitoring Deliverables

Data Management and Monitoring Deliverables

From the 2012 IRWMP Guidelines, the intent of the Data Management Standard is to ensure efficient use of available data, stakeholder access to data, and to ensure the data generated by IRWM implementation activities can be integrated into existing State databases. To ensure that this happens, each project in this application includes:

- A preliminary Monitoring Assessment and Performance Measures (MAPM) report included in Attachment 6 of this application.
- Task 3 Reporting for each project includes any required modification to the MAPM based on DWR comments
- The Ongoing Monitoring Task for each project includes implementation of the MAPM and preparation of the required reporting.

The Authority has a proven track record of implementing successful projects that meet their desired objectives. In prior implementation grant rounds, the Authority and the project proponents have prepared the required MAPM for similar projects, and prepared the required annual reporting to DWR. The MAPMs for these projects have been prepared utilizing those prepared for similar projects in prior rounds.

The adopted IRWMP (**Attachment 1e**) includes requirements for Plan Performance and Monitoring in Section 9 and Data Management in Section 10 that meet the IRWMP 2012 Guidelines. Section 9.4 addresses Project-Specific Monitoring, and Section 9.5 addresses Reporting Procedures and Responsibilities that the Authority and the project proponents will adhere to for the projects included in this application.

Project A: FID Southwest Groundwater Banking Project

Introduction

The primary purpose of this project is to halt, and ultimately reverse, the current groundwater overdraft in the area west of Raisin City by utilizing unused regional flood water supplies and provide for sustainable management of surface and groundwater. The proposed groundwater banking project is located in an area that does not have surface supplies and relies exclusively on groundwater to meet demands of agriculture. The area is dominated by a large pumping depression to the South located in and around the Raisin City Water District (RCWD). To help correct this problem, the Fresno Irrigation District (FID), along with project partner James Irrigation District, is pursuing the development of a groundwater banking project located approximately six miles south of the City of Kerman, between FID and James Irrigation District (JID), in the region of the groundwater depression. Both FID and JID currently have rights to obtain Kings River floodwater and CVP supplies; and FID has rights to obtain Fisheries Agreement Schedule C and D flows during the fall and winter months. However, with generally no irrigation demand during this time period, FID and JID are not able to utilize these water sources, and most of this water leaves the region via the Kings River, and ultimately, the San Joaquin River.

This project includes construction of a new 60-acre groundwater banking site adjacent to an existing FID basin site, and increasing the conveyance canal capacity along the downstream-most portion of the Lower Dry Creek Canal. Utilizing the new basin project, and increasing the canal capacity to convey stormwater to the McMullin Grade Canal that serves JID basins will provide an annual average recharge amount of approximately 5,500 AF, and provide approximately 270 AF of flood water surface storage in its basins. Approximately 4,200AF of that total can be recharged at the proposed 60-acre basin site. Utilizing existing JID's wells nearby, the project will be able to recover approximately 5,000AF of the water that is recharged. Groundwater will be pumped using these existing wells and conveyed to JID's growers to meet demand. JID will then provide water to FID in exchange for the pumped groundwater.

A monitoring program will be established to manage the project and monitor groundwater conditions in the vicinity. The project will provide flood protection, a dry-year supply to improve drought preparedness for the region, and provide increased revenues for the districts while improving groundwater recharge in the area.

Additional details concerning the proposed Southwest Groundwater Banking Project are included in the project's feasibility study included in **Attachment 3b**. This study is referenced throughout this document.

This project was included in the Kings Basin IRWMP Project List (adopted 10-17-2012, included as **Attachment Ii**) as Project ID 66.

Goals and Objectives:

The primary purpose of this project is to halt, and ultimately reverse, the current groundwater overdraft in the area west of Raisin City by utilizing unused regional flood water supplies and provide for sustainable management of surface and groundwater. The objectives of the project are to:

- Reduce reliance on water supplies from the Delta.
- Reduce the large groundwater depression south of the project site in and around the Raisin City Water District (RCWD).
- Expand the available water supply of the Kings River region. This project will provide an additional estimated 5,500 AF average annual water supply.
- Make use of flood waters that are sometimes lost to FID and JID. Flood water would be routed through FID to the project site where this water will be recharged, stored, and later put to beneficial use.
- Minimize flood damage by diverting some floodwaters. Having an additional facility to divert floodwaters will increase the capacity to handle floodwaters in the area. The Lower Dry Creek Canal has been master planned by the United States Army Corp of Engineers as a flood routing channel for the region. The proposed basins would be able to contain approximately 270 AF of stormwater, with an initial basin diversion of 100 cfs. Long-term stormwater diversion into the proposed basins is expected to be approximately 15 cfs (assuming 0.5 feet/day percolation rate in the basins).
- Make use of Kings River Fisheries Agreement Exhibit C & D waters that must be provided by either Fresno Irrigation District, Consolidated Irrigation District, or Alta Irrigation District. With FID's Kings River diversion located downstream of the river zone designated for fish flows, FID can divert and route this water to the project's banking facility during the non-irrigation season.
- Increase groundwater storage. The project would provide as much as 9,000 acre-feet of additional groundwater storage at the recharge facility (assuming a maximum storage limited to 365 days of 0.5 feet/day of recharge at the proposed recharge basins).
- Provide a reliable, dry-year water supply. This project will provide an average of 5,500 acre-feet of dry year water supply to the Kings River region.

- Reduce local groundwater overdraft. The project will also deliver water to JID customers for direct surface water delivery (through in-lieu recharge), thereby offsetting groundwater pumping within JID.
- Sustain the local agricultural community by providing revenue to FID and JID. By agreement with a project partner, FID and JID will receive additional revenue over and above conveyance and operational expenses.
- Help establish a fishery along the Kings River. The fisheries program commits water to be diverted along portions of the Kings River for establishment of a fishery. A portion of this water needs to be routed through sections of the river down to FID's diversion point.
- Increase knowledge of the local geology and hydrogeology. Groundwater recharge and recovery data will be monitored and evaluated, providing valuable information regarding the area and performance of the project.

Purpose and Need:

This project is consistent with the 2012 Upper Kings Basin Integrated Regional Water Management Plan (IRWMP). As listed on page 3-10 of the IRWMP, FID is a member of the IRWMP. FID participated in the development of the IRWMP from the onset of the project, and adopted the IRWMP on November 13, 2012. FID is partnering with James Irrigation District (JID) on the project and JID is an Interested Party, as shown on page 3-10 of the IRWMP.
This project is consistent with the Regional Goals identified in Section 5.2 of the IRWMP, including:

- RG1 - Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater. The project will provide up to 5,500AF/yr of groundwater recharge.
- RG2 - Increase the water supply reliability, enhance operation flexibility and reduce system constraints. The project will increase conveyance capacity, and with the use of existing extraction wells, will provide an average annual additional supply to the region of 5,000AF, including during dry years.
- RG3 – Improve and protect water quality. The project will convey and recharge higher quality surface water to an area with lower quality groundwater.
- RG4 - Provide additional flood protection. The project will provide additional conveyance capacity to route flood water through canals that are currently undersized for the masterplanned stormwater routing. The project will also provide a new 60-acre basin that will be used to capture floodwaters.
- RG5 - Protect and enhance aquatic ecosystems and seasonal wildlife habitat. The project will allow for the furtherance of the Kings River Fisheries Management Program by allowing surface water to be routed down the river for fish flows and provide storage for the water to not be lost to the region.

This project is consistent with the Kings Basin Measureable Objectives identified in Sections 5.2 and in Table 5-2 of the IRWMP, including:

- MO1 - Increasing amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years. This project provides additional groundwater recharge.
- MO2 - Identify opportunities and Projects. The project is included in the Authority's Project List and Preliminary studies indicate that this region's geology is favorable to groundwater recharge.
- MO4 – Increase average annual supply and reduce demand. This project will utilize and capture available flood water that is typically lost to the region.
- MO5 – Increase dry year supply. The banking project will increase groundwater supplies in the area that could be utilized during dry years.
- MO6 – Increase regional conveyance capacity. Canal capacity improvements would provide greater opportunities for delivering surface water supplies to regions experiencing groundwater depressions.
- MO7 – Compile baseline water quality data for ground and surface water. The banking operations and ongoing monitoring at extraction wells and monitoring network near the facility will include regular water quality sampling and inclusion in annual reporting of banking operations.
- MO10 – Increase surface storage. New surface water recharge basins would be constructed as part of this project.
- MO11 – Sustain the Kings River Fisheries Management Program. The fisheries management program on the Kings River is discussed Section 9.1 of the IRWMP. In addition, FID has committed to being responsible for increased flows to establish the fishery along the river. The fisheries program commits water to be conveyed along portions of the Kings River that are upstream of FID's diversion point. In order for FID to commit water supply to the fisheries program without losing a portion of its supply, a project like the one proposed is desired. This project would allow FID to divert water down the river for the fishery to FID's diversion point then store and bank the water at the project location.
- MO12 – Pursue opportunities to incorporate habitat benefits into projects. The project will provide additional water habitat for migrating water fowl.
- MO13 – Increase public awareness of IRWMP efforts. The Authority will include the project in its public releases, Authority highlight documents, and on the Authority website in effort to communicate the projects and efforts of the Authority and IRWMP.

The project is needed for the following reasons:

- Groundwater levels are declining in the area including Fresno ID and the area surrounding the project. The Raisin City area near the project has been well documented as critically overdrafted, including in the Authority's IGSM Model (2007, available on the Authority's website).
- The are around the project including the Raisin City area does not receive surface water and is in critical need of a recharge facility to maintain groundwater levels.
- In flood years large volumes of Kings River water flow out of the area and are not beneficially used in the Kings Groundwater Basin

- James ID, a project partner interested in receiving water additional water from the project has groundwater quality concerns, and its CVP supply allocation is limited

Please also refer to Attachment 7 Technical Justification for a detailed description of the project need and supporting information.

Integrated Elements of Projects:

The project is being developed by FID with the partnership of JID to provide benefit to each District and to the region. The project includes integration of existing facilities and water supplies from each District to develop a joint project that will provide the benefits described in this application. FID is providing conveyance facilities, water supply, and recharge basin area. JID is providing water supply and well pumping capacity, conveyance facilities, and irrigation demand. The conjunctive use banking project integrates capture of water lost to the region, facilitation of water supply availability for fisheries management, and groundwater recharge.

Project A and B are similar in the following ways:

- Both projects have similar workplans and are recharge projects with similar project components including:
  - Groundwater recharge basins
  - Sedimentation considerations
  - Turnout structures and flowmeters
  - Conveyance canal improvements
- Both projects will capture floodwaters typically lost to the region
- Both projects will utilize existing wells for groundwater extraction

Completed Work:

Work completed as of January 13, 2013

In summary, the work completed as of the date of this application includes:

- Feasibility Study entitled "*Southwest Flood Water Protection and Utilization Project*", including water availability analysis, project cost analysis, and geologic review (**Attachment 3b,** the attachments from this report are included as separate attachments herein)
- James Irrigation District Reconnaissance Investigation (**Attachment 3c**)
- Supplement to Reconnaissance Investigation Possible Banking Opportunities Study (**Attachment 3d**)
- Preliminary topographic survey and preliminary project layout drawings (**Attachment 3e**)
- An Option for Purchase of the Property has been secured (**Attachment 3f**)
- Groundwater Recharge Feasibility Study (**Attachment 3g**)

Please also refer to Attachment 7 Technical Justification for a detailed description of the project need and supporting information.

Existing Data and Studies:

Several studies related to the regional groundwater depression in the Raisin City area and potential groundwater banking projects have been prepared (see the "Completed Work" section above). FID currently has flood right agreements associated with the project site. In addition, FID has recently completed a similar groundwater banking project (Boswell Banking Facility) in the southwest region of FID, and is familiar with the development and on-going operations of banking facilities.

Project Map:

Two maps regarding Project A are included. Figure 3-3 shows the project location, improvements and monitoring area. Figure 3-4 shows the surface water sources and groundwater area affected.

Project Timing and Phasing:

This project is not proposed in phases or expansion at this time. The Groundwater Recharge Feasibility Study discussed possible future phases of the project, however the District is not planning to initiate these further phases, and the project being proposed in this application is a standalone project, not dependant on any other activities. The canal channel improvements would allow an increase in floodwater conveyance to the proposed recharge basin location and to recharge/banking facilities within JID. The proposed basin will be fully functional with all necessary water control structures to perform groundwater recharge operations.

In general, the components of the project include:

- Reach 'C' of FID's Lower Dry Creek Canal improvements
    - Located between the Malaga Avenue alignment and the proposed recharge basin site near the Adams Avenue Alignment
    - Increase capacity to 200 cfs
- Reach 'D' of FID's Lower Dry Creek Canal improvements
    - Located between the proposed recharge basin site and JID's McMullin Canal
    - Increase capacity to 100 cfs
- Construction of 60 acres of recharge basins
    - Located within FID's existing flood rights zone at the end of Lower Dry Creek Reach 'C'

Figure 3-3 FID project location map

Figure 3-4 FID source water map

Tasks

The following workplan was developed based on similar groundwater banking projects constructed in the region, including the workplan for similar projects completed under DWR grant funding programs such as the most recent IRWM Implementation contract with the Authority. *The work items were developed to collectively implement the proposed project.*

Task 1: Project Administration

This task will include the project administration related work involved in the development of the project. This task includes items such as meetings, coordination with stakeholders, developing partnerships, and overall project coordination.

Work products for this task includes:

- Project meetings
- Coordination of stakeholders
- Project implementation and agreement preparation

Current Status: No work on this task has commenced.
Deliverables: Meeting minutes and other deliverables as required.

Task 2: Labor Compliance Program

This task includes adopting and enforcing a labor compliance program pursuant to California Labor Code and applicable laws. It is anticipated that a 3rd party labor compliance officer will be retained to develop the program and perform the required workplace inspections, reviews, and reporting. The labor compliance program will be in place prior to the award of the project's construction contract.

Current Status: No work on this task has commenced.
Deliverable: Submission of Labor Compliance Program

Task 3: Reporting

This task has been separated out for reference, but as has been done on other recent grants, DWR grant related reporting may be considered for inclusion under the Project Administration task if this project moves forward.

This task will include quarterly project reports and all other reporting obligations in accordance with the grant contract requirements. This task will also include preparation of a project draft and final project report. The report will summarize the project activities identified within this workplan, including a comparison of the scope, budget and schedule of the items performed. The draft report will be prepared and submitted to DWR for review and comment. Upon receipt of DWR comments, a final project report will be prepared and resubmitted to DWR.

This task also includes modification to the Monitoring, Assessment, and Performance Measures (MAPM) prepared and included in **Attachment 6**. Upon completion of any needed revisions to the MAPM, it will be implemented and the efforts described within the MAPM will be documented.

Current Status: No work on this task has commenced.
Deliverables: MAPM modification if required, preparation of pay requests, submission of quarterly, annual and final reports as specified in the Grant Agreement.

Task 4: Land Purchase/Easement

This task includes acquisition of the required land for the recharge basins and for the canal widening. Included in this subtask is fee title acquisition of approximately 60 acres for development as the recharge basin area. FID currently has a flood rights agreement with this land (**Attachment 3h**). Final purchase of the property is expected to be completed by the end of 2013.

Current Status: Land purchase option has been secured (**Attachment 3f**).

Work products for this task include:

- Land appraisals as required by the State.
- Acquisition of Required Land

Deliverables to DWR for this task will include:

- Status of completion of acquisition
- Proof of completion of acquisition, in the form of title and agreement

There are many work products described under this task. If desired by DWR, any of these work products will be made available to DWR for review.

Task 5: Assessment and Evaluation

This task includes the required studies to review and analyze the feasibility of the banking project. Much of this work has already been completed or is well underway.

Current Status: The following subtask has already been completed:

Subtask 5.1 – Project Feasibility Study- January 2013

A study reviewing potential banking opportunities within James Irrigation District was prepared in 2005. A reconnaissance investigation (prepared in 2011), together with its supplement (prepared in 2012), reviewed the full ultimate banking project. A feasibility study was completed in January 2013 to evaluate water supplies, facility economics and conceptual project design of Phase 1 of the project. The study identified water supplies

available for banking and recharge, project yield, and included detailed cost estimates for construction fees. Refer to **Attachment 3a,b,c** for a copy of the studies.

The following subtask has not been completed:

Subtask 5.2 - Establish Monitoring Committee

A Groundwater Monitoring Committee of local landowners and JID staff will be established for monitoring and providing guidance on the management of the project's groundwater bank. This committee will assume responsibility for monitoring and providing guidance on management of the proposed project. Initial discussions with landowners in the area have already occurred. The committee will assist with review and operations similar to operations at the District's other basins.

Deliverables: Monitoring Committee establishment, meeting minutes/notes.

Task 6: Final Design

This task includes developing the preliminary and final design for the project. In addition, this task includes a detailed topographic survey of the subject property and canal alignments.

The following subtasks will be performed:

Subtask 6.1 – Surveying

This task will include topographic surveying along the FID canal, within the recharge basin property, along adjacent roadways at road crossings, and in other areas needed to complete the final design. The deliverable for this task is topographic survey data. A boundary survey is anticipated for the canal and recharge basin land acquisition.

Subtask 6.2 – Final Design

Preliminary and final design drawings and specifications will be prepared for the canal channel improvements, road crossings and culverts, recharge basin earthwork and levee construction, project turnout structure, new canal regulation structure at the recharge basin site, three interbasin structures, and three monitoring wells. Final basin design will include a full geotechnical investigation to determine the recommended levee design. Structure design will include the design of a concrete canal regulation structure, project turnout structure, and sedimentation channel weir structure, with appropriate control appurtenances and basin turnout box and pipeline design. Monitoring well design will include initial siting, determination of dimensions, materials, and perforated intervals. A monitoring network will be established, including review of DWR driller's logs, a canvass of nearby wells for accessibility, and proximity to the basin and wells.

Initial water level data and water quality samples will be collected to serve as base line data for future operations.

Current Status: This task will be initiated with the grant.
Work products for this task include:

- Preliminary design plans and specifications
- 90% level design plans and specifications
- Final design plans and specifications (contract documents)
- Construction cost estimates at each design milestone

Deliverables: Completion of project plans and specifications at the 90 percent and final level, monitoring network establishment and base line data.

Task 7: Environmental Documentation

This task includes the required planning and environmental efforts to complete the project development. Some preliminary work has already been completed.

This task includes the required environmental processing and documentation involved in the project. Two of these items are closely interrelated, so are described here together. The process and documentation described herein is based on experience from the same process for the similar banking facilities.

Environmental Process – The two environmental regulations that need compliance relate to NEPA and CEQA. Since the project will not involve Federal monies, or a Federal decision, NEPA does not apply. CEQA consists of 1) preparation of initial studies to identify potential project impacts, 2) undertaking scientific and biological reviews to identify the existing conditions and potential impacts from construction and/or operations of the proposed project and 3) public input through meetings, public hearings and the formalized process of publication, circulation and adoption.

Environmental Documentation - Environmental documentation will include preparation of a CEQA Initial Study, performing the necessary biological surveys including plant and animal surveys as well as identifying the potential for endangered species, cultural resources survey and other pertinent studies as identified in the initial study. Additionally, there is planned to be public involvement in preparation and review of this work through meetings and a public hearing.

Current Status:

Work already completed:

- California Department of Fish & Game Natural Diversity Database evaluation to identify sensitive plant and animal species at the project site.

Work products to be completed for this task include:

- Cultural resources investigation
- Reconnaissance level biological survey
- CEQA Initial Study for circulation and other related documentation
- Approved and adopted CEQA documentation

Deliverable: Approved and adopted CEQA/NEPA documentation

Task 8: Permitting

This task includes the required permitting efforts to complete the project development. Permitting for this project will be involved and include numerous State, Federal and Local agencies. Each of the identified agencies will be contacted and have jurisdiction over portions of the project. The permits identified herein are grouped into two areas. The first are permits that are required during the planning, regulatory and design phase. The other group consists of permits that are required for construction. The anticipated permits for the project are listed below. It is anticipated that the applications for the permits will commence after preliminary design plans have been approved and specifications are prepared.

Planning, Regulatory, and Design Phase Permits and/or Reviews:

- Fresno County –County road crossing replacement
- Mosquito Abatement District – Review and planning for mosquito control

Construction Phase Permits and/or Reviews:

- Fresno County – Construction, electrical review, encroachment permit (if required)
- San Joaquin Valley Air Pollution Control District – Regulation VIII Permit (Dust Control Plan) and Rule 9510 (Indirect Source Review)

  The project will disturb more than five acres, and will require a Dust Control Plan be prepared and submitted to the San Joaquin Valley Air Pollution Control District.

  It is not anticipated that the project will be subject to Rule 9150, Indirect Source Review; however, a letter will be submitted to the SJVAPCD to verify the project's exemption.
- State Water Resources Control Board – 2009-0009-DWQ Construction General Permit (Storm Water Pollution Prevention Plan)

The project will disturb more than one acre and will require a Storm Water Pollution Prevention Plan be prepared, submitted via SMARTS to the State Water Resources Control Board, and fully implemented.

Current Status: This task will be initiated after preliminary plans have been approved.
Deliverables: All required permits.

Task 9: Construction Contracting

Bidding documents will be prepared for all construction work. Separate bid packages will be prepared for the earthwork/structures and the monitoring wells. This task also includes public bid advertisements, pre-bid meetings, answering questions during the bidding process, and evaluating submitted bids. The deliverables for this task is bidding documents and support during bidding.

Work products for this task include:

- Bid documents required to obtain contractors bids for construction.
- Advertisements for bids
- Pre-bid contractor's meeting
- Bid canvass summary
- Contract award

Current Status: No work on this task has commenced.
Deliverables: Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract

Task 10: Construction

This task includes construction of the required facilities. It is anticipated that two separate contracts for construction will be secured; one for the earthwork and structures, and a second for construction of the monitoring wells.

Current Status: No work on this task has commenced.

The following subtasks will be completed:

Subtask 10.1 Earthwork and Structures

This construction task is anticipated to include:

Mobilization and Site Preparation

This subtask will include construction items necessary for mobilization including contractor bonds and insurance, worker protection, and mobilizing construction equipment to the project site.

Work products for this task include:

- Contractor mobilization, bonds, and insurance.
- Worker protection

Recharge Basin and Levee Construction

This will include the earthwork activities to excavate and construct the recharge basins, including the earthen levees. In addition, this subtask also includes any required clearing and grubbing of the existing fields and the abandonment, demolition, and removal of the existing structures. Debris as a result of this subtask will be exported offsite to an appropriate waste collection or landfill location, if applicable.

The initial stages of the earthwork operations will consist of excavating the sides of the channels to the required width, and using excess cut from the channel excavation to construct the recharge basin levees or widening the canal banks. Soil compaction, backfilling, and other geotechnical activities will be reviewed and monitored by a geotechnical engineer to ensure compliance with the geotechnical report recommendations and design plans and specifications.

Work products for this task include:

- Site preparation and demolition
- Construction of widened canal channel

Lower Dry Creek Canal Structures

This will include the activities related to structure replacement due to widening the existing Lower Dry Creek Canal and to allow for increased flow rate capacity. Structures that would need replacement include canal check structures, private canal turnouts, private road culvert crossings, and County road culvert crossings.

Work products for this task include:

- Construction of canal check structures, turnouts, and culvert crossings

Project Turnout, Sedimentation Weir, Interbasin Structures

This subtask will include the construction of a new concrete project canal turnout structure, canal regulation structure downstream of the basins, a sedimentation weir structure in the sedimentation channel to only allow clean water to enter the recharge basins, and interbasin structures to deliver water throughout the project's recharge basins. The construction will include water control gates, water level measurement devices, and other appurtenances and will be constructed according the plans and specifications.

Work products for this task include:

- Construction canal turnout structure from Lower Dry Creek Canal to the Project's basins
- Construction of canal regulation structure downstream of the basins
- Construction of sedimentation weir structure in the sedimentation channel
- Construction of interbasin structures

Other Site Improvements.

This subtask includes remaining construction activities that will be part of the groundwater banking facility. These activities include perimeter fence construction and placing crushed rock drive surfaces.

Work products for this task include:

- Perimeter fencing around banking facility
- Crushed rock drive surface

Performance Testing and Demobilization.

This subtask includes final inspection of the banking facility. A final inspection will be performed to ensure the project was constructed in compliance with the plans and specifications. Once construction and testing is complete, the contractor will be able to demobilize from the project and project closeout will commence.

Work products for this task include:

- Final inspection of the facility
- Contractor demobilization

Subtask 10.2 - Monitoring Well Construction.

Three shallow monitoring wells will be constructed according to the plans and specifications. The monitoring wells will be used to assist with monitoring and managing the groundwater bank. These three wells will supplement any existing private wells identified in a future well canvass.

Work products for this task include:

- Construction of Monitoring Wells

Task 11: Environmental Compliance/Mitigation/Enhancement

The project is not anticipated to impact Federal of State protected species or natural communities. However, this task has been developed to mitigate any potential disturbance or impacts to protected species or communities. As previously discussed, the construction of the project's recharge basins will involve excavation of the floor of the basins and construction of earthen levees: and the construction along the canal will involve excavation of the sides and bottom. Preventative measures will be used during construction to minimize potential impacts to wildlife, including:

- Vehicles should use slow speeds (<15 miles per hour), especially at night, when driving through or around the Project site to minimize potential for striking or disturbing animals. San Joaquin kit fox and other animals are vulnerable to collisions with autos.
- Open pipes and culverts should be inspected before being moved or altered to prevent wildlife from being injured or trapped.
- If special status species are encountered during an inspection, they should be left alone to passively exit the area unless otherwise authorized by CDFG or USFWS.
- Any migratory birds and their nests should be not be disturbed as outlined in the Migratory Bird Treaty Act of 1918(MBTA). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in Section 50 of the Code of Federal Regulations(CFR) Part 10, including feathers or other parts, nests, eggs or products, except as allowed by implementing regulations (50 CFR 21).
- If building or tree removal must take place during the bird nesting season (February-August) due to construction schedule constraints, pre-disturbance surveys for bird nesting activity should be conducted by a qualified biologist no more than 15 days before tree and building removal. If active nests are located within the construction site, nests should be buffered an appropriate distance as specified by a qualified biologist. Within that buffer no disturbance should occur until after nesting season for the observed species is concluded. Pre-disturbance surveys for bird nesting activity should include the trees on-site, burrows and open buildings (house/garage and shed).

Current Status: No work on this task has commenced.

Work products for this task include:

- Preventative construction measures
- Construction monitoring

The following deliverables will be provided to DWR as part of this task:

- Listing/Report of protective measures required
- Implementation status, included in the project status reporting in **Task 3**

There are many work products described under this task. If desired by DWR, any of these work products will be made available to DWR for review.

Task 12: Construction Administration

This task includes construction administration and observation efforts. FID experienced construction management staff will perform construction observation duties with assistance from an experienced consultant familiar with these projects.

Current Status: No work on this task has commenced.

The following subtasks will be completed:

Subtask 12.1 - Construction Observation.

The engineering consultant will provide a field engineer, geotechnical engineer, or geologist, as appropriate, to monitor construction of the recharge basins and levees, concrete structures, and pipelines. The consultant will make periodic visits to the project site during construction. Other roles of the engineering consultant will include: Organize and attend kickoff meetings, attend weekly meetings with contractors, review submittals, process monthly payment requests, and review contract change orders requests.

Work products for this task include:

- Daily construction observation and reporting
- Review of submittals
- Contractor progress payment approval and change order review

Subtask 12.2 - Record Drawings.

Upon completion of construction, the design drawings will be modified to reflect construction conditions using information provided by the contractor. The drawings will be signed by a professional engineer.

Work products for this task include:

- Preparation of final record drawings

Deliverables to DWR related to this task will include:

- Project construction status, included in the project status reports in **Task 3**
- Final record (as-built) drawings based on changes during construction

There are other work products described under this task. If desired by DWR, any of these work products will be made available to DWR for review.

Subtask 12.3 –O&M Manuals and Monitoring Plan.

This subtask includes the preparation of an Operations and Maintenance (O&M) Manual and Monitoring Plan. The Monitoring Plan will establish the procedures for monitoring the banking project's influence on groundwater conditions and will be used to minimize negative effects on nearby wells and septic systems, in conjunction with the MAPM. The O&M Manual and Monitoring Plan may be included in the same document. Draft copies of each document will be given to FID for comments and then final copies will be prepared.

Work products for this task include:

- O&M Manual
- Monitoring Plan

The following deliverables will be delivered to DWR:

- Final Monitoring Plan

There are many work products described under this task. If desired by DWR, any of these work products will be made available to DWR for review.

Task 13 – On-Going Monitoring

This task includes on-going monitoring and operation of the project for many years following completion in compliance with the Monitoring, Assessment and Performance Measures as required in the IRWM Guidelines and more particularly described in **Attachment 6** of this application. The ongoing monitoring and operation/maintenance of the project includes efforts after initial project completion and operation. These efforts will be completed by the District. Current Status: No work on this task has commenced.

This task includes two subtasks:

Subtask 13.1 – On-going Monitoring

Utilizing the MAPM described in **Task 3**, the on-going monitoring will include regular monitoring of water deliveries, well extraction, groundwater levels, and groundwater quality. In addition, the data will be evaluated by an engineer and hydrogeologist and documented in an annual report. Monitoring efforts provide useful information for properly managing the groundwater bank. A Groundwater Monitoring Committee will be established (see **Subtask 5.2**). Ongoing monitoring efforts will extend for the life of the project. This task is shown for a short duration on the project schedule only because of space on the schedule. Annual monitoring reports will be prepared in accordance with the future Monitoring Plan.

Work products for this task include:

- Monitoring of the new banking facility

Subtask 13.2 – On-going Operation and Maintenance.

On-going operation and maintenance will include delivering water to the site, extraction well pumping, and maintenance on the wells, pumps, and recharge basins. Ongoing operation and maintenance efforts will extend for the life of the project. This task is shown for a short duration on the project schedule only because of space on the schedule.

Work products for this task include:

- Ongoing Operation and Maintenance of facilities

Deliverables to DWR for this task will include:

- Annual Report of Operations including the MAPM listed in **Task 3** and described in **Attachment 6**.

Project B: Laguna Irrigation District – Recharge Basin 11 Project

Introduction

The proposed project includes a 52-acre site that would be developed into a groundwater recharge basin. Kings River floodwaters would be the primary water source recharged in the basin. The conveyance capacity of Liberty Canal would be improved to increase the quantity of water that could be delivered to the site. The project will include a turnout on and check structure on Liberty Canal, flowmeters, basin with exterior levees, settling pond, outlet to Murphy Slough, and monitoring wells.

The motive for the proposed project is to address groundwater overdraft and beneficially use floodwaters that flow out of the region. The project will capture and recharge on average 2,650 AF of Kings River floodwater per year. As a result, the project will capture and recharge water in an area with declining groundwater levels, divert floodwater to reduce flood damage along the Kings River corridor, and create a dry-year water supply that can be pumped by private wells and used in droughts. The project will also create a regulation reservoir that can temporarily hold water and deliver it to irrigators. Lastly, the project will improve local groundwater quality by recharging high-quality Kings River water that originates in the Sierra Nevada mountains.

Goals and Objectives:

The goals of the project include the following:

- Capture floodwater and recharge it into the local aquifer
- Divert floodwater to reduce flood damage along the Kings River corridor
- Create a more reliable dry-year water supply that can be pumped by private wells and used in droughts
- Provide a regulation reservoir that can temporarily hold water and deliver it to irrigators
- Improve local groundwater quality by recharging high-quality Kings River water that originates in the Sierra Nevada mountains

Purpose and Need:

This project is consistent with the 2012 Upper Kings Basin Integrated Regional Water Management Plan (IRWMP). This project is consistent with the Regional Goals identified in Section 5.2 of the IRWMP, including:

- RG1 - Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater. The project will recharge an average annual amount of approximately 2,600AF.
- RG2 - Increase the water supply reliability, enhance operation flexibility and reduce system constraints. The project will increase conveyance capacity, and recharge water that will be available to growers in the area to utilize in dry years utilizing their existing wells.

- RG3 – Improve and protect water quality. The project will convey and recharge higher quality surface water to an area with lower quality groundwater.
- RG4 - Provide additional flood protection. The project will provide additional conveyance capacity to route flood water through canals and provide a new basin that will be used to capture floodwaters.
- RG5 - Protect and enhance aquatic ecosystems and seasonal wildlife habitat. The project will allow for the furtherance of the Kings River Fisheries Management Program by allowing surface water to be routed down the river for fish flows and provide storage for the water to not be lost to the region, and provide seasonal habitat for water fowl.

This project is consistent with the Kings Basin Measureable Objectives identified in Sections 5.2 and in Table 5-2 of the IRWMP, including:

- MO1 - Increasing amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years. This project provides additional groundwater recharge.
- MO2 - Identify opportunities and Projects. The project is included in the Authority's Project List and preliminary studies indicate that this region's geology is favorable to groundwater recharge.
- MO4 – Increase average annual supply and reduce demand. This project will utilize and capture available flood water that is typically lost to the region.
- MO5 – Increase dry year supply. The recharge of water in the area will allow for growers to pump the recharged water in dry years.
- MO6 – Increase regional conveyance capacity. The project includes canal capacity improvements to deliver surface water supplies.
- MO10 – Increase surface storage. New basins would be constructed as part of this project that will provide surface storage space.
- MO12 – Pursue opportunities to incorporate habitat benefits into projects. The project will provide seasonal water habitat for migrating water fowl.
- MO13 – Increase public awareness of IRWMP efforts. The Authority will include the project in its public releases, Authority highlight documents, and on the Authority website in effort to communicate the projects and efforts of the Authority and IRWMP.

The project is needed for the following reasons:

- Groundwater levels are declining in the area including Laguna ID and surrounding districts
- The northern portion of Laguna Irrigation District does not receive surface water and is in critical need of a recharge facility to maintain groundwater levels
- In flood years large volumes of Kings River water flow out of the area and are not beneficially used in the Kings Groundwater Basin
- Local communities have serious water quality problems related to arsenic, nitrates and other constituents

Please also refer to Attachment 7 Technical Justification for a detailed description of the project need and supporting information.

Integrated Elements of Projects:

Project A and B are similar in the following ways:

- Both projects have similar workplans and are recharge projects with similar project components including:
  - Groundwater recharge basins
  - Sedimentation considerations
  - Turnout structures and flowmeters
  - Conveyance canal improvements
- Both projects will capture floodwaters typically lost to the region
- Both projects will utilize existing wells for groundwater extraction

Completed Work:

A substantial amount of work has been performed to develop the project and confirm its feasibility, including:

- Project Feasibility Study (2012, included as **Attachment 3i)** which includes:
  - Detailed subsurface investigations in 2007
  - Regional comparison of recharge basin sites
  - 30% design plans
  - Database searches for endangered species and cultural resources
  - Extensive public outreach to local water agencies and growers
- Option to purchase secured for the property (**Attachment 3j)**

A reconnaissance-level study performed in 2007 evaluated the proposed project and 15 other sites in the area for groundwater recharge potential. The proposed site was identified as the most favorable out of all sixteen sites based on physical characteristics of surface and subsurface materials, and numerous practical considerations. A feasibility study was completed in January 2013 to further verify the technical and economic feasibility of the project. The feasibility study discussed the site features, local geology, estimated annual recharge capacity, preliminary project design, permitting, environmental issues, cost estimate, financial analysis, and a project schedule. The feasibility study is included as **Attachment 3i**. Relevant sections from the 2007 subsurface investigations study are included in Appendix A of the Feasibility Study (**Attachment 3i**). Please also refer to Attachment 7 Technical Justification for a detailed description of the project need and supporting information.

Existing Data and Studies:

A detailed subsurface investigation study was performed in 2007 by the North Fork Group of the Kings River Conservation District. The study evaluated 16 potential recharge site in the North Fork of the Kings River. The study included site visits, borehole drilling, soil sampling and en evaluation of practical factors. The proposed project was ranked the highest of all 16 site studies. Relevant sections of the study are found in Appendix A of the Project Feasibility Study (**Attachment 3i**).

A project feasibility study was completed in 2012-2013 to further verify the feasibility of the project. The study includes a 30% design and evaluates numerous practical factors including local geology, infiltration rates, water supplies, project yield, monitoring needs, environmental issues, permitting requirements, project costs and the project schedule. The study is included as **Attachment 3i**.

Project Map:

A map of the proposed site including the major project features and monitoring facilities is included as **Figure 3-5**.

Figure 3-5 LID location map

Project Timing and Phasing:

The project is not part of a multi-phase project complex or a component of a larger project.

Tasks

The following workplan was developed based on similar groundwater recharge projects constructed in the region, including the workplan for similar projects completed under DWR grant funding programs such as the most recent IRWM Implementation contract with the Authority. *The work items were developed to collectively implement the proposed project.*

Task 1: Project Administration

This task will include the project administration related work involved in the development of the project. This task includes items such as meetings, coordination with stakeholders, developing partnerships, and overall project coordination.

Work products for this task includes:

- Project meetings
- Coordination of stakeholders
- Project implementation and agreement preparation

Current Status: No work on this task has commenced.
Deliverables: Meeting minutes and other deliverables as required.

Task 2: Labor Compliance Program

This task includes adopting and enforcing a labor compliance program pursuant to California Labor Code and applicable laws. It is anticipated that a 3rd party labor compliance officer will be retained to develop the program and perform the required workplace inspections, reviews, and reporting. The labor compliance program will be in place prior to the award of the project's construction contract.

Current Status: No work on this task has commenced.
Deliverable: Submission of Labor Compliance Program

Task 3: Reporting

This task has been separated out for reference, but as has been done on other recent grants, DWR grant related reporting may be considered for inclusion under the Project Administration task if this project moves forward.

This task will include quarterly project reports and all other reporting obligations in accordance with the grant contract requirements. This task will also include preparation of a project draft and final project report. The report will summarize the project activities identified within this

workplan, including a comparison of the scope, budget and schedule of the items performed. The draft report will be prepared and submitted to DWR for review and comment. Upon receipt of DWR comments, a final project report will be prepared and resubmitted to DWR. This task also includes modification to the Monitoring, Assessment, and Performance Measures (MAPM) prepared and included in **Attachment 6**. Upon completion of any needed revisions to the MAPM, it will be implemented and the efforts described within the MAPM will be documented.

Current Status: No work on this task has commenced.
Deliverables: MAPM modification if required, preparation of pay requests, submission of quarterly, annual and final reports as specified in the Grant Agreement.

Task 4: Assessment and Evaluation

Subtask 4.1 – Project Surveying

Perform topographic survey of 3.5 miles of Liberty Canal and canal structures including bridges, culverts, pipe crossings and other pertinent features. Obtain and compile recorded maps and corner records relative to the subject property. Perform boundary field survey, including recovering and locating controlling monuments for the property, and resolving the existing boundary of the subject property based on recovered monuments and record data. Prepare legal descriptions for property acquisition and Certificates of Compliance. Set monuments along acquired property boundary. Prepare Record of Survey map documenting boundary resolution, acquired parcel boundary, and the location of set monuments, and file with Fresno County.

Subtask 4.2 – Liberty Canal Hydraulic Analysis.

Perform a detailed hydraulic analysis of the 3.5 miles of Liberty Canal that will need expansion to deliver 70 cfs to the site while conveying maximum irrigation demands. Perform hydraulic model in HEC-RAS to identify which crossing (bridges, culverts, etc.) require modification, and which canal sections need deepening or widening.

Subtask 4.3 – Post Construction Geologic Evaluation.

After construction of the monitoring wells, a professional geologist will review the boring logs, well development tests results and other geologic data to characterize the local geology. The evaluation will be documented in a memorandum which will include record drawings, boring logs and an evaluation of the geology and stratigraphy.

Current Status: LID performed a preliminary survey and hydraulic analysis of canal (see **Attachment 3k**)

Current Status: No work on this task has commenced.
Deliverable: HEC-RAS hydraulic study, design for upgraded canal, geologic evaluation memorandum, surveying documentation related to parcel split and boundary survey

Task 5: Final Design

This task includes preparing the final plans and specifications based on the existing 30% drawings. A licensed engineer will prepare final designs for the Liberty Canal expansion, check structure, turnout, basin levees, settling pond, turnout structure, monitoring wells, and appurtenant facilities. Perform structural design for concrete check structure. Geotechnical investigations will be performed to identify local soil types to be used for levees and preferred dimensions for levees. These will include soils borings performed manually or with a truck mounted auger, and soil classification tests.

The work will be broken into the following items:

- Geotechnical Investigations
- Preliminary Plans/Specifications – 60%
- 90% Plans/Specifications
- Final Plans and Specifications

Current Status: The Feasibility Study was completed in 2012. The study which also includes topographic survey and 30% design drawings can be found in **Attachment 3i**. The 30% design drawings are Appendix B of **Attachment 3i.**

Deliverables:
Geotechnical investigations report, 60%, 90% and final plans and specifications

Task 6: Environmental Documentation

This task includes preparing a CEQA Initial Study for the project, a cultural resources survey and biological survey.

Subtask 6.1 – CEQA Initial Study

Perform a CEQA Initial Study for the project and file it with Fresno County. Perform the appropriate public noticing and outreach. It is anticipated that there will be few environmental impacts so a Negative Declaration or Mitigated Negative Declaration will be filed.

Subtask 6.2 Cultural Resources Survey

Hire a professional archeologist to perform a reconnaissance level survey of the site for historic, cultural or archeological resources.

Subtask 6.3 – Biological Survey

Hire an experienced professional biologist to perform a reconnaissance level survey of the site for sensitive, threatened or endangered species.

Current Status: Performed initial review of CEQA topics to identify potential isues. Performed cultural records search for area, performed search for known sitings of sensitive species in area (see **Exhibit 2**)

Deliverables: CEQA Initial Study, Cultural Resources Reconnaissance Survey, Reconnaissance Level Biological Survey

Task 7: Permitting

This task includes the required permitting efforts to complete the project development. The anticipated permits for the project are listed below. It is anticipated that the applications for the permits will commence after preliminary design plans have been approved and specifications are prepared.

- Fresno County – Road encroachment permit. The project will require an encroachment permit for the canal work and turnout pipeline.
- San Joaquin Valley Air Pollution Control District – Regulation VIII Permit (Dust Control Plan) and Rule 9510 (Indirect Source Review). The project will disturb more than five acres, and will require a Dust Control Plan be prepared and submitted to the San Joaquin Valley Air Pollution Control District. It is not anticipated that the project will be subject to Rule 9150, Indirect Source Review; however, a letter will be submitted to the SJVAPCD to verify the project's exemption.
- State Water Resources Control Board – 2009-0009-DWQ Construction General Permit (Storm Water Pollution Prevention Plan). The project will disturb more than one acre and will require a Storm Water Pollution Prevention Plan be prepared, submitted via SMARTS to the State Water Resources Control Board, and fully implemented.

Current Status: This task will be initiated after preliminary plans have been approved.
Deliverables: All required permits.

***Stormwater Pollution Prevention Plan*.**

A Stormwater Pollution Prevention Plan will be prepared for the site since it will disturb more than 5 acres. The plan will be submitted to the Regional Water Quality Control Board.

***Dust Control Plan*.**

A dust control plan will be prepared and submitted to the San Joaquin Valley Air Pollution Control Board.

County Permit (Road Encroachments).

A permit will be acquired from Fresno County since some of the canal work and the turnout pipeline may take place along a county road right-of-way.

County well permits for the monitoring wells are not included because they will be acquired by the drilling contractor.

Current Status: No progress

Deliverables: Storm Water Pollution Prevention Plan, Dust Control Plan, and Fresno County Encroachment Permit.

Task 8: Construction Contracting

Bidding documents will be prepared for the monitoring wells. The remaining work will be performed by Laguna Irrigation District and will not require bidding documents. This task includes public bid advertisements, pre-bid meetings, answering questions during the bidding process, and evaluating submitted bids.

Current Status: No progress

Deliverables: Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract

Task 9: Construction

This task includes construction of the required facilities. The following subtasks will be completed:

Subtask 9.1 Earthwork and Structures

This subtask is anticipated to include the following items:

Mobilization/Demobilization

This subtask will include construction items necessary for mobilization including contractor bonds and insurance (monitoring wells only), worker protection, and mobilizing construction equipment to the project site, as well as demobilizing and site cleanup.

Canal Improvement (Upstream of Site)

This subtask includes modifying approximately 1.5 miles of the 3.5 mile reach of Liberty Canal upstream of the project site. This will include widening and deepening the canal in some locations, replacing one undersized culvert, and removing small sections of grape vines that may be encroaching into the right-of-way.

Basin Earthwork

This will include the earthwork activities to excavate and construct the recharge basins, including the earthen levees, levee keyways, settling basin, and overall basin floor grading. In addition, this subtask also includes any required clearing and grubbing of the existing site and the abandonment, demolition, and removal of the existing irrigation lines. This task also includes installation of two staff gauges and initial ripping/disking of the basin floor. Soil will be acquired from inside the basin or the on-site borrow pile for levee construction.

Liberty Canal Structures

This subtask will include the construction of a new concrete canal check structure in the Liberty Canal for maintaining canal water levels. The construction will include water control gates, water level measurement devices, a turnout pipeline, and riprap for erosion protection.

Murphy Slough Drain

This subtask includes construction of the Murphy Slough Drain which will allow water to be delivered from the recharge basin into the adjacent Murphy Slough. Components will include a drain inlet structure, drain pipe, canal gate, flow meter, flap valve and riprap for erosion protection.

Subtask 9.2 – Monitoring Wells

This subtask includes construction of four 100-feet deep monitoring wells by a qualified, licensed driller, well development, and preliminary water quality sampling.

Current Status: No progress

Deliverable: Constructed recharge basin and appurtenant facilities, construction of monitoring wells

Task 10: Environmental Compliance/Mitigation/Enhancement

No environmental compliance, mitigation or enhancement is anticipated to be necessary since the project will be placed on previously disturbed agricultural land. A preliminary review of topics for a CEQA Initial study did not identify any major environmental issues.

Current Status: Not applicable

Deliverables: Not applicable

Task 11: Construction Administration

This task includes construction administration and observation efforts. LID experienced construction management staff will perform construction observation duties with assistance from an experienced consultant familiar with these projects. The subtasks will include:

Subtask 11.1 – Construction Staking

A licensed surveyor will perform construction staking as needed to identify project boundaries, grades and elevations for the canal and basin work.

Subtask 11.2 - Construction Oversight

The entire project will be under the supervision and direction of the District, with technical support from their consulting engineer and/or hydrogeologist as needed. Day-to-day construction inspection services would be provided by District staff, and periodic

visits would be performed by an engineering consultant. The engineering consultant will provide a field engineer, geotechnical engineer, or geologist, as appropriate, to monitor construction of the recharge basins and levees, concrete structures, wells, and pipelines. During construction of the wells, geologic logs will be prepared by a geologist. Other roles of the engineering consultant will include: organize and attend kickoff meetings, attend weekly meetings with contractors, review submittals, process monthly payment requests, and review contract change orders requests.

Subtask 11.3 – Compaction Testing

Soil compaction, backfilling, and other geotechnical activities will be reviewed and monitored by a geotechnical engineer to ensure compliance with the geotechnical report recommendations and design plans and specifications.

Subtask 11.4 - Record Drawings.

Upon completion of construction, the design drawings will be modified to reflect construction conditions using information provided by the monitoring well contractor and LID. The drawings will be signed by a professional engineer.

Current Status: No progress

Deliverables: Compaction testing results, final record drawings

Task 12 - Land Acquisition

The project site will be purchased from a local landowner.

Current Status: The landowner was first approached about selling the land in 2007 and they were interested in divesting the property due to its sandy soils, which make it marginal for agriculture. In 2012, the landowner signed an option agreement providing LID the first right to purchase the property according to its appraised value (**Attachment 3l**). The appraisal is included as (**Attachment 3l)**.

Deliverables: Final closing documents for property acquisition.

Task 13 – On-Going Monitoring

This task includes on-going monitoring and operation of the project for many years following completion in compliance with the Monitoring, Assessment and Performance Measures as required in the IRWM Guidelines and more particularly described in **Attachment 6** of this application. The ongoing monitoring and operation/maintenance of the project includes efforts after initial project completion and operation. These efforts will be completed by the District. This task includes two subtasks:

Subtask 13.1 – On-going Monitoring.

Utilizing the MAPM described in **Task 3**, the on-going monitoring will include regular monitoring of water deliveries and groundwater levels. In addition, the data will be evaluated by an engineer and hydrogeologist and documented in an annual letter report. Monitoring efforts provide useful information for properly managing the groundwater recharge facility. Ongoing monitoring efforts will extend for the life of the project. This task is shown for a short duration on the project schedule only because of space on the schedule. Annual monitoring reports will be prepared in accordance with the future Monitoring Plan.

Work products for this task include:

- Monitoring of the new recharge facility

Subtask 13.2 – On-going Operation and Maintenance.

On-going operation and maintenance will include delivering water to the site, and maintenance of the recharge basins. Ongoing operation and maintenance efforts will extend for the life of the project. This task is shown for a short duration on the project schedule only because of space on the printed schedule.

Work products for this task include:

- Ongoing Operation and Maintenance of facilities

Deliverables to DWR for this task will include:

- Annual Report of Operations including the MAPM listed in **Task 3** and described in **Attachment 6**.

Project C: Bakman WC Water Supply Reliability and Conservation Project

Introduction

Bakman serves a primarily disadvantaged community, and grant funding will help reduce water costs to the community, promote conservation of water and provide improved water quality and an increased water supply to the community utilizing existing infrastructure. Bakman Water Company is a privately owned utility that has provided water service in the Fresno area since 1948. Bakman currently provides water service to approximately 8,500 customers through 2,453 service connections and covers approximately 1,660 acres within the southeastern portion of the City of Fresno and parts of unincorporated Fresno County.

DBCP treatment will be added to Pump Station 8 and then the treated water will be blended with Pump Station 8A water that will be delivered through an existing fill line. The blended water will lower the Pump Station 8 nitrate levels before entering the water system. The project will utilize existing infrastructure to provide a reliable drinking water supply. Bakman had previously implemented a Nitrate Blending Plan that blended Pump Station 8 effluent with Pump Station 8A to produce a nitrate concentration below the MCL. This blending plan was suspended when it was discovered that the groundwater at Pumping Station 8 had exceeded the current MCL for DBCP. The best cost effective technology for removing DBCP is granular activated carbon (GAC). Untreated groundwater enters at the top of the vessel and flows downward through the GAC. Contaminants are adsorbed by the GAC and treated water exits from the bottom of the vessel.

This project includes installation of water meters and/or Automatic Meter Reading (AMR) components on all (2,453) service connections within the Bakman Water Company service area, the related AMR system to remotely read the meters and the installation of DBCP treatment, nitrate blending and integrated controls and analyzers to Pump Station 8 and 8A. The following table shows the status of Bakman's meter installation.

Date	# of Meters	Installation Required
Service Retrofitted after 9/30/2008 (No Meter Installed)	434	Requires meter and AMR components to be installed.
Service Fully Retrofitted after 9/30/2008 (Meter Installed)	350	Requires AMR components to be installed.
Remaining Services to be Fully Retrofitted	1,669	Require full service retrofit including meter, meter box and AMR components.
Total	**2,453**	

This meter portion of the project is similar to the City of Fresno meter installation project, which has been successfully implemented and which received funding from a DWR IRWM Implementation grant. A project location map is included as **Figure 3-6**.

Goals and Objectives:

The primary goals of the proposed project are to:

- Address the critical water supply and water quality need of a Disadvantaged Community within the region by constructing wellhead treatment for DBCP contamination and blending to address a well with nitrates in excess of the maximum contaminant level.
- Rehabilitate a well that will provide critical additional supply and augment a limited water supply system that has several contamination plumes.
- Help a DAC address the requirement to install water meters.
- Provide an estimated 20% reduction in groundwater pumping from conservation resulting from the installation of water meters
- Further implementation of priority projects identified in the Authority's IRWMP

Purpose and Need:

The project goals and objectives are consistent with the Kings Basin Integrated Regional Water Management Plan (IRWMP), including:

- RG1 - Halt and ultimately reverse the current overdraft and provide for sustainable management of surface and groundwater. The overdraft within the region is evidenced by falling groundwater levels, and manifested by increasing costs of groundwater pumping and some groundwater degradation. The main specific long-term goal of the Kings Basin IRWMP, as well as other water management documents for the area, is to correct the overdraft and stabilize groundwater levels.

  Bakman is dependent on groundwater as its sole source of supply to meet water demands. The installation of water meters is expected to result in a 20% water savings by consumers. Installation of meters will provide users with additional information regarding usage, and promote conservation with metered usage rates; in their 2010 Urban Water Management Plan, Bakman committed to providing information to promote conservation. Reducing demand will reduce groundwater pumping required to meet demands within the water service area. The proposed project is therefore intended to maintain or increase the volume of groundwater available in the local aquifer.

- RG2 - Increase the water supply reliability, enhance operational flexibility, and reduce system constraints. The DBCP treatment and blending portion of the project will increase operational flexibility and reduce system constraints by providing another water supply source without requiring a new well to be constructed. This portion also contributes to water supply reliability by offering another layer of redundancy in the network for use during normal and dry years. This will improve the reliability of the water supply as well as enhance operational flexibility and reduce system constraints. The meter installation portion of the project will help Bakman better analyze, manage, and conserve the groundwater aquifer in the area. Information obtained from the meters will additionally allow for improved system understanding and operational

adjustments to meet demands and educate users. This portion of the project will promote and provide water conservation and more efficient groundwater management.

- RG3 - Improve and protect water quality. Groundwater in the local aquifer is affected by nearby contamination plumes, including nitrate and DBCP, both of which are finite contaminants. This project will conserve water, and thus sustain supply of an overdrafted aquifer, slowing the migration of the contaminant plumes (see Attachment 7 for further discussion and related figure). Additionally, the project will treat contaminated water, thereby aiding in the aquifer remediation for these two constituents. By slowing the movement of contaminant plumes and directly treating one of the contaminants, water quality will be protected and improved in the region.

This project is consistent with the Kings Basin Measureable Objectives identified in Sections 5.2 and in Table 5-2 of the IRWMP, including:

- MO1 - Increasing amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years. This project includes conservation through the installation of water meters that will reduce groundwater pumping.
- MO2 - Identify opportunities and Projects. The project is included in the Authority's Project List, and well rehabilitation and conservation from meter installation are similar to other similar projects that have been successfully implemented in the region.
- MO4 – Increase average annual supply and reduce demand. The wellhead treatment and blending project will provide a water source within an area of Bakman that has limited suitable groundwater. The project will reduce demand through conservation that results when water meters are installed, and the resulting conservation will reduce groundwater pumping, helping to increase the available supply in the groundwater aquifer that Bakman is solely dependent upon.
- MO5 – Increase dry year supply. Reducing the overall pumping through conservation will sustain and increase the overall groundwater supply available for pumping, including in dry years.
- MO7 – Compile baseline water quality data for ground and surface water. The wellhead treatment and blending portion of the project includes active monitoring and data analysis that will be used by the SCADA system for operations of the two wells.
- MO8 - Encourage Best Management Practices, policies & education that protect water quality. Consistent with Bakman's UWMP, communication of the project, water conservation from meters and its benefits will help educate customers.
- MO9 – Identify sources of water quality problems & promote/support solutions to improve water quality. The project includes wellhead treatment for DBCP has been successfully implemented within the City of Fresno and other areas of the region. The project also includes blending to reduce nitrate levels which has also been accepted by CDPH and utilized within the region.
- MO13 – Increase public awareness of IRWMP efforts. The Authority will include the project in its public releases, Authority highlight documents, and on the Authority website in effort to communicate the projects and efforts of the Authority and IRWM in the region.

- MO15 – Comply with SB x7-7. The project includes water meter installation.

The project is needed to:

- Address a critical water quality and water supply need of a DAC
- Provide wellhead treatment to address DBCP contamination
- Provide improvements to allow for blending between two wells to address high nitrate problems at one of the wells.
- Provide needed water conservation in an aquifer that is critically overdrafted.
- Allow for the utilization of an existing well that cannot be used, which is critical in an aquifer with multiple contamination plumes
- Help protect and sustain the aquifer that is the sole source of supply for the DAC
- Address the requirement to meter service connections

By reducing water usage, this project will increase the reliability of the water supply as well as enhance operational flexibility. Bakman will be able to pro-actively monitor water usage on a daily, or multiple times daily, basis as necessary. Information obtained from the meters will allow for improved system understanding and operational adjustments to meet demands.

A reduction in water usage will help sustain the groundwater supply and slow the migration of contaminant plumes (See Attachment 7 for further discussion and Regional Groundwater Contamination Map).

Please also refer to Attachment 7 Technical Justification for a detailed description of the project need and supporting information.

Integrated Elements of Projects:

Bakman is located within the City of Fresno sphere (See Location Map – **Figure 3-6**). The project is similar to the City's recently completed meter installation program. Both Bakman and the City of Fresno pump groundwater from the same aquifer, and are affected by nearby contamination plumes (see Regional Groundwater Contamination Map – **Attachment 7f**). The meter installation component of the project will help Bakman, as well as the City, better analyze, manage and conserve the groundwater aquifer in the region. Bakman has reviewed and analyzed water meter studies prepared by the City of Fresno, and have selected a similar water meter with automatic meter reading (AMR) system. Bakman will continue to review studies and information from the City of Fresno and utilize lessons learned from the City of Fresno's meter installation program to ensure the successful implementation of the meter installation program for Bakman. The well treatment and blending portion of the project will create redundancy, deliver higher quality water, help aquifer remediation and take advantage of existing infrastructure to better meet demands without constructing a new well. Bakman is located partially within the City of Fresno, and the City and Bakman have worked together for decades for delivery of water within the area.

Bakman, the City of San Joaquin and the City of Kerman all have projects included in this application that include water meter installation. The three project proponents have collaborated on water meter types, compliance requirements and meter reading alternatives.

The three have entered into a letter of intent (**Attachment 3p**) to consider project implementation alternatives to help reduce costs.

Bakman is located entirely within the Fresno Irrigation District, and although the projects each has included in this application are not connected, the two agencies work collaboratively to manage the shared groundwater aquifer.

Completed Work:

A substantial amount of work has been performed to develop the project and confirm its feasibility, including:

- CDPH approved nitrate blending plan (**Attachment 3m**)
- Nitrate blending pipeline constructed
- Preliminary Plans for wellhead treatment and nitrate blending (**Attachment 3p)**
- Preliminary evaluation and determination that project is CEQA Exemption. Bakman believes that the installation of meters is exempt from CEQA under Section 21065 of the CA Public Resources Code and the installation of GAC Treatment is exempt as a Class 1 Exemption per Section 15301. If it is determined that it is not exempt, Bakman will comply with CEQA guidelines, complete an initial study, and perform the appropriate documentation.
- CPUC Approved General Metered Service rates (**Attachment 3o)**
- Meter, AMR selection and SCADA quotations received (see Attachment 4 for further discussion)
- Meter design and prior installation.

Please also refer to Attachment 7 Technical Justification for a detailed description of the project need and supporting information.

Existing Data and Studies:

Bakman has installed meters over the past few years as mentioned. Past meter installation costs included in this project description are based on actual costs from prior installations and quotes from equipment/material vendors. These meters have allowed Bakman to promote conservation within the service area. In addition, Bakman has reviewed previous studies and selected a Badger water meter with Automatic Meter Reading for their system (see Badger Product Sheets – **Attachment 3q**). Two apartment complexes within the Bakman Water Company service area have meters for tracking purposes to see how much water a typical apartment complex uses.

As previously mentioned, Bakman has already implemented a Nitrate Blending Plan between Wells 8 and 8A. The project will also include DBCP treatment, for which Bakman has not prepared any previous studies; however, there is existing sampling data to substantiate the necessity of DBCP treatment and Nitrate blending (see **Attachment 3r** – Sampling Results).

Project Map:

A project map is included as **Figure 3-6**. The project map shows Bakman Water Company's boundary; water meters will be installed throughout the service area and Wells 8A and 8 are located at near E. Belmont and Peach Avenues and E. Belmont and Minnewawa Avenues, respectively, as shown.

Project Timing and Phasing:

This application is for implementation of the entire system. However, the project is scalable; if funding is not available, Bakman can implement a reduced number of meters. Benefits associated with costs are essentially a linear relationship.

Figure 3-6 Bakman Location Map

Tasks

The following workplan was developed based on recent experience by Bakman Water Company, their consulting engineers, and the City of Fresno, who recently implemented a similar project. All of the tasks required by the Grant PSP are listed and addressed below, even if no work under these tasks is required.

Task 1: Project Administration

This task will include the project administration related work involved in the development of the project. This task includes items such as meetings, coordination with stakeholders, developing partnerships, and overall project coordination.

Work products for this task includes:

- Project meetings
- Coordination of stakeholders
- Project implementation and agreement preparation

Current Status: No work on this task has commenced.
Deliverables: Meeting minutes and other deliverables as required.

Task 2: Labor Compliance Program

This task includes adopting and enforcing a labor compliance program pursuant to California Labor Code and applicable laws. It is anticipated that a 3rd party labor compliance officer will be retained to develop the program and perform the required workplace inspections, reviews, and reporting. The labor compliance program will be in place prior to the award of the project's construction contract.

Current Status: No work on this task has commenced.
Deliverable: Submission of Labor Compliance Program

Task 3: Reporting

This task has been separated out for reference, but as has been done on other recent grants, DWR grant related reporting may be considered for inclusion under the Project Administration task if this project moves forward.

This task will include quarterly project reports and all other reporting obligations in accordance with the grant contract requirements. This task will also include preparation of a project draft and final project report. The report will summarize the project activities identified within this workplan, including a comparison of the scope, budget and schedule of the items performed. The draft report will be prepared and submitted to DWR for review and comment. Upon receipt of DWR comments, a final project report will be prepared and resubmitted to DWR.

This task also includes modification to the Monitoring, Assessment, and Performance Measures (MAPM) prepared and included in **Attachment 6**. Upon completion of any needed revisions to the MAPM, it will be implemented and the efforts described within the MAPM will be documented.

Current Status: No work on this task has commenced.
Deliverables: MAPM modification if required, preparation of pay requests, submission of quarterly, annual and final reports as specified in the Grant Agreement.

Task 4: Assessment and Evaluation

This task will include preliminary analysis of DBCP and nitrate treatment, process and site layout, operational criteria update, finalizing the preliminary drawings and an amended Nitrate Blending Plan. An existing Nitrate Blending Plan was previously approved (**Attachment 3m**), but will require updating to include the wellhead treatment considerations for DBCP. An evaluation of different meter communication types will be conducted and the meter and meter communication method determined.

Current Status: There is an approved nitrate blending plan for the project. Preliminary equipment analysis and design for the wellhead treatment has been prepared. Bakman staff have started an evaluation and have solicited budgetary bids for meters and AMR systems.

Deliverables: Meter evaluation, operational criteria, approved preliminary drawings, and the amended nitrate blending plan.

Task 5: Final Design

Subtask 5.1 Wellhead Improvements

This task will include finalization of the design plans and specifications for the wellhead treatment and blending portion of the project. This task will include finalizing plans for the improvements at the Well 8 site, including site layout, GAC vessels, valving, instrumentation, and connection to the existing pipeline. Preliminary plans will be prepared by a licensed engineer experienced with wellhead treatment design, and the plans will be submitted to CDPH for review and comment. Upon receipt of CDPH comments, the plans and specifications will be finalized for bidding.

Current Status: No work on this task has commenced.
Deliverables: Well 8 improvement plans and specifications, final AMR bidding instructions.

Subtask 5.2 Meters/Equipment Bid Specifications

This task includes the preparation of bid documents for meter and AMR equipment procurement. Preliminary and final bid documents will be prepared for Bakman to purchase

the meters and equipment required for installation. Bakman has prepared standard drawings for installation of meters which will be utilized for the construction of meters (See Standards W-1 and W-2 – **Attachment 3s).** Bakman will modify these standards, if needed, for use during installation. It is planned that Bakman staff will install the meters.

Current Status: No work on this task has commenced.
Deliverables: Preliminary and Final Meter/Equipment bid specifications.

Task 6: Environmental Documentation

No work is anticipated under this task. Bakman believes that the installation of meters and GAC Treatment are exempt from CEQA under Sections 21065 and 15301 of the CA Public Resources Code, respectively and plans to file the required paperwork for an exemption. If it is determined that it is not exempt, Bakman will comply with CEQA guidelines, complete an initial study, and perform the appropriate documentation.

Current Status: CEQA exemption determination
Deliverables: CEQA documentation

Task 7: Permitting

Permitting for this project may include approval of the amended Nitrate Blending Plan from CDPH, encroachment permits from City of Fresno, Fresno County, and Pacific Gas & Electric to perform work in and along road rights of way. Bakman does not anticipate any problems securing these permits as construction work will be limited to Bakman's existing service yard at the Well 8 site. Encroachment permits from the City and/or County of Fresno may be required for work within the road right of way associated with meter installation improvements.

The anticipated permits for the project are listed below.

- California Department of Public Health – Nitrate Blending Plan
- Fresno County and/or City of Fresno – Road encroachment permit

  The project will potentially require encroachment permits for the meter installations.
- San Joaquin Valley Air Pollution Control District – Regulation VIII Permit (Dust Control Plan) and Rule 9510 (Indirect Source Review)

  The project will not disturb more than five acres; therefore it will require only a Construction Notification Form be prepared and submitted to the San Joaquin Valley Air Pollution Control District.

  It is not anticipated that the project will be subject to Rule 9150, Indirect Source Review; however, a letter will be submitted to the SJVAPCD to verify the project's exemption.
- State Water Resources Control Board – 2009-0009-DWQ Construction General Permit (Storm Water Pollution Prevention Plan)

The project will possibly disturb more than one acre and, if so, will require a Storm Water Pollution Prevention Plan be prepared, submitted via SMARTS to the State Water Resources Control Board, and fully implemented. Current Status: Approved Nitrate Blending Plan obtained previously; construction phase permits will be prepared and obtained after preliminary plans have been approved.

Deliverables: CDPH approval of the amended Nitrate Blending Plan; all required permits

Task 8: Construction Contracting

Subtask 8.1 Wellhead Improvements

Bid documents will be prepared for procurement and construction of the components detailed for the treatment and blending improvements at Well 8. This task also includes pre-bid meetings, answering questions during the bidding process, and evaluating submitted bids.

Current Status: No work on this task has commenced.
Deliverables: Advertisement for bids, Bid Canvass and evaluation of bids, contract award.

Subtask 8.2 Meter/Equipment

Bidding for the desired meters and Automatic Meter Read (AMR) communication/collection system will be conducted. Bakman will order the meters and apputenances for Bakman staff to install. Bakman will include requests for contractors to install the AMR system as part of this bid solicitation.

Current Status: No work on this task has commenced.
Deliverables: Advertisement for bids, Bid Canvass and evaluation of bids, contract award.

Task 9: Construction

Subtask 9.1 Wellhead Improvements

This task will include mobilization, installation of GAC Filters and related equipment, analyzers and associated controls, site piping, and SCADA improvements.

Mobilization of the construction project will include:

- Obtaining GAC filters and analyzers
- Obtaining SCADA equipment

Subtask 9.2 Meter Installation

Bakman staff will install the ordered water meters. This task will include the required mobilization, box and meter installation, trench resurfacing, or concrete repair, performance testing and demobilization. Bakman Water Company standards and manufacturer specifications will be used for this task. Also included in this task is the meter AMR

communication system by the equipment vendor, and deployment of the required software. This task will include:

- Noticing customers of the impending meter installation including approximate times for water service to be disabled
- Locating construction equipment to the areas of installation, including boring or directional drilling equipment, trenching equipment or hand excavation tools
- Posting street signage as needed to notify passerbys and residents of blocked parking areas or street encroachments including lane closures, detours, or flagman traffic control

Demobilization of the project will include removing all traffic signage and construction equipment from the construction sites.

Current Status: No work on this task has commenced.

Deliverables for this task include: Installation of meters, equipment, and completed initial operation.

Task 10: Environmental Compliance/Mitigation/Enhancement

It is not anticipated that any additional environmental compliance or mitigation measures will be required for this project.

Current Status: No work on this task has commenced.

Task 11: Construction Administration

This task includes construction observation efforts and preparation of record drawings, to be performed by a qualified inspector. A qualified inspector will provide construction observation to monitor the installation of the meters. The inspector will make periodic visits to the project site during construction. Other roles of the inspector will include: Organize and attend kickoff meetings, attend weekly meetings with contractors, review submittals, process monthly payment requests, and review contract change orders requests. Upon completion of construction, the design drawings will be modified to reflect construction conditions using information provided by the contractor. The drawings will be signed by a professional engineer.

Current Status: No work on this task has commenced.

Deliverables include: Daily construction observation and reporting, review of submittals, contractor progress payment approval and change order review, and record drawings.

Task 12: On-Going Monitoring

This task includes on-going monitoring and operation of the project for many years following completion in compliance with the Monitoring, Assessment and Performance Measures as required in the IRWM Guidelines and more particularly described in **Attachment 6** of this

application. The ongoing monitoring and operation/maintenance of the project includes efforts after initial project completion and operation. These efforts will be completed by Bakman staff.

Current Status: No work on this task has commenced.
This task includes two subtasks:

Subtask 12.1 – On-going Monitoring

Utilizing the MAPM described in **Task 3**, the on-going monitoring will include regular monitoring of water deliveries, meter accuracy, well extraction, groundwater levels, and groundwater quality. Monitoring efforts provide useful information for properly operation of the wellhead treatment, blending, and water conservation efforts. This task is shown for a short duration on the project schedule only because of space on the schedule. Annual monitoring reports will be prepared in accordance with the future Monitoring Plan.

Work products for this task include:

- Monitoring of well operations and meter readings and operation

Subtask 12.2 – On-going Operation and Maintenance.

On-going operation and maintenance will include well and equipment maintenance, and water meter maintenance. Ongoing operation and maintenance efforts will extend for the life of the project. This task is shown for a short duration on the project schedule only because of space on the schedule.

Work products for this task include:

- Ongoing Operation and Maintenance of facilities

Deliverables to DWR for this task will include:

- Annual Report of Operations including the MAPM listed in **Task 3** and described in **Attachment 6**.

Project D: City of San Joaquin Water Supply Reliability & Conservation Project

Introduction

The project includes critical water supply and water quality needs for the disadvantaged community of the City of San Joaquin, including well rehabilitation to provide needed water pressure to meet fire flow requirements, and water conservation through the installation of water meters.

The City of San Joaquin, located in the arid region of western Fresno County, is a Disadvantaged Community and has provided drinking water to its residents from three wells where a continual trend of overdraft has created cause for concern locally as well as regionally. The City's water system is currently served by only two active wells: Well No. 3 and Well No. 5. Well No. 4 was removed from service in September 2010 under direction from the California Department of Public Health (CDPH) due to sporadic detection of total coliform, E. Coli and pseudomonas bacteria in the well. Because of the recurring water quality problems with Well No. 4, CDPH strongly recommended that the City abandon Well No. 4 and pursue construction of a replacement well. The current maximum production rate of the two existing wells is 2,300 gpm, which is less than the peak demand of 3,500 gpm. Well No. 3, the oldest well, was constructed in 1968, and is nearing the end of its useful life. In addition to the source capacity deficiency, the City's water system does not have any storage facilities and is unable to meet peak demand.

The reduction in water consumption that will occur due to the installation of water meters throughout the City will help alleviate the demand on the City's water system that currently lacks source capacity and has no storage at all. The State of California recognizes that individual water use behavior will play a role in the reverse of groundwater overdraft. Household water meters that accurately measure water use according to individual household practices and charge rates accordingly have been shown to significantly reduce the amount of water used. The City of San Joaquin supports the effort, and future state mandate, to reduce wasteful water use practices, a position which motivates the City's desire to install water meters at all of the approximately 644 single family residential water service connections within the City of San Joaquin. Being a disadvantaged community (according to the 2006-2010 American Community Survey, which shows median household income to be at 43.9 percent, well below the 80 percent threshold) the residents of San Joaquin are unable to finance installation of meters. (The City is listed in Table 4-3 of the IRWMP as a disadvantaged community.) Since local groundwater levels (reference Well #15S16E28A003M) have dropped approximately 35 feet from a water surface elevation of 114 feet in 1990 to 80 feet in 2010, averaging a drop of approximately 1.7 feet per year, the proposed project is a necessary step towards reducing groundwater overdraft and moving towards the sustainable management of groundwater in the area. It is estimated that the use of water meters will reduce pumping from the underlying aquifer by approximately 147 acre-feet per year.

Goals and Objectives:

The primary goals of the proposed project are to:

- Address the critical water supply and water quality need of a Disadvantaged Community within the region by modifying a well to existing contamination and provide augmentation to an inadequate water supply system that are needed to maintain adequate fire protection flows.
- Provide an estimated 20% reduction in groundwater pumping from conservation resulting from the installation of water meters
- Help a DAC address the requirement to install water meters.
- Further implementation of priority projects identified in the Authority's IRWMP

Agricultural practices that dominate the San Joaquin Valley and surround the City of San Joaquin impact both the supply and quality of water. So do residential, family and individual practices. Collectively, they all make an impact on the draw of groundwater in the San Joaquin Valley. This project addresses the individual household impact, which translates to city-wide impact, on the critical water supply of the residents of the City of San Joaquin.

Water meters have been proven to impact human behavior regarding the amount of water individuals and households (therefore entire urban and rural communities) consume and waste. Reducing the amount of water used will help to reverse the current overdraft of the groundwater used by City residents. The leadership of the City of San Joaquin has chosen to be proactive in this effort. They currently monitor and cite water waste. This approach, while important, is limited to obvious water waste that can be visually observed, such as flooding on the streets due to unattended backyard crop irrigation. Water meters take waste prevention a step further by providing a financial incentive to customers to minimize or eliminate wasteful practices and behaviors that are less visible, such as repairing leaky faucets, replacing malfunctioning toilets, or improving irrigation practices.

Since 1990, water usage has increased from 150 million gallons per year to over 260 millions of gallons per year, partly due to a nearly 30% increase in population between 2000 and 2010.

Purpose and Need:

The project goals and objectives are consistent with the Kings Basin Integrated Regional Water Management Plan (IRWMP), including:

- RG1 - Halt and ultimately reverse the current overdraft and provide for sustainable management of surface and groundwater. The overdraft within the region is evidenced by falling groundwater levels, and manifested by increasing costs of groundwater pumping and some groundwater degradation. The main specific long-term goal of the Kings Basin IRWMP, as well as other water management documents for the area, is to correct the overdraft and stabilize groundwater levels. The City of San Joaquin is dependent on groundwater as its sole source of supply to meet water demands. The installation of water meters is expected to result in a 20% water savings by consumers. Installation of meters will provide users with additional information regarding usage,

and promote conservation with metered usage rates. Reducing demand will reduce groundwater pumping required to meet demands within the water service area. The proposed project is therefore intended to maintain or increase the volume of groundwater available in the local aquifer.

- RG2 - Increase the water supply reliability, enhance operational flexibility, and reduce system constraints. The well rehabilitation will provide additional groundwater pumping capability to allow the City to meet peak fire flow demands if needed. The improvements will clean and correct a contaminated well and provide suitable water quality. This will improve the reliability of the water supply as well as enhance operational flexibility and reduce system constraints. The meter installation portion of the project will help the City better analyze, manage, and conserve the groundwater aquifer in the area. Information obtained from the meters will additionally allow for improved system understanding and operational adjustments to meet demands and educate users. This portion of the project will promote and provide water conservation and more efficient groundwater management.
- RG3 - Improve and protect water quality. Well #4 will be rehabilitated to eliminate contamination problems. This project will conserve water, and thus sustain supply of an overdrafted aquifer.

This project is consistent with the Kings Basin Measureable Objectives identified in Sections 5.2 and in Table 5-2 of the IRWMP, including:

- MO1 - Increasing amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years. This project includes conservation through the installation of water meters that will reduce groundwater pumping.
- MO2 - Identify opportunities and Projects. The project is included in the Authority's Project List, and well rehabilitation and conservation from meter installation are similar to other similar projects that have been successfully implemented in the region.
- MO4 – Increase average annual supply and reduce demand. The well rehabilitation will provide a water source that cannot currently be utilized because of contamination. The project will reduce demand through conservation that results when water meters are installed, and the resulting conservation will reduce groundwater pumping, helping to increase the available supply in the groundwater aquifer that the City is solely dependent upon.
- MO5 – Increase dry year supply. Reducing the overall pumping through conservation will sustain and increase the overall groundwater supply available for pumping, including in dry years.
- MO7 – Compile baseline water quality data for ground and surface water. The well rehabilitation of Well #4 will include water quality testing and active monitoring and data analysis at a location of the City that is currently not being pumped.
- MO8 - Encourage Best Management Practices, policies & education that protect water quality. The City will communicate to its customers regarding the project, describing water conservation from meters and its benefits to help educate customers.

- MO9 – Identify sources of water quality problems & promote/support solutions to improve water quality. The project includes well rehabilitation that has been successfully implemented within the region.
- MO13 – Increase public awareness of IRWMP efforts. The Authority will include the project in its public releases, Authority highlight documents, and on the Authority website in effort to communicate the projects and efforts of the Authority and IRWM in the region. The City will include clarification of the IRWMP funding source in its communication to customers.
- MO15 – Comply with SB x7-7. The project includes water meter installation.

The project is needed to:

- Address a critical water quality and water supply need of a DAC
- Provide well rehabilitation to a contaminated well
- Provide needed water conservation in an aquifer that is critically overdrafted
- Allow for the utilization of an existing well that cannot be used, which is critical to a system that does not have water adequate production to meet peak flow requirements
- Help protect and sustain the aquifer that is the sole source of supply for the DAC
- Address the requirement to meter service connections

Please also refer to Attachment 7 Technical Justification for a detailed description of the project need and supporting information.

Integrated Elements of Projects:

Bakman, the City of San Joaquin and the City of Kerman all have projects included in this application that include water meter installation. The three project proponents have collaborated on water meter types, compliance requirements and meter reading alternatives. The three have entered into a letter of intent (**Attachment 3n**) to consider project implementation alternatives to help reduce costs.

Completed Work:

A June 2011 CDPH memorandum (**Attachment 3t**) cited the need for additional well capacity. A CEQA Notice of Exemption (NOE) for the project has been prepared, completed and filed with the County of Fresno (**Attachment 3u**). Preliminary well rehabilitation requirements have been developed and a cost quotation provided (**Attachment 4h**).

Please also refer to Attachment 7 Technical Justification for a detailed description of the project need and supporting information.

Existing Data and Studies:

The City has completed several items, as described above as listed above. The City has contacted CDPH regarding the well rehabilitation and the requirements for re-operation of Well #4. CDPH has provided a letter (**Attachment 3t**) stating the requirements, and the City has received a quotation from an experienced well driller in order to estimate the possible construction costs (**Attachment 4h**). The City completed a Proposition 218 rate study and rate

increase in 2009. A copy of the report is included as **Attachment 3x**. Also included in **Attachment 3x** is the City's Water Conservation Strategy, including a discussion on water meters and the resulting conservation on page 8. A more detailed description of the technical justification is included in Attachment 7.

Project Map:

A project map is included as **Figure 3-7**.

Figure 3-7 City of San Joaquin Project Location Map

Project Timing and Phasing:

This project is a stand-alone project. The City of San Joaquin is committed to implementing well rehabilitation to provide water meters for the purpose of ground water conservation and reduction in groundwater overdraft as soon as possible. The installation of meters and implementation of customer billing will be coordinated with community water conservation education and outreach activities. The City plans to notify residents of actual water usage prior to charging metered rate so that residents have time to make leak repairs and adjust their household culture of water use so that rates will be as affordable as possible. The City will also take steps to discourage the disabling of water meters, by implementing policies such as penalty fees for disabled or damaged meters.

Tasks

The following workplan was developed based on recent experience by the City of San Joaquin, their consulting engineers and Authority staff who have recently implemented similar projects. All of the tasks required by the Grant PSP are listed and addressed below, even if no work under these tasks is required.

Task 1: Project Administration

This task will include the project administration related work involved in the development of the project. This task includes items such as meetings, coordination with stakeholders, developing partnerships, and overall project coordination. The City will review its financial reserves at the time of grant award and determine if it will be able to provide necessary capital to cover project costs while awaiting reimbursement from DWR. If additional funding is needed, the City will apply for short term financing from available sources such as the Rural Community Assistance Corporation and Self-Help Enterprises.

Work products for this task includes:

- Project meetings
- Coordination of stakeholders
- Project implementation and agreement preparation

Current Status: No work on this task has commenced.
Deliverables: Meeting minutes and other deliverables as required.

Task 2: Labor Compliance Program

This task includes adopting and enforcing a labor compliance program pursuant to California Labor Code and applicable laws. It is anticipated that a 3rd party labor compliance officer will be retained to develop the program and perform the required workplace inspections, reviews, and reporting. The labor compliance program will be in place prior to the award of the project's construction contract.

Current Status: No work on this task has commenced.
Deliverable: Submission of Labor Compliance Program

Task 3: Reporting

This task has been separated out for reference, but as has been done on other recent grants, DWR grant related reporting may be considered for inclusion under the Project Administration task if this project moves forward.

This task will include quarterly project reports and all other reporting obligations in accordance with the grant contract requirements. This task will also include preparation of a project draft and final project report. The report will summarize the project activities identified within this workplan, including a comparison of the scope, budget and schedule of the items performed. The draft report will be prepared and submitted to DWR for review and comment. Upon receipt of DWR comments, a final project report will be prepared and resubmitted to DWR. This task also includes modification to the Monitoring, Assessment, and Performance Measures (MAPM) prepared and included in **Attachment 6**. Upon completion of any needed revisions to the MAPM, it will be implemented and the efforts described within the MAPM will be documented.

Current Status: No work on this task has commenced.
Deliverables: MAPM modifications if required, preparation of pay requests, submission of quarterly, annual and final reports as specified in the Grant Agreement.

Task 4: Assessment and Evaluation

No additional assessment or evaluation work is anticipated for the project. Equipment consideration for the meter portion of the project, and well rehabilitation final requirements will be included in Task 5: Final Design.

Current Status: Well rehabilitation quotation received.
Deliverables: None anticipated.

Task 5: Final Design

This task will include finalization of the design plans and specifications for the well rehabilitation and preparation of bid solicitation requirements for the meter equipment.

Subtask 5.1 – Well Rehabilitation

This subtask will include finalizing bidding documents in accordance with CDPH approval requirements for the wellhead improvements. A preliminary set of plans and specifications will be prepared and submitted to CDPH for review and comment. Upon receipt of the comments, the plans will be finalized in preparation for contractor construction. The specifications will include the appropriate level of detail for a well rehabilitation including construction requirements, initial operation instructions and testing requirements.

Current Status: No work on this task has commenced.
Deliverables: Preliminary and Final Well Rehabilitation Plans and Specifications

Subtask 5.2 – Meters/Equipment

This task includes the preparation of bid documents for meter and AMR equipment procurement. Preliminary and final bid documents will be prepared for the City to purchase the meters and equipment required for installation. A separate bid set will be developed for the City to contract for meter installation. Meter Installation shall be in compliance with City of San Joaquin Improvement Standards.

Current Status: No work on this task has commenced.

Deliverables: Meter/Equipment procurement specifications, Meter Installation Bid Documents

Task 6: Environmental Documentation

The City has determined that the installation of meters is exempt from CEQA under Sections 15301 and 15302 of the CA Public Resources Code. The NOE (**Attachment 3u**) for the meter installation has been prepared, adopted and filed. The City also believes the well rehabilitation is also exempt from CEQA under Sections 21605 of the CA Public Resources Code, and will prepare the NOE for the well rehabilitation prior to construction. If it is determined that it is not exempt, the City will comply with CEQA guidelines, complete an initial study, and perform the appropriate documentation.

Current Status: NOE filed for meter installation.

Deliverables: CEQA documentation for the Well Rehabilitation

Task 7: Permitting

This task includes the required permitting efforts to complete the project development. The anticipated permits for the project are listed below. It is anticipated that the applications for the permits will commence after preliminary design plans have been approved and specifications are prepared.

- California Department of Public Health – Well Permit
- Fresno County – Road encroachment permit. The project will potentially require encroachment permits for the meter installations.
- San Joaquin Valley Air Pollution Control District – Regulation VIII Permit (Dust Control Plan) and Rule 9510 (Indirect Source Review)

  The project will not disturb more than five acres; therefore it will only require a Dust Control Plan be prepared and submitted to the San Joaquin Valley Air Pollution Control District.

  It is not anticipated that the project will be subject to Rule 9150, Indirect Source Review; however, a letter will be submitted to the SJVAPCD to verify the project's exemption.
- State Water Resources Control Board – 2009-0009-DWQ Construction General Permit (Storm Water Pollution Prevention Plan)

The project will possibly disturb more than one acre and, if so, will require a Storm Water Pollution Prevention Plan be prepared, submitted via SMARTS to the State Water Resources Control Board, and fully implemented.

Current Status: No work on this task has commenced. This task will be initiated after preliminary plans have been approved.
Deliverables: CDPH approval of well rehabilitation. All required permits.

Task 8: Construction Contracting

Subtask 8.1 Well Rehabilitation

Bid documents will be prepared for a licensed and experienced well driller to perform the required modifications to rehabilitate Well #4 as identified in the well rehabilitation specifications and CDPH requirements. This task also includes pre-bid meetings, answering questions during the bidding process, and evaluating submitted bids.

Current Status: No work on this task has commenced.
Deliverables: Advertisement for bids, Bid Canvass and evaluation of bids, contract award.

Subtask 8.2 Meter/Equipment

Bidding for the required meters and Automatic Meter Read (AMR) communication/collection system will be conducted. The City may consider ordering meters with other project proponents in the region. The bid solicitation will include meter installation by a licensed contractor. The bid solicitation will also include City acquisition of the meters and associated meter readers by the City.

Current Status: No work on this task has commenced.
Deliverables: Advertisement for bids, Bid Canvass and evaluation of bids, contract award separately for the meter installation. City procurement of meters and meter readers.

Task 9: Construction

Subtask 9.1 Well Rehabilitation

This task will include mobilization, well rehabilitation, performance testing and demobilization. City of San Joaquin standards and CDPH requirements will be required of the contractor to complete the task in accordance with the bid documents.

Current Status: No work on this task has commenced.
Deliverables: Evidence of completed well rehabilitation and CDPH approval

9.2 Meter Installation

Several days prior to construction, all residential properties within the work area are notified of the proposed work schedule and timelines of any anticipated affects to water service.

Thereafter, the contractor's construction tasks include location of water service lines to each property, and installation a meter box and lid. Follow up construction tasks include installation of water meters.

Once the contractor has received Notice to Proceed (NTP) for work within the designated contract area(s), contractor mobilization and site preparation will typically include: 1) notification of residents several days in advance of the work, and 2) and logging water service and proposed meter box locations. The work includes installation of the meter boxes and lids, meters.

Each residential meter is field tested and activated to perform a 'forced read' to ensure: each meter is functioning properly. This evaluation is performed for each residential meter prior to contractor demobilizing to the next property within the Contract Area.

Current Status: No work on this task has commenced.
Deliverables for this task include: Evidence of completed box and meter installation.

Task 10: Environmental Compliance/Mitigation/Enhancement

It is not anticipated that any additional environmental compliance or mitigation measures will be required for this project.

Current Status: No work on this task has commenced.
Deliverables: None anticipated.

Task 11: Construction Administration

This task includes construction observation efforts and preparation of record drawings, to be performed by a qualified inspector. A qualified inspector will provide construction observation to monitor the installation of the meters. The City of San Joaquin (LCSD) will consider contracting construction administrative and reporting duties to Self-Help Enterprises (SHE). SHE has experience in administering other DWR programs such as the Infrastructure Rehabilitation Program and Water Use Efficiency Program as well as other state and federally funded water project funding. Construction management activities will be conducted by the consulting civil engineer for the project. The inspector will make periodic visits to the project site during construction. Other roles of the inspector will include: Organize and attend kickoff meetings, attend weekly meetings with contractors, review submittals, process monthly payment requests, and review contract change orders requests. Upon completion of construction, the design drawings will be modified to reflect construction conditions using information provided by the contractor. The drawings will be signed by a professional engineer.

Current Status: Preliminary discussions with SHE regarding assistance have occurred.
Deliverables include: Daily construction observation and reporting, review of submittals, contractor progress payment approval and change order review, and record drawings.

Task 12 – On-Going Monitoring

This task includes on-going monitoring and operation of the project for many years following completion in compliance with the Monitoring, Assessment and Performance Measures as required in the IRWM Guidelines and more particularly described in **Attachment 6** of this application. The ongoing monitoring and operation/maintenance of the project includes efforts after initial project completion and operation. These efforts will be completed by City staff.

Current Status: No work on this task has commenced.
This task includes two subtasks:

Subtask 12.1 – On-going Monitoring

Utilizing the MAPM described in **Task 3**, the on-going monitoring will include regular monitoring of water deliveries, meter accuracy, well extraction, groundwater levels, and groundwater quality. Monitoring efforts provide useful information for properly operation of the rehabilitated well and water conservation efforts. This task is shown for a short duration on the project schedule only because of space on the schedule. Annual monitoring reports will be prepared in accordance with the future Monitoring Plan.

Work products for this task include:

- Monitoring of well operations and meter readings and operation

Subtask 12.2 – On-going Operation and Maintenance.

On-going operation and maintenance will include well and equipment maintenance, and water meter maintenance. Ongoing operation and maintenance efforts will extend for the life of the project. This task is shown for a short duration on the project schedule only because of space on the schedule.

Work products for this task include:

- Ongoing Operation and Maintenance of facilities

Deliverables to DWR for this task will include:

- Annual Report of Operations including the MAPM listed in **Task 3** and described in **Attachment 6**.

Project E: City of Kerman Residential Water Meter Project

Introduction

This work plan describes the City of Kerman residential Water Meter Project Phase III being submitted for Proposition 84 grant funding consideration. The completion of this project includes installation of approximately 665 water meters, continuing the City of Kerman water meter installation project and allowing the majority of water services within the City of Kerman water service area to be metered and charged on a metered rate.

This project was presented to the Upper Kings Basin Integrated Regional Water Management Authority (UKBIRWMA) Advisory Committee. The Advisory Committee reviewed the project and found it to be consistent with the goals and objectives of the IRWMP and able to provide increase benefits to the other projects. The UKBIRWMA Board of Directors approved the project for inclusion on April 18, 2012.

The primary goals of the proposed project are to:

- Address the critical water supply and water quality need of a Disadvantaged Community within the region by modifying a well to existing contamination and provide augmentation to an inadequate water supply system that are needed to maintain adequate fire protection flows.
- Provide an estimated 20% reduction in groundwater pumping from conservation resulting from the installation of water meters
- Help a DAC address the requirement to install water meters.
- Further implementation of priority projects identified in the Authority's IRWMP

Agricultural practices that dominate the San Joaquin Valley and surround the City of San Joaquin impact both the supply and quality of water, as do residential, family and individual practices. Collectively, they all make an impact on the draw of groundwater in the San Joaquin Valley. This project addresses the individual household impact, which translates to city-wide impact, on the critical water supply of the residents of the City of San Joaquin.

Water meters have been proven to impact human behavior regarding the amount of water individuals and households (therefore entire urban and rural communities) consume and waste. Reducing the amount of water used will help to reverse the current overdraft of the groundwater used by City residents. The leadership of the City of San Joaquin has chosen to be proactive in this effort. They currently monitor and cite water waste. This approach, while important, is limited to obvious water waste that can be visually observed, such as flooding on the streets due to unattended backyard crop irrigation. Water meters take waste prevention a step further by providing a financial incentive to customers to minimize or eliminate wasteful practices and behaviors that are less visible, such as repairing leaky faucets, replacing malfunctioning toilets, or improving irrigation practices.

Since 1990, water usage has increased from 150 million gallons per year to over 260 millions of gallons per year, partly due to a nearly 30% increase in population between 2000 and 2010.

Goals and Objectives:

The primary goals of the proposed project are to:

- Provide an estimated 20% reduction in groundwater pumping from conservation resulting from the installation of water meters
- Help the City address the State requirement to install water meters.
- Reduce the groundwater overdraft for a City that is solely dependent on groundwater supply to meet demands. The groundwater level within the City declines, on average, 2.1 feet per year
- Promote water conservation
- Further implementation of priority projects identified in the Authority's IRWMP

Purpose and Need:

The project goals and objectives are consistent with the Kings Basin Integrated Regional Water Management Plan (IRWMP), including:

- RG1 - Halt and ultimately reverse the current overdraft and provide for sustainable management of surface and groundwater. The overdraft within the region is evidenced by falling groundwater levels, and manifested by increasing costs of groundwater pumping and some groundwater degradation. The main specific long-term goal of the Kings Basin IRWMP, as well as other water management documents for the area, is to correct the overdraft and stabilize groundwater levels. The City of San Joaquin is dependent on groundwater as its sole source of supply to meet water demands. The installation of water meters is expected to result in a 20% water savings by consumers. Installation of meters will provide users with additional information regarding usage, and promote conservation with metered usage rates. Reducing demand will reduce groundwater pumping required to meet demands within the water service area. The proposed project is therefore intended to maintain or increase the volume of groundwater available in the local aquifer.
- RG2 - Increase the water supply reliability, enhance operational flexibility, and reduce system constraints. The well rehabilitation will provide additional groundwater pumping capability to allow the City to meet peak fire flow demands if needed. The improvements will clean and correct a contaminated well and provide suitable water quality. This will improve the reliability of the water supply as well as enhance operational flexibility and reduce system constraints. The meter installation portion of the project will help the City better analyze, manage, and conserve the groundwater aquifer in the area. Information obtained from the meters will additionally allow for improved system understanding and operational adjustments to meet demands and educate users. This portion of the project will promote and provide water conservation and more efficient groundwater management.

- RG3 - Improve and protect water quality. Well #4 will be rehabilitated to eliminate contamination problems. This project will conserve water, and thus sustain supply of an overdrafted aquifer.

This project is consistent with the Kings Basin Measureable Objectives identified in Sections 5.2 and in Table 5-2 of the IRWMP, including:

- MO1 - Increasing amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years. This project includes conservation through the installation of water meters that will reduce groundwater pumping.
- MO2 - Identify opportunities and Projects. The project is included in the Authority's Project List, and well rehabilitation and conservation from meter installation are similar to other similar projects that have been successfully implemented in the region.
- MO4 – Increase average annual supply and reduce demand. The well rehabilitation will provide a water source that cannot currently be utilized because of contamination. The project will reduce demand through conservation that results when water meters are installed, and the resulting conservation will reduce groundwater pumping, helping to increase the available supply in the groundwater aquifer that the City is solely dependent upon.
- MO5 – Increase dry year supply. Reducing the overall pumping through conservation will sustain and increase the overall groundwater supply available for pumping, including in dry years.
- MO7 – Compile baseline water quality data for ground and surface water. The well rehabilitation of Well #4 will include water quality testing and active monitoring and data analysis at a location of the City that is currently not being pumped.
- MO8 - Encourage Best Management Practices, policies & education that protect water quality. The City will communicate to its customers regarding the project, describing water conservation from meters and its benefits to help educate customers.
- MO9 – Identify sources of water quality problems & promote/support solutions to improve water quality. The project includes well rehabilitation that has been successfully implemented within the region.
- MO13 – Increase public awareness of IRWMP efforts. The Authority will include the project in its public releases, Authority highlight documents, and on the Authority website in effort to communicate the projects and efforts of the Authority and IRWM in the region. The City will include clarification of the IRWMP funding source in its communication to customers.
- MO15 – Comply with SB x7-7. The project includes water meter installation.

The project is needed to:

- Address a critical water quality and water supply need of a DAC
- Provide well rehabilitation to a contaminated well
- Provide needed water conservation in an aquifer that is critically overdrafted
- Allow for the utilization of an existing well that cannot be used, which is critical to a system that does not have water adequate production to meet peak flow requirements

- Help protect and sustain the aquifer that is the sole source of supply for the DAC
- Address the requirement to meter service connections

The project addresses the challenges faced by the City due to declining groundwater levels. Groundwater levels have gradually declined in the Kerman area and throughout the Upper Kings Basin. The project will encourage conservation and aid in the restoration of groundwater supplies by increasing the residents' awareness of their individual water use. Another benefit of the meter system currently in use by the City is the ability to detect leaks on individual water services allowing the City to work with the property owners to make the necessary repairs. Without this unique ability much of the water wasting would go undetected.

Please also refer to Attachment 7 Technical Justification for a detailed description of the project need and supporting information.

Integrated Elements of Projects:

Bakman, the City of San Joaquin and the City of Kerman all have projects included in this application that include water meter installation. The three project proponents have collaborated on water meter types, compliance requirements and meter reading alternatives. The three have entered into a letter of intent (**Attachment 3n**) to consider project implementation alternatives to help reduce costs.

Completed Work:

The City of Kerman has installed water meters on 58% of the residential services within the City. The City has developed the necessary engineering and standards for this purpose. In addition, they have purchased the necessary hardware and software to operate the AMR system and integrate the acquired data into the monthly billing system. The personnel involved with reading the meters and downloading the data have been sufficiently trained to operate the system efficiently and accurately. A City utility rate study was conducted by a consulting firm (see **Attachment 3x**), and metered rates were established based on minimum funding requirements to operate the water system and allow for an operating reserve.

Existing Data and Studies:

The City of Kerman Urban Water Management Plan describes the historic water use of Kerman and also projects future water demand. To improve and ensure water supply and reliability, and in accordance with Upper Kings Basin IRWMP goals and mandatory requirements, the City of Kerman has implemented a multi-year project for the installation of approximately 3,200 residential water meters of which, 1,722 have been installed in phases I and II. Work related to funding under this grant is specific to the installation of meters at a portion of the remaining unmetered services. As is all work related to the overall project, each residential property within the project area will involve the installation of a water meter box and lid, water meter, an automatic meter reading device, and setting the customer's account to the existing AMR system currently in use.

The plan also illustrates the savings in water pumped in years 2009 and 2010. **(Exhibit #4)** Over the span of these two years the City installed water meters on 58% of the residential services and began billing on a metered rate.

Project Map:

A project map is included as **Figure 3-8**. The project map shows the portion of the City to be metered by this project.

Figure 3-8 Kerman Project location map

Project Timing and Phasing:

This project is for installation of meters at a portion of the remaining unmetered services within the City. This project is scalable however, and if full funding is not available, the City can implement a reduced number of meters.

Tasks

The following workplan was developed based on recent experience by the City of San Joaquin, their consulting engineers and Authority staff who have recently implemented similar projects. All of the tasks required by the Grant PSP are listed and addressed below, even if no work under these tasks is required.

Task 1: Project Administration

This task will include the project administration related work involved in the development of the project. This task includes items such as meetings, coordination with stakeholders, developing partnerships, and overall project coordination. The City will review its financial reserves at the time of grant award and determine if it will be able to provide necessary capital to cover project costs while awaiting reimbursement from DWR. If additional funding is needed, the City will apply for short term financing from available sources such as the Rural Community Assistance Corporation and Self-Help Enterprises.

Work products for this task includes:

- Project meetings
- Coordination of stakeholders
- Project implementation and agreement preparation

Current Status: No work on this task has commenced.
Deliverables: Meeting minutes and other deliverables as required.

Task 2: Labor Compliance Program

This task includes adopting and enforcing a labor compliance program pursuant to California Labor Code and applicable laws. It is anticipated that a 3rd party labor compliance officer will be retained to develop the program and perform the required workplace inspections, reviews, and reporting. The labor compliance program will be in place prior to the award of the project's construction contract.

Current Status: No work on this task has commenced.
Deliverable: Submission of Labor Compliance Program

Task 3: Reporting

This task has been separated out for reference, but as has been done on other recent grants, DWR grant related reporting may be considered for inclusion under the Project Administration task if this project moves forward.

This task will include quarterly project reports and all other reporting obligations in accordance with the grant contract requirements. This task will also include preparation of a project draft and final project report. The report will summarize the project activities identified within this workplan, including a comparison of the scope, budget and schedule of the items performed. The draft report will be prepared and submitted to DWR for review and comment. Upon receipt of DWR comments, a final project report will be prepared and resubmitted to DWR. This task also includes modification to the Monitoring, Assessment, and Performance Measures (MAPM) prepared and included in **Attachment 6**. Upon completion of any needed revisions to the MAPM, it will be implemented and the efforts described within the MAPM will be documented.

Current Status: No work on this task has commenced.
Deliverables: MAPM modifications if required, preparation of pay requests, submission of quarterly, annual and final reports as specified in the Grant Agreement.

Task 4: Assessment and Evaluation

No additional assessment or evaluation work is anticipated for the project. The City has already completed the necessary planning, design and engineering work for the project. Currently 58% of the City's residential customers are on metered service.

Current Status: In preparation for having a fully metered water distribution system the following work items were previously completed:

- A City utility rate study was conducted and metered water service rates were established and are in current use **(Attachment 3v)**
- Water meter products were investigated and a City standard water meter and radio-read system was established and is currently in use
- An automated billing system utilizing monthly reading data was purchased and is currently being used
- Public Works Water Division Employees and City Finance Employees were trained in all aspects of the water meter reading system, water meter data acquisition and integration

Deliverables: None anticipated.

Task 5: Final Design

The City will prepare a bid solicitation package for meter installation in accordance with the requirements of prior meter installations by the City. This task will include the following:

- A field inventory will be conducted of all remaining residential unmetered locations and a list will be developed listing materials and conditions
- A listing of each location will be prepared
- A map will be prepared indicating where the water service on each lot is located
- All meters will be installed per City Standard W-2 **(Attachment 3w)**
- Bid Specifications and bid documents will be prepared

Current Status: No work on this task has commenced.
Deliverables: Completion of bid package information.

Task 6: Environmental Documentation

The City has determined that the installation of meters is exempt from CEQA under Sections 15301 and 15302 of the CA Public Resources Code. The City will prepare the NOE prior to construction and file with the County. If it is determined that it is not exempt, the City will comply with CEQA guidelines, complete an initial study, and perform the appropriate documentation.

Current Status: Preliminary determination of CEQA exemption
Deliverables: CEQA documentation

Task 7: Permitting

Encroachment permits from the County of Fresno may be required for work within the road right of way associated with meter installation improvements. The contractor is responsible for obtaining all required permits related to the overall project. These included permits related to the development of project Surface Water Pollution Prevention Program (SWPPP's) and street or other right-of-way work and/or encroachment permits necessary to complete the work within the contract area

This task includes the required permitting efforts to complete the project development. The anticipated permits for the project are listed below. It is anticipated that the applications for the permits will commence after preliminary design plans have been approved and specifications are prepared.

- Fresno County – Road encroachment permit. The project will potentially require encroachment permits for the meter installations.
- San Joaquin Valley Air Pollution Control District – Regulation VIII Permit (Dust Control Plan) and Rule 9510 (Indirect Source Review)

  The project will not disturb more than five acres; therefore it will only require a Dust Control Plan be prepared and submitted to the San Joaquin Valley Air Pollution Control District.

  It is not anticipated that the project will be subject to Rule 9150, Indirect Source Review; however, a letter will be submitted to the SJVAPCD to verify the project's exemption.
- State Water Resources Control Board – 2009-0009-DWQ Construction General Permit (Storm Water Pollution Prevention Plan)

  The project will possibly disturb more than one acre and, if so, will require a Storm Water Pollution Prevention Plan be prepared, submitted via SMARTS to the State Water Resources Control Board, and fully implemented.

Current Status: No work on this task has commenced. This task will be initiated after preliminary plans have been approved.
Deliverables: All required permits.

Task 8: Construction Contracting

Plans and Specifications delineating the scope of the project and providing in detail all aspects of the work to be completed inclusive of material, equipment and necessary skills and testing will be completed and approved. The following is a list of steps to be followed for the bidding process:

- *Approval to commence the bidding process from the Kerman City Council*
- *Initiate advertise for bids*
- *Conduct pre-bid meeting and job site walk through*
- *Prepare bid package addenda as required*
- *Conduct public bid opening*
- *Evaluate bids and establish lowest responsible bid*
- *Execute contract*
- *Conduct preconstruction meeting*
- *Review and respond to contractors submittals*
- *Issue Notice to Proceed*

Current Status: No work on this task has commenced.
Deliverables: Advertisement for bids, Bid Canvass and evaluation of bids, contract award separately for the meter installation, City procurement of meters.

Task 9: Construction

This task includes installation of water meters. Several days prior to construction, all residential properties within the work area are notified of the proposed work schedule and timelines of any anticipated affects to water service. Thereafter, the contractor's construction tasks include location of water service lines to each property, and installation a meter box and lid. Follow up construction tasks include installation of water meters.

Once the contractor has received Notice to Proceed (NTP) for work within the designated contract area(s), contractor mobilization and site preparation will typically include: 1) notification of residents several days in advance of the work, and 2) and logging water service and proposed meter box locations. The work includes installation of the meter boxes and lids, meters.

Each residential meter is field tested and activated to perform a 'forced read' to ensure: each meter is functioning properly. This evaluation is performed for each residential meter prior to contractor demobilizing to the next property within the Contract Area.

Current Status: No work on this task has commenced.
Deliverables for this task include: Evidence of completed box and meter installation.

Task 10: Environmental Compliance/Mitigation/Enhancement

It is not anticipated that any additional environmental compliance or mitigation measures will be required for this project.

Current Status: No work on this task has commenced.
Deliverables: None anticipated.

Task 11: Construction Administration

This task includes construction observation efforts and preparation of record drawings, to be performed by a qualified inspector. A qualified inspector will provide construction observation to monitor the installation of the meters. Construction management activities will be conducted by the consulting civil engineer for the project. The inspector will make periodic visits to the project site during construction. Other roles of the inspector will include: Organize and attend kickoff meetings, attend weekly meetings with contractors, review submittals, process monthly payment requests, and review contract change orders requests. Upon completion of construction, the design drawings will be modified to reflect construction conditions using information provided by the contractor. The drawings will be signed by a professional engineer.

Current Status: No work on this task has commenced.
Deliverables include: Daily construction observation and reporting, review of submittals, contractor progress payment approval and change order review, and record drawings.

Task 12 – On-Going Monitoring

This task includes on-going monitoring and operation of the project for many years following completion in compliance with the Monitoring, Assessment and Performance Measures as required in the IRWM Guidelines and more particularly described in **Attachment 6** of this application. The ongoing monitoring and operation/maintenance of the project includes efforts after initial project completion and operation. These efforts will be completed by City staff.

Current Status: No work on this task has commenced.
This task includes two subtasks:

Subtask 12.1 – On-going Monitoring

Utilizing the MAPM described in **Task 3**, the on-going monitoring will include regular monitoring of water deliveries, meter accuracy, well extraction, groundwater levels, and groundwater quality. Monitoring efforts provide useful information for properly operation of the rehabilitated well and water conservation efforts. This task is shown for a short duration on the project schedule only because of space on the schedule. Annual monitoring reports will be prepared in accordance with the future Monitoring Plan.

Work products for this task include:

- Monitoring of well operations and meter readings and operation

Subtask 12.2 – On-going Operation and Maintenance.

On-going operation and maintenance will include well and equipment maintenance, and water meter maintenance. Ongoing operation and maintenance efforts will extend for the life of the project. This task is shown for a short duration on the project schedule only because of space on the schedule.

Work products for this task include:

- Ongoing Operation and Maintenance of facilities

Deliverables to DWR for this task will include:

- Annual Report of Operations including the MAPM listed in **Task 3** and described in **Attachment 6**.