ATTACHMENT 3
Work Plan

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3 Attachment 3 - Work Plan

Attachment 3 is mandatory. See Exhibit A for detailed guidance on preparing this attachment. There is no page limitation for Attachment 3; however, applicants are encouraged to be clear and concise. See Exhibit A for an outline of tasks that will also meet the major tasks listed in the Budget in Exhibit B.

The Work Plan contains summary descriptions of all the projects constituting the Proposal and tasks necessary to complete each project in the Proposal. The Work Plan must be sufficiently detailed to demonstrate that the Proposal is ready for implementation, and should include a brief discussion of the supporting studies, data, and resources for each project, to ensure implementation of the proposal is based on sound scientific and technical principles. Deliverables should be identified in the Work Plan. For this solicitation, the scoring criteria for grant applications will include points for applications where the Work Plan includes Data Management and Monitoring Deliverables that are consistent with the IRWM Plan Standards and Guidance - Data Management Standard, contained in the IRWM Guidelines. The Work Plan should identify linkages between and among projects that are critical to the success of the regional effort. The Work Plan tasks must also be consistent with the major tasks and sub-tasks identified in the Budget, Attachment 4 and Schedule, Attachment 5.

Attachment 3, Work Plan, should consist of two parts: an introduction and proposed work. Based on the goals and objectives of the Proposal, a description of all work that will be necessary to complete the Proposal must be included in this attachment. The Work Plan must include a summary of the entire Proposal as well as details for each project within the Proposal. Any supporting documentation necessary to substantiate work already completed should be submitted as appendices to Attachment 3.

3.1 Introduction

As discussed in Attachment 1, the Kern IRWM Group has selected five projects through the project prioritization process described in the IRWMP. These projects will implement water management strategies to meet the Region's objectives as well as the Statewide Priorities as discussed in Attachment 9. The projects included in this Proposal provide many benefits including increasing water supply and reliability, increasing water conservation, improving operational efficiency, improving water quality, promoting resource stewardship, providing flood control, and helping to meet the critical water supply and water quality needs of multiple disadvantaged communities.

3.1.1 Project List

A table of specific projects in the Proposal, including, an abstract of each project, the current status of each project in terms of percent completion of design, and implementing agencies.

Table 3.1-1 summarizes specific projects of this Proposal. The table includes an abstract of each project, current status of each of the percent completion of design, and the implementing agencies. These projects are described in greater detail in listed sections.

Table 3.1-1: Projects Submitted in the Kern IRWM Implementation Grant Proposal

Project Title	Implementing Agencies	Project Summary	Design Status (% Complete)	Work Plan Section No.
Urban Bakersfield Water Use Efficiency Project	KCWA Improvement District No. 4 (Proponent), City of Bakersfield	This project offers high-efficiency devices and promotes best water conservation practices to improve indoor and outdoor water use efficiency of the City's residential, commercial and municipal customers. The project represents the initiation of integrated water conservation programs, as well as the continuation of existing efforts, to bring the Greater Bakersfield subregion, which contains the Kern IRWM Region's largest urban areas, into compliance with AB 1420 and SBX7-7.	N/A	3.2
Tehachapi Regional Water Use Efficiency Project	TCCWD	This project will reduce indoor water demand in the Tehachapi-Cummings County Water District service area. The project represents initiation of water conservation programs to bring the urbanized areas of the Tehachapi area into compliance with a variety of state initiatives. It will benefit a disadvantaged community (the City of Tehachapi, a DAC) by implementing a program for directly installing, free of charge, residential and commercial conservation fixtures that exceed current and upcoming State requirements, in the City of Tehachapi. The project also provides rebates for efficient toilets for the entire region.	N/A	3.3
Snyder Well Intertie Pipeline for Irrigation and Nitrate Removal Project	City of Tehachapi (Proponent), TCCWD	This project will connect a City of Tehachapi well that produces groundwater with high nitrate concentrations to TCCWD's raw water pipeline system to deliver non-potable water for irrigation of nearby school athletic fields as well as crops, thereby decreasing water demands on the City's water system. The nitrate in the water produced by the Snyder Well is beneficial for crop irrigation; by extracting high nitrate groundwater from the aquifer, the nitrate levels in the underlying groundwater may decline over time.	30%	3.4
Kern Water Bank Recharge and Recovery Enhancement Project	Kern Water Bank Authority	Project will entail constructing an additional 189 acres of recharge ponds and three recovery wells. The project represents the continued improvements in the investments the Authority has made in groundwater banking programs, in particular to increase the intake capacity to take advantage of available wet year water supplies and store them for recovery in later dry periods.	30%	3.5
Sycamore Road Flood Reduction Project	City of Arvin	Project will benefit a disadvantaged community by constructing sub-surface stormwater infrastructure in an area that experiences flooding on a regular basis. The current conveyance on the road surface is insufficient for local flood flows and dangerous.	15%	3.6

3.1.1 Goals and Objectives of the Proposal

Objectives for the Kern Region IRWMP are categorized into five resource categories**: increase water supply, improve operational efficiency, improve water quality, promote land use planning and resource stewardship, and improve regional flood management**. The development of these objectives and a detailed explanation of the objective as well as a description of the means of measuring progress toward achieving each objective can be found in Section 10.2 of the Plan. Additionally, Attachment 9 of this Proposal provides a project-by-project description of how the proposed projects also do a wonderful job of furthering the IRWMP Program Preferences as well as IRWM Program Statewide Priorities.

The projects selected and described in the following sections are all excellent examples of projects that work toward meeting Plan objectives and will each provide significant progress toward meeting many of the objectives upon implementation.

The Urban Bakersfield and the Tehachapi Regional Water Use Efficiency Projects will help meet water supply needs through the implementation of cost effective water conservation measures. These projects will improve operational efficiencies of both water and wastewater services and help to insure good resource stewardship.

The Kern Water Bank Recharge and Recovery Enhancement Project provides an alternative source of dry year water supplies, improves regional groundwater quality, provides a safe place to make to store floodwater for future beneficial use, captures water otherwise destined for non-use, and improves the use and stewardship of this limited natural resource.

The purpose of the Snyder Well Intertie Pipeline for Irrigation and Nitrate Removal Project is to re-purpose a valuable City asset, the Snyder Well, to the benefit of the City, TCCWD, and the local school district. The project will improve the water supply reliability, it will also improve operational efficiency by delivering non-potable water for irrigation of athletic fields/crops, and it will remove nitrate-laden water from the aquifer and applying it where the nitrate can be beneficially used. The project will also produce improvement in the quality of the subject wells and their aquifer (particularly the Snyder and Mojave Wells) by lowering nitrate levels over time.

The Sycamore Road Flood Reduction Project will consist of constructing underground storm drainage facilities to convey stormwater that currently floods areas along Sycamore Road to a regional stormwater retention basin. The Project will assist the City of Arvin in their ability to effectively manage flood water from the local watershed systems and thus improve regional flood management. The Project will also reduce the risk of property damage and life/safety concerns.

A description of each project with detailed information about the work plan for implementation as well as schedules and budgets are provided in Attachments 3, 4, and 5. The reader will see how these projects have been well thought through, are clearly implementable within the context and timeframe of this grant program, and will achieve quantifiable benefits consistent with the Goals and Objectives of the Kern IRWMP as well as further Program Preferences and Statewide Priorities.

3.1.2 Purpose and Need

A description of the purpose and need of the Proposal and how it addresses the adopted IRWM Plan's goals and objectives.

Table 3.1-2 provides a summary of the Kern IRWM Plan objectives that are met by through this Proposal by project. How these projects meet these objectives is further described in the individual Work Plan Sections.

3.1.1 Integrated Elements of Projects

A description of synergies or linkages between projects that result in added value, or require coordinated implementation or operation.

A discussion of the integrated nature and/or aspects of each project is included in each of the project Work Plan Sections including a discussion of how each project is an integrated part of the Plan meeting Plan objectives.

The nature of the Plan's project selection process creates a level of integration of projects leading to the best projects meeting the Region's goals and objectives being selected. You will see a variety of projects selected for this application that address more than one of the Region's needs yet with a clear priority for its most pressing needs (water supply and water supply reliability).

3.1.2 Regional Map

Detailed maps that show, at a minimum, the location of activities or facilities of the project(s), the water resources (groundwater or surface water) that will be affected; DACs within the region; and proposed monitoring locations.

A map showing the location of the Kern IRWM Group boundary, proposed projects, and the location DACs is provided in **Figure 3.1-1**. Groundwater basins that are affected by the projects within this Proposal are shown in **Figures 1-1** and **1-2** in Attachment 1. Proposed monitoring locations are shown on the individual project maps later in the Project Work Plan Sections.

Table 3.1-2: Kern IRWMP Objectives Addressed by Proposal

Kern IRWMP Objectives	Urban Bakersfield Water Use Efficiency Project	Tehachapi Regional Water Use Efficiency Project	Snyder Well Intertie Pipeline for Irrigation and Nitrate Removal Project	Kern Water Bank Recharge and Recovery Enhancement Project	Sycamore Road Flood Reduction Project
Increase Water Supply (WS)					
Through cooperation and collaboration with other regions restore water supplies to levels that will mitigate for water lost from the Region and eliminate overdraft				X	
Pursue and implement cost effective water use efficiency programs	X	X			
Increase water storage capacity in the region by increasing recharge acreage and expanding groundwater banking programs before all prime recharge land has been developed 8,000 recharge acres as soon a practicable				X	
Increase/augment water supplies to meet region demands (e.g., M&I, agricultural, environmental) by 2050.	X	X		X	
Improve Operational Efficiency (OE)					
Optimize local management of water resources to improve water supply reliability over the planning horizon	X	X	X	X	
Improve Water Quality (WQ)					
Identify and preserve prime recharge areas in the Kern fan area and other areas				X	
Improve water quality for DACs and the watershed over the planning horizon		X	X		
Continue to provide drinking water that meets or exceeds water quality standards; and support efforts to attain appropriate standards throughout the planning horizon			X		

Kern IRWMP Objectives	Urban Bakersfield Water Use Efficiency Project	Tehachapi Regional Water Use Efficiency Project	Snyder Well Intertie Pipeline for Irrigation and Nitrate Removal Project	Kern Water Bank Recharge and Recovery Enhancement Project	Sycamore Road Flood Reduction Project
Maximize the use of lesser quality water for appropriate uses (landscaping, certain ag crops, "aesthetic" projects) throughout the planning horizon			X		
Promote Land Use Planning and Resource Stewardship (LU)					
Increase educational opportunities to improve public awareness of water supply, conservation, and water quality issues throughout the planning horizon	X	X			
Improve and coordinate integrated land use planning to support stewardship of environmental resources, such as local rivers and streams and the Kern Fan, and integrate with habitat conservation plans and other ongoing planning efforts from this point forward				X	
Preserve and improve ecosystem/watershed health throughout the planning horizon				X	
Improve Regional Flood Management (FM)					
Improve regional flood management by addressing preparedness, response, and post flood actions throughout the planning horizon					X
Identify and promote innovative flood management projects to protect vulnerable areas					X
Plan new developments to minimize flood impacts from this point forward					X

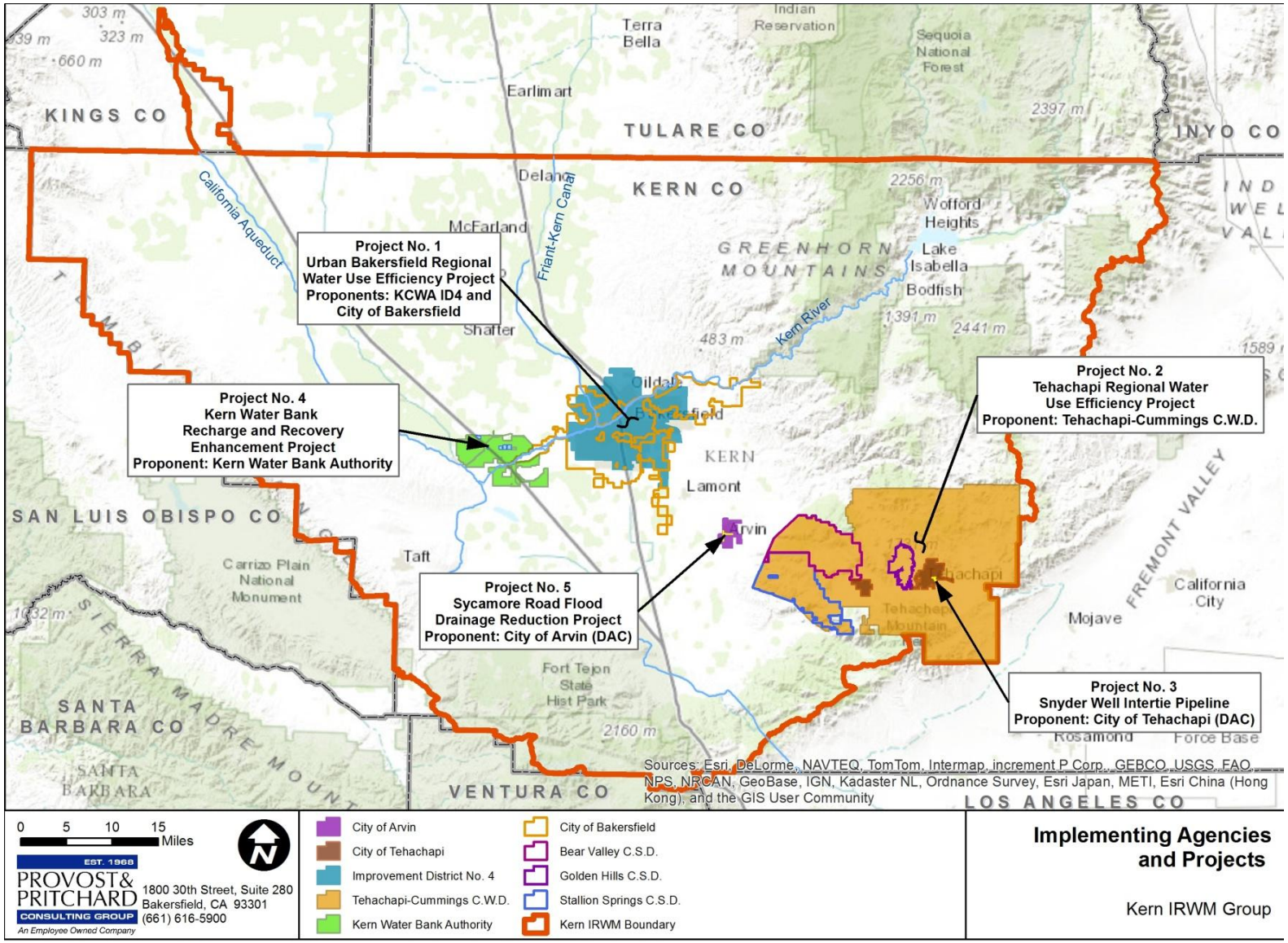


Figure 3.1-1: Overview Map and DACs

3.1.3 Completed Work

A description of the work that has been completed or is expected to be completed prior to the grant award date. For example, if CEQA/NEPA and other environmental compliance efforts have been completed discuss the environmental determination made by the lead agency and the documents that were filed.

Descriptions of the completed work for the projects are contained in the later Work Plan Sections (3.2 through 3.6). The work completed for each project has been sufficient to determine the feasibility of the project and the work tasks required to implement the project. These sections also discuss the work that is expected to be completed prior to the grant award. Many of the projects have completed portions of California Environmental Quality Act (CEQA) compliance, land acquisition, permitting, and preliminary design.

3.1.4 Existing Data and Studies

A brief discussion of the data that have been collected and studies that have been performed that support the project(s)' site location, feasibility, and technical methods. If necessary, include references to the page locations of the studies or reports that support the claims made in this discussion.

Existing data and studies are listed in the project Work Plan Sections. Depending upon the project, portions of CEQA documentation, feasibility studies, geotechnical studies, and preliminary design have been completed and are listed in these sections.

3.1.5 Project Maps

Provide a site map showing the project(s) geographical location and the surrounding work boundaries.

Detailed project maps are included in each of the project Work Plan Sections.

3.1.6 Project Timing and Phasing

If the proposed project(s) is part of a multi-phased project complex, provide a description that demonstrates that the proposal can operate on a standalone basis, i.e., can be fully functional without implementation of the subsequent projects.

Where requested funding is for a component of a larger project, this section must describe all of the components of the larger project complex and identify project elements the IRWM Implementation grant is proposed to fund. Linkages to any other projects that must be completed first or that are essential to obtain the full benefits of the Proposal must be discussed.

A discussion of the timing and phasing for each project is included in each of the project Work Plan Sections. Each project is ready to proceed with final design and construction (or implementation in the case of the Water Use Efficiency Projects) if grant funding is awarded.

3.2 Urban Bakersfield Water Use Efficiency Project

3.2.1 Introduction

An aggressive conservation program is essential to integrated regional water management by providing reliable and quantifiable demand reduction that improves the Region's capacity to manage drought scenarios and other strains on imported and Regional water supplies. The proposed Urban Bakersfield Water Use Efficiency Project (UBAK or Project) will leverage and/or expand existing water conservation incentive programs, municipal irrigation upgrades and education efforts. The Program is a comprehensive and complimentary suite of water conservation efforts designed to address the key water uses in the City of Bakersfield (City) and assist the City and Improvement District No. 4 (ID4) in meeting their state regulatory requirements identified by SBX7-7 and AB 1420. The Program includes a suite of program elements that promote high-efficiency devices and best water conservation practices to improve indoor and outdoor water use efficiency of the City's residential, commercial and municipal customers through both specific efficiency projects and educational opportunities.

In addition to reducing potable demand, the program provides secondary benefits, which include a reduction in energy consumption and associated indirect greenhouse gas emissions, as well as a reduction in non-point source pollution.

The three program elements proposed will provide quantifiable and sustainable water, they include:

1. ***Municipal Irrigation Controller Program (UBAK1)***
2. ***Residential and Commercial Water Conservation Incentive Program (UBAK2)***
3. ***Education Program (UBAK3)***

Combined, these program elements target significant indoor and outdoor end uses of water in residential, commercial and municipal sectors and are estimated to achieve approximately 2,800 AF of water savings over the life of the resulting water conservation measures. Beyond the life of the measures, implementation of the Program will influence and transform markets and standards towards higher efficiency.

Background

The climate and hydrology of the Kern River watershed have a high degree of annual and seasonal variability. As a result, the streamflow hydrology of the Kern River in the Bakersfield area is highly variable as well. The City relies on a number of sources of water including local groundwater which has been recharged with imported SWP water, local surface water from the Kern River, as well as imported surface water that is delivered directly to the City, both of which are treated at the City's two water treatment plants.

The City and its residents historically have not had, and currently do not have access to reliable, economical or clean alternate sources of water. Although limited amounts of State Project Water have been available to City residents in prior years, such supply has been restricted and

increasingly unreliable. City residents have therefore had to increase its reliance on the Kern River as the exclusive water source; either through direct use of surface water supplies or through groundwater created by recharge from the Kern River and associated recharge projects (City's 2800 Acres facility).

Although the City relies significantly on local surface water and groundwater supplies, the State Water Project (SWP) plays a significant role in the City's water resources portfolio by providing water for both direct delivery (about 20 percent) and regional groundwater recharge. The 2011 SWP Delivery Reliability Report projects that SWP deliveries during multiple-year dry periods could average about 34 to 35 percent of total Table A amounts and could possibly be as low as 9 percent during an critically dry single year. As a demand-side source of water supply, an aggressive conservation program is essential to integrated regional water management. Consumer acceptance of water-efficient technology and practices will result in long-term demand reduction that improves the Kern Region's capacity to manage drought scenarios and other strains on water supplies and the Delta. Further, water conservation is a comparatively low-cost source of water supply with positive environmental impacts and benefits including energy savings, pollution prevention, and reduced carbon emissions.

The City of Bakersfield's Kern River water supply is primarily derived from "pre-1914" appropriative water rights that the City acquired from Tenneco West, Inc., in 1976.

Much of the urban water demand is satisfied through City of Bakersfield Kern River water deliveries to the California Water Service Company (Cal Water), and specifically water treatment plants operated by Cal Water. Cal Water serves portions of the City and unincorporated areas in Kern County, and provides water mostly to single-family residences. Cal Water operates the Bakersfield Northwest and Northeast treatment plants. At these treatment plants, water is treated and prepared for Cal Water and City distribution. The amount of Kern River water delivered to Cal Water's water treatment plants in 2012 was about 18,000 AF.

In recent years the City and Cal Water have initiated several measures and programs to increase urban water conservation. The City is increasing urban water conservation through a combination of ordinances, municipal codes, the use of recycled water, and participation in integrated regional water planning.

The City has established landscape standards to promote water use efficiency by encouraging landscape design to minimize watering and avoid unnecessary runoff of irrigation water. These standards are now implemented through a model water efficient landscape ordinance (Bakersfield Municipal Code, 17.04.358, amended 17.61). The City's municipal code prohibits water flowing across sidewalks (12.28.020), allowing irrigation water to overflow into gutters (12.28.030), and creates a duty to turn off water before it flows into gutters (12.28.040). Wasting water under these municipal codes is enforceable by general penalty (provision 1.40.010). If wasting water is not corrected within 5 days, the City may discontinue service (14.04.300). The City has also adopted the Uniform Building Code, which contains water fixture efficiency measures for all new construction.

The City's water conservation measures are described in the UWMP update (City of 2007). The City implements measures to conserve water and increase the public awareness of water conservation. One of the City's conservation measures is to provide detailed information on water use from their metered water system to customers to show annual changes in

consumption. Customers who have unmetered connections because the cost for metered water is adjusted based on water use. Less water used equals lower costs. In 1999, residential water users in the City's metered water service area used about 17% less water than residential water users within the city who were not metered. The City's water service area is currently fully metered.

The City also closely monitors its domestic water system for leaks and water loss. Large landscaped city-owned areas are monitored with computer-controlled irrigation systems to minimize water use and identify leaks in the system. The City's Recreation and Parks Department, the single largest water user, continues to implement irrigation efficiency technology using Rainbird's Maxicom system. This master control system monitors weather conditions and water use patterns to provide for efficient park and median island irrigation as well as alerting staff to potential water line breaks or sprinkler head breaks.

Recycled water is used within the City whenever possible to offset demands for surface and groundwater. Wastewater Plant 3, within the City domestic service area, is producing approximately 1,000 AF per year of disinfected tertiary treated water for recycled water use for irrigating purposes at the City's Sports Village. When the Sports Village is completely built out, the anticipated irrigation demand of 2,000 AF per year will be supplied 100% by recycled water.

Cal Water's Bakersfield District Conservation Master Plan (2011–2015) (M. Cubed et al., 2011) outlines the current and proposed conservation programs for Cal Water's Bakersfield District for the next 5 years. The conservation program is expected to expand as a result of SBX 7-7, which requires a mandated 20% reduction in per capita urban water use by 2020. In the previous five years, per capita demand has averaged 292 gallons per day in the Bakersfield District, which exceeds the average statewide urban water demand by 52%. For Cal Water to comply with SBX 7-7 on a regional scale, the targeted reduction in per capita demand for the Bakersfield District is an 8% reduction to 268 gallons per capita per day by 2015 and an 18% reduction to 256 gallons per capita per day by 2020. Cal Water developed a portfolio of conservation programs to meet the Bakersfield District's water conservation targets. The primary conservation programs included in the plan are rebates/vouchers for toilets, urinals, and clothes washers; residential survey; residential showerhead/water conservation kit distribution; pop-up rotator nozzle irrigation system distribution; and public information/education programs.

The City of Bakersfield and Cal Water have separate water purveyor areas, as shown in the **Figure 3.2-1**. The City of Bakersfield's water service area is located in Northwest and Southwest Bakersfield, while Cal Water serves South, Central, and East Bakersfield. Cal Water also serves residents outside of the City limits. Approximately 75% of Cal Water's residents are within the City limits.

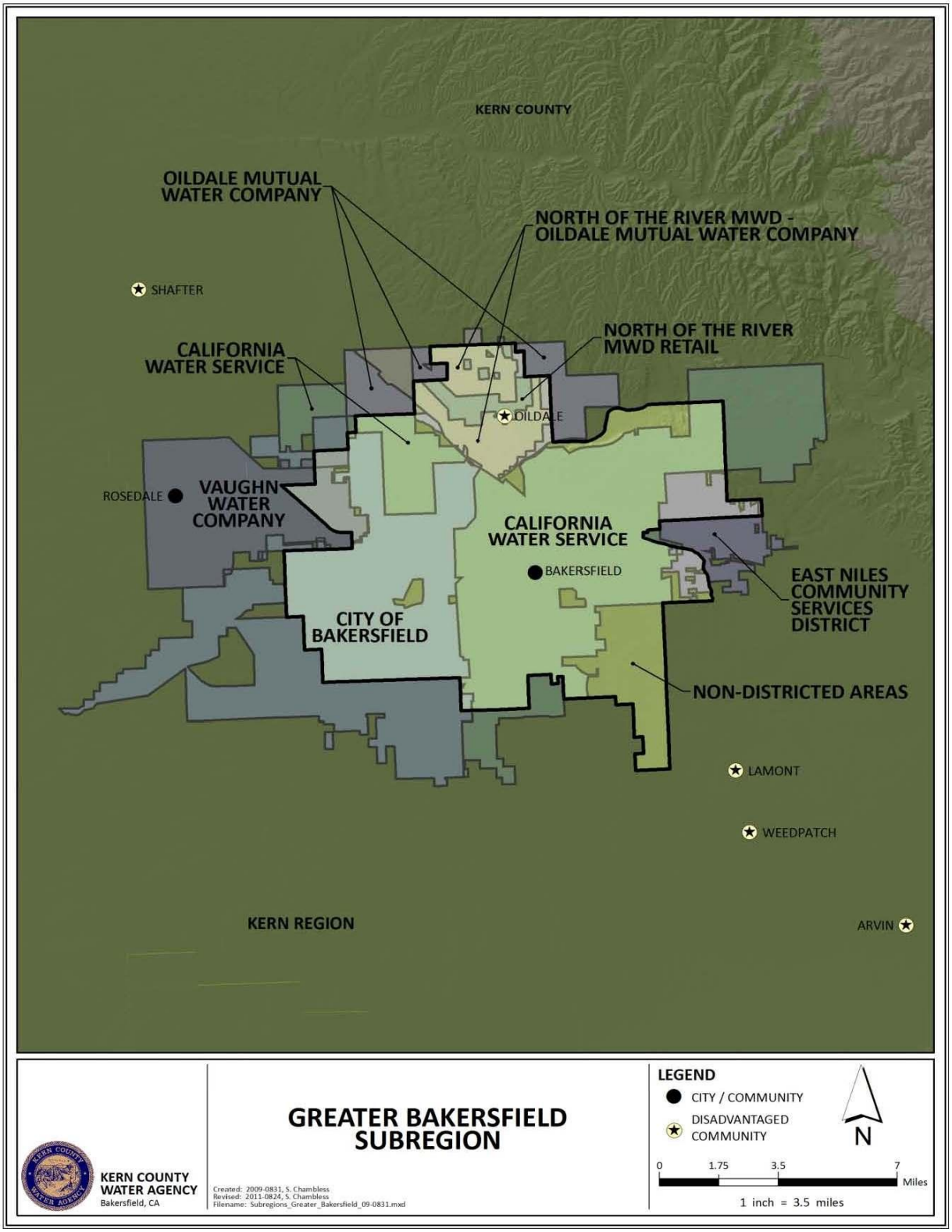


Figure 3.2-1: City of Bakersfield, Cal Water, and ID4 Boundaries

Project Description

1. Municipal Irrigation Controller Program

The Municipal Irrigation Controller Program will upgrade the City Parks irrigation system to reduce runoff and total water usage through the design and installation of a smart irrigation control system that provides real-time information on irrigation water demand for 18 parks in the City. Implementation of this Project will also reduce dry-weather runoff, which carries pollution to storm water retention and detention basins, canals, and the Kern River main channel; all of which may contain sensitive ecosystems and habitats. The program is anticipated to reduce water use in the Parks by 30 percent and achieve 142 AFY of water savings or 2,172 AF in over 15 years.

The City of Bakersfield is an inland community with high evapotranspiration rates and an average annual rainfall of about 6.1 inches, classifying the area as a desert. Consequently water use for irrigation is a primary use in the City's water service area. Dedicated landscaping (parks, medians, and commercial and industrial landscaping) accounted for about 10% of the total water consumption in the City limits in 2012.

The City's Recreation and Parks Department (Rec and Parks or Department) has been investing in efficiency improvements since the early 1990s when it began standardizing irrigation equipment. At that time the Department installed a Maxicom weather station and began the effort to fully implement an evapotranspiration (ET) based automated irrigation control system. The Maxicom Irrigation Central Control System (System), which is specifically designed for multi-site commercial or industrial irrigation applications, was identified as the best quality and fit of automated water budgeting system available. The controllers regulate irrigation based on site-specific conditions and local weather and allow the user to control hundreds of remote sites from one Central Controller, which adjusts in response to actual ET conditions.

All new City and developer-provided landscape improvements maintained by the Department are required to install irrigation systems that are Maxicom-ready. To date four parks are fully operational and hundreds of acres of landscape systems are Maxicom-ready and several staff members have been trained in the design, construction and operation of the Maxicom system. In addition to those, the system has been installed at 18 other sites, which staff is in the process of bringing on line. The Department is committed to expanding this valuable system to all City parks and bringing the Maxicom-ready areas on line with the central control in order to realize the full benefits of the system. Funding to do so has been a major challenge in this difficult economic climate.

There are 32 Parks in the service area that have not yet had the system installed, and the program prioritizes the highest of these. This program will build on the existing upgrades undertaken by the Department and install a Centralized Control System in 18 City parks (See **Table 3.2-1** and **Figure 3.2-2**). The City Water Resources Department is working closely with the Parks department to design, manage and monitor this program.

As a program that serves municipal irrigation sites, the Irrigation Controller Program will allow the City of Bakersfield to become a model for its customers.

Table 3.2-1: Parks to Receive Maxicom System

Priority	Park Name	Lot size Acres	Water Usage (CCF) (2009-2012)	Annual Average Water Usage (AFY)	Estimated Water Savings (AFY)	Maxicom Parts and Installation Costs
1	Grissom Park	12	72,964	41.88	12.56	$ 28,171
2	Campus Park North	8	64,181	36.83	11.05	$ 28,171
3	Campus Park South	12	59,720	34.27	10.28	$ 28,171
4	Seasons Park	10	57,595	33.05	9.92	$ 28,171
5	University Park	11	57,666	33.10	9.93	$ 28,171
6	Haggin Oaks Park	10	56,370	32.35	9.71	$ 28,171
7	Kroll Park	4	34,675	19.90	5.97	$ 28,171
8	Quailwood Park	6	46,742	26.83	8.05	$ 28,171
9	Jastro Park	9	46,554	26.72	8.02	$ 28,171
10	River Oaks Park	10	46,069	26.44	7.93	$ 28,171
11	Stonecreek Park	6	41,535	23.84	7.15	$ 28,171
12	Centennial Park	4	41,613	23.88	7.16	$ 28,171
13	Garden Park	6	36,744	21.09	6.33	$ 28,171
14	Wilderness Park	5	32,681	18.76	5.63	$ 28,171
15	Wilson Park	8	34,895	20.03	6.01	$ 28,171
16	Beale Park	7	32,763	18.80	5.64	$ 28,171
17	MLK Center	13	32,573	18.69	5.61	$ 28,171
18	Stiern Park	5	31,673	18.18	5.45	$ 28,171
	TOTAL	**146**	**827,013**	**474.64**	**142.39**	**$ 507,078**

A review of weather-based irrigation controller studies indicates that an assumption of 20% water savings on a large landscape or commercial site is realistic (Municipal Water District of Orange County (MWDOC) Residential Runoff Reduction (R3) Study (2004); MWDOC Smart Timer Rebate Program Evaluation (2011); San Diego Water Authority Smart Landscape Grant Program (2011)). In these studies, all of the savings (20% or more on average) occurred without audits or check-ups and was simply a result of a direct rebate program for controllers.

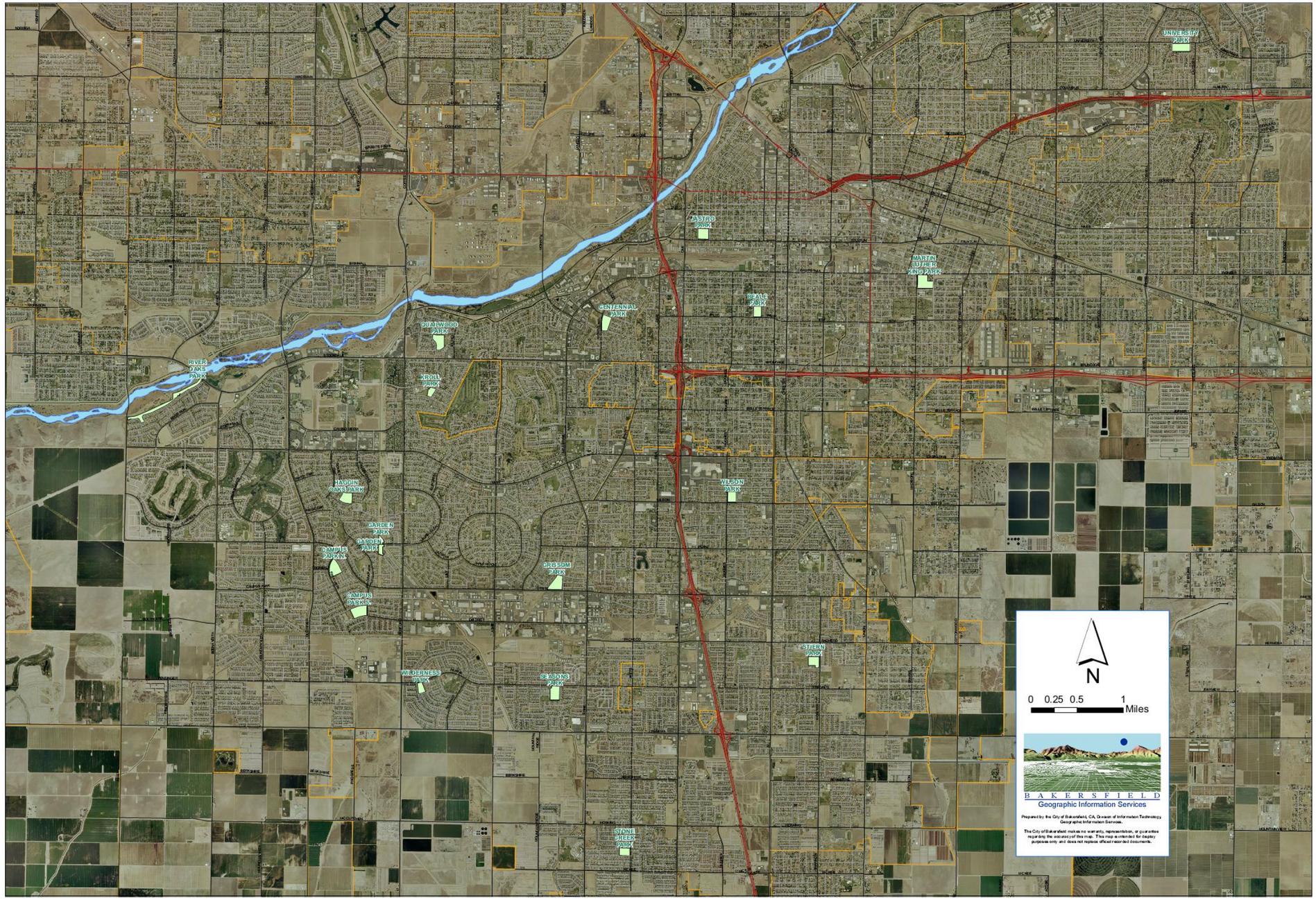


Figure 3.2-2: Location of Proposed City Parks to Receive Maxicom Systems

2. Residential and Commercial Water Conservation Incentive Program

The Residential and Commercial Water Conservation Incentive Program provides incentives for a suite of devices that promote high-efficiency technologies and best water conservation practices to improve indoor and outdoor water use efficiency in the City of Bakersfield. The program will leverage the existing administration and promotion of the Cal Water rebate/voucher program (https://www.calwater.com/conservation/index.php) and extend eligibility to residential and commercial customers served by the City, who currently are not eligible to receive the rebates/vouchers. This structure will provide customers with a consistent message and will also allow the City to take advantage of the existing infrastructure developed by Cal Water and thus avoid potentially costly investments in program administration and operations.

Nine specific program elements are proposed that will provide quantifiable and reliable water savings (**Table 3.2-2**).

These program elements target significant indoor and outdoor uses of water in the residential and commercial sectors and are estimated to achieve approximately 656 AF of water savings over the life of the measures. Also, by focusing on fixtures that exceed the minimum efficiency standards, implementation of the Program will influence and transform markets and standards towards higher efficiency and foster long-term "passive" water savings beyond the life of the measures.

Table 3.2-2: UBAK2 Rebates/Vouchers

Activity Name	Class	Rebate Amount ($, max)	Number
HE/UHE* Toilet	Commercial, Residential	200, 100	40
Clothes washer:	Residential	150	20
CW coin-op	Commercial	400	1
Urinals (0.25 gpf)	Commercial	300	2
High Efficiency Pop-Up Nozzle	Residential, Commercial	Free	10,000
Showerhead/Aerator, Tablet Kit Dist	Residential	Free	76
Smart Controllers	Single Family	125	60
Large Landscape Water Use Reports	Irrigation	Free	34
Large Landscape Surveys	Irrigation	Free	6

* High Efficiency/Ultra High efficiency

3. Education Program

The Education Program would expand existing water conservation outreach in the ID4 service area to provide a more comprehensive program. Building awareness about water conservation is a critical component to modifying long-term behavioral habits and reinforcing the other Program components.

ID4 would like to expand its current education offerings available for local junior high and high schools. This will be accomplished through: (1) the development of California State Content Standards-based curriculum focused on urban water use efficiency for grades 7 -12; and (2) hosting additional Project WET workshops for teachers of grades 7-12.

(1) California State Content Standards-based curriculum for grades 7-12

ID4 would develop both a 7th-8th grade and a 9th-12th grade water education program that would focus on urban water use efficiency. The Water Education Programs would be developed specifically around California Science standards. Both water education programs would include a custom California Standards-based curriculum packet for the teacher, which would include grade-level lesson plans, maps and grade-level activities. A 60-minute classroom presentation that focuses on urban water use efficiency and groundwater would also be created. The presentation would include videos on water purification and a groundwater demonstration using a groundwater flow model. Students would also be provided with water efficiency information that would be intended for use in the home.

(2) Project WET Workshop for 7th-12th Grade Teachers

Project WET is a program that encompasses all grade levels, and ID4 would like to offer those who teach 7th-12th grade an opportunity to use the program in their classroom. ID4 would organize and conduct a 6-hour Project WET Workshop and Practicum for 7th-12th grade teachers. This would include creating grade-level units from the Project WET activity guide that focus on water use efficiency. Activities would be demonstrated as part of the workshop and practicum. Material packets would also be created and given to teachers to conduct the Project WET activities in their classrooms. During the workshop, teachers would also be introduced to how water is managed and how they can encourage water conservation in their own classrooms.

ID4 will expand the scope of the consultant currently utilized to implement its current Kindergarten through 6th Grade education program to accomplish both tasks described above.

<u>New 7 – 12 grade program</u>

1. Development of new urban water use efficiency curriculum
2. Three Project WET workshops (one annually for three years).
3. Expansion of schools visited within ID4 to include 7-12 grades

Summary

When fully implemented, these three Programs are estimated to save approximately 2,800 AF of water over the lifetime of the programs (2,172 AF over 15 years for the Municipal Irrigation Controller Program and 656 AF for the Residential and Commercial Rebate Program).

Goals and Objectives

The primary goal of the Urban Bakersfield Water Use Efficiency Project is to reduce potable water demand by approximately 169 AF annually and 2,800 AF over the lifespan of the program's measures (which vary by measure) by implementing water-efficiency incentive and educational programs.

The Project will help achieve the following IRWM Plan objectives:

1. *Pursue and implement cost effective water use efficiency programs (Conserve 30,000 AFY by 2030),*
2. *Optimize local management of water resources to improve water supply reliability,*
3. *Improve water quality, and*
4. *Increase educational opportunities to improve public awareness of water supply, conservation, and water quality issues throughout the planning horizon.*

Improving water use efficiency and reducing wasteful water use practices throughout the Region will also help agencies address the statewide, regional and local water conservation initiatives:

- Statewide water demand reduction targets set forth in SBX7-7 legislation that meets the water conservation goal of 20 percent per capita reduction by 2020.
- Implementation of the conservation component of water agency Water Supply Management Plans and Urban Water Management Plans.

The goals of the Project are to:

- Develop a conservation program that helps fulfill the City's SBX7-7 requirements of reducing per capita water use to 256 gpcd by 2020.
- Develop a conservation program that fulfills ID4 and the City's AB 1420 requirements.
- Support the Regional objectives identified in the Kern IRWMP.
- Promote programs that enable residential and commercial customers to improve water use efficiency in a cost-effective manner.
- Protect Surface Water and Groundwater Quality
- Promote efficient use of water through appropriate incentive programs.
- Provide appropriate educational and informational programs to encourage conservation.
- Reduce energy use and carbon emissions by reducing pumping and treatment for water and wastewater and reducing hot water end use.

The Specific goals of each program element are provided in **Table 3.2-3**.

Table 3.2-3 : Program Goals and Objectives

Project Component	Goals and Objectives
UBAK1 - Irrigation Controller Program	• Reduce landscape water use • Install irrigation controllers in 18 parks • Achieve up to 142 AFY of water savings or 2,172 AF in 15 years • Provide a model to City customers of efficient irrigation • Improve operational efficiency of City Parks • Reduce runoff and non point source pollution
UBAK2 - Residential and Commercial Water Conservation Incentive Program	• Reduce indoor and outdoor water use by approximately 26 AFY or 656 AF over the lifetime of the devices • Install water-efficient components (number identified in **Table 3.2-2**) • Incentivize purchase of qualified low water use products • Provide a consistent and coherent message and incentive opportunities to regional customers • Improve consumer acceptance of high-efficiency fixtures • Increase product availability and move the market to the next segment of efficient fixtures • Improve affordability of high-efficiency fixtures
UBAK3 - Education Program	• Provide education for 3,000 schoolchildren and training for 20 teachers. • Increase awareness of general water conservation principles, as well as existence of the above water conservation programs, throughout local communities. • Expand education programs to include grades 7-12.

Purpose and Need

The purpose of the project is to reduce water consumption by about 2,800 AF, increase water use efficiency in residential , commercial and municipal sites and expand education programs in order to support the IRWMP's objective to "pursue and implement cost effective water use efficiency programs" and, more specifically, to "conserve 30,000 AFY by 2030".

The Region is highly reliant on imported supplies to supplement local surface water and groundwater and has experienced significant reductions in imported water supplies due to recent ongoing drought conditions, regulatory actions and court decisions that have reduced exports from the Sacramento-San Joaquin Delta. On top of that, the effects of climate change may make imported water supplies less reliable in the future. The 2011 SWP Delivery Reliability projects SWP deliveries from 9 percent to 70 percent of the maximum contract amount over an 82-year simulation period under current conditions. Deliveries are expected to average 61 percent of maximum contract amount under current conditions, but decrease to approximately 35 percent of maximum contract amount over multiple dry years. All of these elements exacerbate the need to increase the conservation of local water supplies.

In addition to reductions in the availability of imported water, the City has to meet SBX7-7 and both the City and ID4 have to comply with AB1420 requirements, but due in part to recent economic conditions, there have been limited financial resources to do so. For an area that was hard hit by the recession but still has to meet SBX7-7, rebates/vouchers provide an opportunity to aid residents in achieving demand reduction needs.

Water savings also yield a secondary benefit of energy and greenhouse gas reductions, which is achieved in two ways. First, the less water used, the less energy required for pumping, transmission and treatment. Secondly, a reduction in hot water uses from appliances such as clothes washers results in reduced energy consumption.

In addition to reducing water demand, the landscape programs address water quality concerns in the region as well. Both the irrigation sprinkler nozzle programs and the water budget program will reduce irrigation runoff.

Municipal Irrigation Controller Program
Program Purpose
• Achieve 142 AFY of water savings, 2,172 AF over the lifetime of the program. • Reduce demand for landscape irrigation including peak demand on water distribution systems. • Promote water-efficient irrigation technology and proper landscape irrigation scheduling. • Support sustainable landscape and gardening principles. • Reduce runoff and improve water quality. • Improve operational efficiency of City Park maintenance. • Provide a model for resource efficiency.
Program Need
In the City of Bakersfield's Water Service Area, about 10 percent, or 560 AFY, of total City water consumption is used to irrigate parks, medians, and commercial and industrial landscaped areas. It is assumed that this 10 percent estimate is accurate within the City limits as well. Consumption varies by a factor of 10 between the summer and winter months. Focusing conservation efforts on reducing outdoor dedicated landscape usage provides the large savings in a cost-effective manner. Landscape irrigation systems are usually inefficient, often attributable to poor maintenance and management. The Automated ET based irrigation system being proposed allows control of multiple sites to exact specifications, making it ideal for the large municipal sites chosen for this program. In addition to reducing water demand, the landscape programs address water quality concerns by reducing runoff. Runoff from landscaped areas can contain various contaminants, including nutrients from fertilizers, pesticides and trash, which reduce the quality of receiving waters, such as the Kern River. Improving irrigation efficiency is perhaps the single most important water conservation goal, especially in inland areas.

Residential and Commercial Water Conservation Incentive Program
Program Purpose
• Reduce potable water demand by 26 AFY, 656 AF over the lifetime of the program. • Decrease indoor and outdoor water use. • Replace existing high-volume toilets, urinals and clothes washers. • Support sustainable landscape and gardening principles. • Reduce runoff and improve water quality.
Program Need
Water Savings. Residential water use (indoors and outdoors) is the single largest use accounting for over 75% of total demand and is the key market to address. According to the California Single Family Water Use Efficiency Study (2011) toilets and clothes washers account for approximately 20 and 18% of indoor household usage respectively. When compared with a similar study conducted in 1999, the researchers concluded that these fixtures were the most important elements in reducing indoor household use and that potential for replacements and savings still remained. The City has not had the resources in the past to provide incentives to its customers to replace their inefficient fixtures; thus there remains a significant amount of older high-water-use toilets that, when replaced with High efficiency toilets (HETs), reduce water usage by approximately 60 percent, while high efficiency clothes washers (HEW) reduce water consumption for clothes washing by approximately 50 percent and energy consumption by 60 percent. The home irrigation system is typically inefficient, up to half of the water applied to the landscape is wasted, not benefiting the plants and often results in runoff. Improving irrigation efficiency is perhaps the single most important goal for water conservation programs across the state. In addition to the residential rebates, commercial customers are also eligible for fixtures and devices specifically designed for the larger customer. High efficiency urinals (HEUs) which flush at 0.25 gpf or less save at least 75% over the standard fixture; spray bodies with integrated pressure regulation and check valves save water by providing optimal pressure and minimizing loss of water through low-head drainage; and rotating nozzles save water by applying water more slowly and uniformly and minimizing run-off. **Market Transformation.** The average costs for HET/HEUs are higher than for moderately priced standard toilets/urinals. Bridging the cost difference with a rebate or a direct-install program will increase demand for HET/HEUs and thus help to push the market toward these more efficient fixtures. **Water Quality.** The landscape program elements improve water quality by reducing runoff. Runoff from landscaped areas can contain various contaminants, including nutrients from fertilizers, pesticides and trash, which reduce the quality of receiving waters such as the Kern River. By offering a broad range of rebates, landscape audits and incentives that address a variety of uses, a large number of customers can benefit from the Program.

Education Program
Program Purpose
Expand offering of educational program to students in grades 7-12. Meet regional AB1420 requirements.
Program Need
ID4 currently operates an educational program to reach students through grades K-6. The existing program is designed to meet the California Urban Water Conservation Council's Best Management Practice of "meeting the youngest water users at an early age and enforce the need to engage in water conservation as a life-long behavior." ID4 has received positive feedback from its current program from teachers, parents and the students themselves. No current program focusing on urban water use efficiency exists for students in grades 7-12 within the ID4 service area; although numerous junior high and secondary schools have inquired about the availability of a program. ID4 would like to expand its current program to include a California State Science standards-based curriculum and make it available to local 7-12 grade students.

Integrated Elements of Project

The Urban Bakersfield Water Use Efficiency Project is intended to improve water efficiency and reduce potable water demand. The three programs in UBAK provide a cohesive and comprehensive package of conservation options by addressing the range of customer types — residential, commercial and municipal — as well as both indoor and irrigation uses. Synergies among the three components of the water conservation program elements, the IRWM Plan, and statewide priorities include:

Partnerships: All of the Programs function as partnerships. In the case of the Municipal Irrigation Controller Program the partnership is between City departments and will support the Recreation and Parks Department's goal of improving irrigation practices and installing ET controllers in all city parks. The Residential and Commercial Water Conservation Incentive Program is a partnership between water utilities and will leverage the existing Cal Water rebate program, extending the program to City of Bakersfield's water service area residents. This will provide customers in the Region with a consistent message and access to programs, and will provide the City with an efficient mechanism for administering and implementing a new program. The Education Program is a wholesale - retailer partnership and provides educational support to all ID4 retailers in partnership with local schools.

Local, Regional and State Requirements. UBAK also supports requirements and plans as a key part of the City and ID4's efforts to meet SBX7-7 and AB1420 goals and UWMP requirements. The Water Use Efficiency Project directly supports the implementation of critical regional and state legislation. For example, the landscape programs support compliance of a local jurisdiction's Water Efficient Landscape Ordinance. Both the landscape and indoor rebate elements also support Cal Green and local green building policies.

Environmental Stewardship. All three projects promote environmental stewardship. The fixture rebate programs reduce water energy use by reducing the amount of water and wastewater pumped and treated and, for HEWs, heated water. The water-efficient landscape rebates and ET controller installation promote water use efficiency in the landscape and improve water quality by reducing runoff. And finally, the education programs teach all these elements of proper resource management and environmental synergies to schoolchildren.

Kern IRWM Plan Integration. Additionally, there is a linkage between the Urban Bakersfield Water Use Efficiency Project and the Kern Water Bank Recharge and Recovery Enhancement Project because: 1) the Kern County Water Agency Improvement District No. 4 is a participant in both projects, and 2) both projects benefit the many IRWMP participants who utilize the Kern Fan area for groundwater supplies and/or banking. Both projects contribute toward meeting IRWMP Water Management Strategies and priorities of both the Kern Fan and Greater Bakersfield Sub-regions. This linkage adds value without requiring coordinated implementation or operation (projects can be done independently).

Completed Work

Municipal Irrigation Controller Program

The City's Recreation and Parks Department has implemented landscape efficiency improvements and installed the Maxicom Irrigation Central Control System since the early 1990's. To date, four parks are fully operational and 18 others are installed and in the processed of being programmed and brought on-line. Several staff members have been trained in the design, construction and operation of the system.

Residential and Commercial Water Conservation Incentive Program

Cal Water has been implementing a variety of conservation programs for many years and the City will build on the infrastructure that Cal Water has already developed, thus allowing the City to bypass any significant administrative startup costs. These include marketing, program administration, monitoring and more.

Education Program

ID4 has historically participated in funding a comprehensive Water Education Program to educate local students about Kern County's water supplies, the importance of water and water use efficiency. The goal of the Water Education Program is to provide the public opportunity to make informed decisions when it comes to water use and conservation. The District program incorporates teacher workshops, curriculum materials, assemblies, classroom presentations and student contests. All curricula and instruction offered through the Water Education Program support the California Curriculum Frameworks and California State Content Standards for kindergarten through 6th grades.

Existing Data and Studies

Table 3.2-4: Existing Studies Supporting the Proposed Project

Project	Existing Data and Studies
Municipal Irrigation Controller Program	• Evaluation of California Weather-Based "Smart" Irrigation Controller Programs, MWD, EBMUD, Aquacraft 2009. • Smart Landscape Grant Program Evaluation, SDCWA, A&N Technical Services, 2011 • ET Controller Unit Savings, MWDOC, 2004
Residential and Commercial Water Conservation Incentive Program	• CUWCC Water Saving Tables for Residential and Commercial Applications, 2011 http://www.cuwcc.org/WorkArea/showcontent.aspx?id=16988 • http://www.map-testing.com/ • California Single Family Water Use Efficiency Study. Aquacraft, 2011
Educational Outreach Program	• Prior development of K-6 Program and the materials produced.

Project Map

The City of Bakersfield (Bakersfield or City) is located within the southern San Joaquin Valley in Kern County; approximately 100 miles north of the Los Angeles metropolitan area. Bakersfield is the largest metropolitan city of Kern County (see **Figure 3.2-1**). The City's population is estimated at 352,428 as of July 2011. Multiple water purveyors provide water to customers within the City limits. The major purveyors are Cal Water, providing approximately 56,400 AF of water in 2012 to City residents, and the City of Bakersfield, which provided approximately 41,100 AF of water to its customers in 2012. The City provides water to a population of approximately 131,000 through 41,568 service connections – primarily for residential uses and also for business, commercial, industrial, fire protection and public customers in and adjacent to the westerly portion of Bakersfield.

The Kern River channel, the City's 2,800 acre water recharge facility, and canals play an important role in the City's groundwater replenishment activities by way of percolation. The City's municipally-owned domestic water system was acquired in the 1976 purchase from Tennaco. The City purchased Kern River water rights, land and the physical water distribution systems for the Ashe Service Area from Tenneco West. The City subsequently added service areas in the Fairhaven and River Lakes areas.

KCWA was formed by Chapter 1003 of the Statutes of 1961 for the primary purpose of establishment of a single entity in Kern County to negotiate and administer a water supply

contract with the SWP water. KCWA contracted the DWR in 1963 for a water supply for member units within Kern County, which included 77,000 AF annually for Improvement District No. 4 (ID4). ID4 was formed to provide a supplemental water supply to the metropolitan Bakersfield area.

The ID4 service area includes a number of retail water agencies. Of these agencies, ID4 wholesales to four, which include Cal Water Bakersfield District and the City of Bakersfield Water Resources Department, plus two others. Within ID4, there are other, smaller retail water agencies that rely on groundwater pumping and have no contract with ID4 for treated water.

Project Timing and Phasing

The Project is not part of a multi-phased project complex and will operate on a standalone basis. Note that the Irrigation Controller program is part of a larger Parks Department effort to retrofit all City Parks; however the proposed program is independent of other ongoing activities.

3.2.2 Work Plan

Category (a): Direct Project Administration Costs

Task 1: Administration

TCCWD will be the lead administrative agency and responsible for preparing and submitting invoices to DWR, and overall project management, including coordination of project team, vendors, and contractors. With the assistance of a consultant, TCCWD will work with City/ID4 staff to administer its Project and work to manage and account for all aspects of the project. City staff will take the lead in retaining consultants for design and bidding phase services, construction services and construction review for the project. Work performed by TCCWD, with the assistance of a consultant, in this task will be coordination with consultants and stakeholders, attending meetings, and processing performance measures and invoices. This effort will be regularly evaluated at monthly project meetings between TCCWD's Project Manager, City/ID4 staff working on the project, consultants working for TCCWD and/or City, plus selected consultants and contractors. At these meetings, progress over the previous month will be reviewed, issues in implementing the project will be discussed, and action items will be established for the next month.

The City of Bakersfield Water Resources Department will be the lead administrative agency and responsible for preparing and submitting invoices for UBAK1 and UBAK2 to TCCWD; ID4 will be responsible for UBAK3. The City of Bakersfield will work interdepartmentally with the Water Resources Department and the Recreation and Parks Department to prepare the invoices for UBAK1 and UBAK2. The Water Resources Department will act as the main contact for the City and will administer all invoicing activities.

Water Resources will also coordinate with ID4 on UBAK3 and will deliver the invoices to TCCWD.

Deliverable(s): TCCWD will deliver monthly invoices of work accomplished to DWR and copies of staff work orders, consultant contacts/task-orders, and/or construction contracts.

Task 2: Labor Compliance Program

TCCWD will retain a consultant to prepare a labor compliance program for all projects within this Proposal upon notice of grant award, in accordance with the requirements of California Labor Code §1771.5(b) for pertinent contracts. Implementation of UBAK1 is anticipated to be completed by contractors who regularly comply with prevailing wage requirements, and will be required to continue that practice on pertinent contracts.

Upon award of the grant, the City's staff will ensure that contractors for the project comply with TCCWD's labor compliance program.

Another part of the City's standard practice is to verify that all contractors employed are appropriately licensed by the State of California and are in good standing

Deliverable(s): TCCWD will submit its Labor Compliance Program to DWR. This program will be adhered to throughout the project in all dealings with the retained contractors and their personnel. Also, copies of all contracts signed by the City for contracted services will be supplied to DWR, as requested for verification that they are consistent with the California Labor Code.

Task 3: Reporting

Task 3.1 – Quarterly Reports and Project Completion Report

TCCWD will act as the grant administrator, and will be responsible for compiling quarterly progress reports and invoices for submittal to DWR. TCCWD will coordinate with City staff to retain consultants as needed to prepare and submit reports.

Reports will meet generally accepted professional standards for technical reporting and terms of the contract with DWR. The Quarterly Reports will explain the status of the project and will include the following information:

- Summary of the work completed for the project during the reporting period
- Activities and milestones achieved
- Accomplishments and any problems encountered in the performance of work

A Project Completion Report documenting actual work done, changes and amendments to each project, a final schedule showing actual progress versus planned progress, and copies of final documents and reports generated during the project. The Report will be submitted to DWR within ninety (90) calendar days of DWR verification that all tasks associated with the project have been completed.

Deliverable(s): TCCWD will deliver quarterly progress reports as well as the Project Completion Report to DWR for this project. A Certificate of Project Completion will be submitted in accordance with DWR's requirements.

Task 3.2 – Project Monitoring Plan

A Project Monitoring Plan (PMP) shall be submitted to the State prior to disbursement of grant funds for construction or monitoring activities for this Project. Along with the Attachment 6 Project Performance Measures Tables requirements for the Project, the PMP will also include: a) Baseline conditions, b) Brief discussion of monitoring systems to be utilized, c) Methodology of monitoring, d) Frequency of monitoring, and e) Location of monitoring points.

City staff will lead work for monitoring and performances measures verification after Project completion. Costs for monitoring and performance measures are not included in the budget (funding match or grant award).

Deliverable(s): PMP as required by conditions in grant contract.

Category (b): Land Purchase/Easement

Task 4: Land Purchase/Easement

Not applicable. No land purchases or right-of-way easements are required for implementing the Urban Bakersfield Regional Water Use Efficiency Project.

Category (c): Planning/Design/Engineering/Environmental Documentation

Task 5: Assessment and Evaluation

Task 5.1 – Feasibility Analysis

The City and ID4, at its own cost, retained Kennedy/Jenks Consultants in February of 2013 to perform a feasibility analysis for the project and develop and submit to the State this proposal including: the Project Work Plan, Budget, Schedule, Monitoring/Assessment/Performance Measures, Technical Justification of Project, and the Benefits and Costs Analysis.

Deliverable(s): On behalf of the City and ID4, TCCWD, DWR grantee, to send documentation of expenditures for the work by Kennedy/Jenks utilizing its own funds as local cost share prior to grant award.

Task 5.2 Site Study to Assess Water Usage

This task consists of retaining a landscaping specialist to perform a water usage analysis at each park. This will consist of reviewing each sprinkler station and determining the estimated irrigation efficiency of the system by reviewing the distribution uniformity. Reports summarizing the water usage assessment will be provided to the City. This information will be utilized for the setup of the Maxicom system.

Deliverable(s): Water usage assessment reports for the 18 parks.

Task 6: Design

Not applicable. This project does not require design studies

Task 7: Environmental Documentation

Task 7.1 – File Categorical Exemption

The Programs were determined to be Categorically Exempt from CEQA under the CEQA Guidelines, Section 15061 (b)(3). A Notice of Exemption will be filed with the Kern County clerk.

The tribal notification requirement (PRC §75102) is not applicable to this project, as the project

will not use a negative declaration or an EIR to comply with CEQA.

Deliverable(s): Notice of Exemption in accordance with CEQA.

Task 8: Permitting

No permits are required for implementation

Category (d): Construction/Implementation

Task 9: Construction/Implementation Contracting

Task 9.1 UBAK1 – Prepare Specifications and RFP, Advertise, Evaluate, and Contract

This task involves contracting to implement the program. Please refer to the individual program elements for details.

Rec and Parks will hire a contractor to install all the Maxicom systems by using the City's existing bidding process to consider formal bids for the project.

Written specifications will be prepared in the bidding process to describe the required level of quality, quantity, delivery and scope of work. In addition to the specifications, certain terms and conditions governing purchases are also outlined in the bid. Specifications prepared by the City's departments are carefully reviewed by the Purchasing Division to eliminate undue restrictions and other limitations which unnecessarily reduce competition. The purchase will eventually be made from the lowest responsive, responsible vendor meeting the objective specifications.

The bids are issued by the City's Purchasing Division and must follow certain prescribed steps to meet the requirements of the City's Charter and Municipal Code.

1. Prepare and issue request for proposal (RFP) for installation services, program;
2. Advertisement of RFP and public bid opening;
3. Evaluate proposals;
4. Select highest-scoring vendor, typically the lowest responsible, responsive bidder; and
5. Enter into agreement and award contract.

The Contractor will be responsible for installing the system etc.

Task 10: Construction/Implementation

Task 10.1 Implementation: UBAK1

UBAK1 will be implemented by the City of Bakersfield Recreation and Parks Department (Rec and Parks). No interagency agreements will be required between Rec and Parks and Water Resources.

Task 10.1.1: Coordination

This task involves coordination with the controller installation company on scheduling installations and review and approval of their invoices.

Rec and Parks will hire a contractor to install all the Maxicom systems at the 18 parks that will be funded by the Grant (see Task 9).

Task 10.1.2: Purchasing

This task involves the controllers. The City will purchase Maxicom systems through the use of the City annual contract procedure. The City will often enter into annual supply contracts with vendors for providing goods and services for a specified period of time, at specified prices. Annual contracts are generally the result of a formal bid process and, as such, departments are authorized to place orders for amounts above $2,500 without specific Purchasing authorization.

Materials/Supplies include:

Task D.1.1 - (6) Channel Cluster Control Unit

Task D.1.2 - Power Supplied Cellular Modem

Task D.1.3 - CCU Terminal Strip

Task D.1.4 - Flow Transmitter

Task D.1.5 - Pulse Decoder

Task D.1.6 - Flow Sensor

Task D.1.7 - Bermad Master Valve

Task D.1.8 - Satellite Control

Task D.1.9 - Multi Station Terminal Strip sub-assembly

Task D.1.10 - Stainless Steel Enclosures

Task D.1.11 - Grounding Plate with Rod Package

Task 10.1.3 Install Irrigation Controllers

This task consists of the work performed by the Contractor for the installation of the irrigation controllers and other components listed above in accordance with the specification documents and manufacturer's recommendations. Rec and Parks staff will work with the Contractor to ensure the proper installation of the system.

Task 10.1.4 Set up Controller system

Rec and Parks staff will coordinate with the Contractor on the proper setup of the controller system to ensure the reliable operations of the system.

Task 10.1.5 Start-up and Testing

Rec and Parks staff in conjunction with the Contractor will implement the startup of the systems and test to ensure that the system meets the specifications and that the desired irrigation efficiencies are achieved.

Task 10.1.6 Training

Rec and Parks staff will begin training concurrently during the testing phase. Staff will be trained on the proper operation of the system.

Task 10.2 Implementation: UBAK2

UBAK2 will be implemented by the City of Bakersfield Water Resources Department (Water Resources) and Cal Water, with the City as lead agency. The City currently has a contract with Cal Water to operate and maintain the domestic water system. Under this contract, Cal Water is required to act as the City's water conservation program coordinator. For UBAK2, the City will pay administration costs to Cal Water to implement the program in addition to the cost of the conservation components. The program will benefit the City's water service area only. No grant funding will be going to Cal Water, as the city will be funding the Cal Water administration costs with matching funds.

This task involves coordinating with customers who participate in the program.

Upon completion of an application form, Cal Water will mail a free conservation kit to single and multi -family customers. The kit includes two high-efficiency showerheads, one hose nozzle, two bathroom faucet aerators, toilet leak tablets, and one kitchen faucet aerator.

Cal Water will issue a rebate check for the cost of purchasing a high efficiency device or smart irrigation controller.

The Residential Water Use Survey Program will be available to single-family residential customers. Residents will schedule an appointment with Cal Water and a trained water conservation specialist will visit the residence to evaluate the indoor and outdoor water use. The surveyor specialist will also provide information about how to read the meter, request water-efficient plumbing fixtures, and take advantage of available rebates/vouchers.

Similarly, commercial customers will also be eligible for a water use evaluation provided by Cal Water and will also be eligible for free sprinkler nozzles.

Cal Water will be responsible for reviewing and approving rebate applications, issuing customer rebates/vouchers, and submitting invoices and final reports to the City. The City will provide invoices, quarterly and final reports to TCCWD, who will submit them to DWR.

The program activity reports would include the following information:

- Program activity levels by rebate type and customer class
- Estimate of water savings
- Description of marketing efforts

Deliverable(s): Standardized reporting templates for each of the program elements

The main implementation components to the rebate program are:

Task 10.2.1 Rebate Applications Evaluation and Processing

- On behalf of the City, Cal Water will review and confirm applicants meet program eligibility requirements
- On behalf of the City, Cal Water will review applications to ensure they meet program terms and conditions
- Cal Water will provide rebates/vouchers per the attached cost sheet. Rebates will be issued in the form of a check. The customer must provide receipts for the installation before rebates will be issued
- Cal Water will maintain a database to track program activities, which will be submitted to the City monthly

Deliverable(s): Database of program participation including accounting of rebates provided to be reimbursed and program administration costs.

Task 10.2.2 Public Outreach and Customer Service

Cal Water will develop, design and print marketing materials describing the project as part of their current marketing efforts. Specific marketing efforts may include: back of bill messages, bill inserts, newsletters, electronic, direct mail to customers and local plumbers, newspaper advertisements, public service announcements, agency newsletter, customer bill inserts, and agency website and others. . This work is already a current feature of the City's contract with Cal Water and no grant funding is required for this task.

Deliverable(s): Program Marketing Materials and Rebate Application Forms

Task 10.3 Implementation: UBAK3

Task 10.3.1 New Educational Curriculum for Grades 7-12

UBAK3 will develop a California State Content Standards-based curriculum focused on urban water use efficiency for grades 7-12; and host additional Project WET workshops for teachers of grades 7-12. ID4 will retain a consultant to develop and help implement new urban water use efficiency curriculum for students in grades 7-12.

Task 10.3.2 Facilitate Three Project Wet Workshops

In Year 1, ID4 will retain a consultant to develop new urban water use efficiency curriculum for students in grades 7-12 and host one Project WET workshop for teachers of grades 7-12. In Year 2, ID4 will retain a consultant to implement the curriculum in local schools and host one Project WET workshop for teachers of grades 7-12. In Year 3, ID4 will retain a consultant to implement the curriculum in local schools and host one Project WET workshop for teachers of grades 7-12.

Category (e): Environmental Compliance/Mitigation/Enhancement
Task 11: Environmental Compliance/Mitigation/Enhancement The Programs were determined to be Categorically Exempt from CEQA under the CEQA Guidelines, Section 15061 (b)(3). No mitigation or enhancement is required.
Category (f): Construction Administration
Task 12: Construction Administration **Task 12.1 UBAK1 Contractor Submittal Review** This task involves review of contractor submittals for materials to be used in UBAK1, and review and approval of invoices from the contractor.
Category (g): Other Costs
No other costs are anticipated for this Project.

3.2.3 Other Required Information

Standards

UBAK1: The Irrigation Controller Program will comply with the Uniform Building Code.

UBAK2 will conform to the existing Cal Water program guidelines, as described in the following table. More information is available at the Cal Water website: https://www.calwater.com/conservation/index.php.

Program	**Standard**
Residential	
1 – HEW	Uses 35-50% less water and approximately 50% less energy than traditional washers. Clothes Washers with a Water Factor of 4.5 or less qualify for rebates.
2 – HET	Maximum of 1.28 gallons per flush (gpf). Includes dual-flush toilets. New toilet must replace an existing toilet that flushes at 3.5 gpf or greater.
3 – Smart Irrigation Controller	Smart Irrigation controllers automatically adjust their watering schedule in response to changing weather conditions.
Commercial	
4 – HEW	Uses 35-50% less water and approximately 50% less energy than traditional washers. High-Efficiency Clothes Washers with a Water Factor of 4.5 or less qualify for rebates.
5 – HET	Maximum of 1.28 gpf. Includes dual-flush toilets. New toilet must replace an existing toilet that flushes at 3.5 gpf or greater.
6 – HEU	New urinal must flush at .25 gpf or less and be replacing an existing urinal that flushes at 1 gpf or greater.
7 – Smart Irrigation Controller	Smart Irrigation controllers automatically adjust their watering schedule in response to changing weather conditions.
8 – Spray Body with Integrated Pressure Regulation and Check Valve	Spray bodies with integrated pressure regulation and check valves save water by providing optimal pressure and minimizing loss of water through low-head drainage.
9 – Rotating Nozzle	Rotating nozzles save water by applying water more slowly and uniformly, minimizing run-off.

UBAK 3: the curriculum will be developed in accordance with the California State Content Standards

3.3 Tehachapi Regional Water Use Efficiency Project

3.3.1 Introduction

Project Description

The proposed Tehachapi Regional Water Use Efficiency Project (Project) will reduce demand in the Tehachapi-Cummings County Water District, Golden Hills CSD, Stallion Springs CSD, Bear Valley CSD and the City of Tehachapi (secondary implementing agencies) service areas by about 2775 AF or 109 AF/yr (**Table 3.3-1**) over the device life through the implementation of the following programs:

1. ***Low-income direct install toilet replacement and audit (TCCWD1)***
2. ***Toilet rebate (TCCWD2)***

Table 3.3-1: Projected Savings from TCCWD Programs

	Average Annual Savings (AF)	Lifetime Savings AFY
TCCWD1	80.6	2042.1
TCCWD2	28.8	733.4
Total	109	2775.4

The Project is designed to reduce consumption and assist in meeting state SBX7-7 regulatory requirements. The participating agencies (secondary implementing agencies mentioned above) have agreed to set the SBX7-7 baseline and conservation targets as a regional alliance. Baseline water use for the regional alliance is 191 GPCD, the 2020 target is 179 GPCD and the 2015 interim target is 185 GPCD, as determined by Target Method 3 from the 2010 Tehachapi Regional Urban Water Management Plan (RUWMP).

The Project includes a suite of programs that provide quantifiable and sustainable water savings and promote high-efficiency devices and best water conservation practices to improve indoor water use efficiency of the residential and commercial customers in the project service area.

In addition to reducing potable demand, the Project has a number of secondary benefits. By reducing transmission, pumping and treatment the Project will also reduce energy consumption and associated indirect greenhouse gas emissions. And finally, the Low-income direct install toilet replacement and audit project will address the needs of the Disadvantaged Community of the City of Tehachapi.

Combined, these programs target significant indoor end uses of water in the residential and, commercial sectors and are estimated to achieve approximately 2775 AF of water savings over

the life of the resulting water conservation measures. Beyond the life of the measures, implementation of the Project will influence and transform markets and standards towards higher efficiency.

1. Low-income Direct Install Toilet Replacement and Audit Program (TCCWD-1)

TCCWD-1 will replace 1,000 existing high volume toilets, 3.5 gallons per flush (gpf) or more, with Niagara's 0.8 gallon per flush Stealth™ ultra high-efficiency toilet (UHET) (or approved equivalent that meets the WaterSense standard with a minimum Maximum Performance (MaP) flush performance score of 600) to low-income single and multi family customers in the City of Tehachapi (City). It is expected installation limitations related to the toilet footprint will require that some number be regular sized HET toilets, so for those sites the program will install the Western 822 high-efficiency toilet (HET) which uses 1.28 gpf. Estimates for this program are that 90% of the toilets installed will be the UHET model and 10% the HET, based on results from similar programs statewide.

The City of Tehachapi is classified as a Disadvantaged Community (DAC). DACs, as defined by both Propositions 50 and 84, are communities whose average Median Household Income (MHI) is less than 80 percent of the statewide annual MHI. According to the American Community Survey (ACS) of the U. S. Census (2011), for the period 2007-2010 the state of California's MHI was $61,632 while the City of Tehachapi had a median household income of $46,250, 75% of the State MHI.

The City was incorporated in 1909, and is located in the Tehachapi Mountains between Bakersfield and Mojave in Kern County, at an elevation of 4,000 feet. The City serves a population of 8,673 and maintains 2,965 water service connections. The City also provides wastewater collection and treatment within its service area. The lands within the City are primarily residential, commercial, light industrial, schools and parks.

Low-income customers tend not to participate in traditional agency rebate projects due to both the burden of the initial capital outlay and the expense and/or difficulty of hiring a plumber to do the installation. Also, the City has the oldest housing in the region with about 70% of the housing stock constructed prior to 1992 (**Table 3.3-2**), and which was when the National Energy Policy Act established the 1.6 gpf toilet standard. TCCWD-1 will address these issues through the proposed direct-install project. The corresponding reduction in the resident's water bill is also particularly significant for low-income customers.

There are a number of State regulations that impact toilet efficiency:

AB 715 requires that, on or after January 1, 2014, 100% of toilets sold or installed in California be high-efficiency (maximum of 1.28).

SB 407 mandates all buildings in California come up to 1992 State plumbing fixture standards at some point in the next decade which includes replacement of any toilet manufactured to use more than 1.6 gallons of water per flush.

CalGreen building standards identify prescriptive indoor provisions for maximum water consumption of plumbing fixtures includes a baseline use for toilets of 1.6 gpf, and high efficiency at 1.28 gpf

The UHE toilets proposed are not a requirement of any legislation or code and exceed all current and upcoming state requirements by at least 35% (for HETs). These savings are sustainable and reliable, requiring little or no behavior changes after installation. There have been a number of programs across the state that have installed these toilets to great success.

In addition to the direct-install element, the program will provide customers with free water conservation inspections (audits), as well as a water conservation kit with fixtures such as aerators, showerheads, shut-off valves, and leak-detecting dye tablets.

The toilet replacement project is expected to save approximately 4,320 AF of water over a 25-year period; these savings are permanent and are not contingent on behavior changes. This savings estimate is derived from the toilet and showerhead replacement project alone and excludes any potential benefits from the inspections and kits.

TCCWD will develop an RFP and negotiate a contract for toilet purchase and installation services. TCCWD will stipulate a turnkey project approach with the contractor in which the contractor will be responsible for identifying, contacting, scheduling and warranty. TCCWD will provide the contractor with a list of users, consumption — the program will prioritize high users— and year that their housing was constructed.

TCCWD will conduct inspections at a small percentage of participants to ensure proper installation and follow up with customer satisfaction surveys.

Projected costs, with prevailing wage, for each installation are described in Attachment 4. Projected savings, lifetime and other assumptions are based on the California Urban Water Conservation Council water savings assumptions (http://www.cuwcc.org/committees/details.aspx?taxid=7444&parentid=1924).

2. Toilet Rebate Program (TCCWD-2)

The Toilet rebate program provides incentives for the replacement of 950 toilets —900 tank-type and 50 flush-valve—that flush at 3.5 gpf or more with HET and UHET models that use 1.28 gpf or less. The project guidelines will specify the models rebated will be required to meet the US EPA WaterSense standard and meet minimum MaP flush performance scores of 600.

While toilet replacement programs have long been implemented throughout the state, the only agency in the Greater Tehachapi Area to offer rebates has been Bear Valley CSD, which has been a member of the California Urban Water Conservation Council since 1995. The lack of participation by the other agencies is due largely to staffing and financial limitations. Bear Valley CSD implements the Council's BMPs and has funded the replacement of 891 toilets with ULFTs and HETs, covering approximately 30% of its pre-1992 housing stock. The other participating agencies have not had a toilet replacement program.

The new SBX7-7 requirements precipitate the need to actively engage customers in improving water efficiency. Toilet replacement has long been documented as one of the more successful and reliable water savings efforts and often referred to as the "low hanging fruit" of conservation programs. Given that this is the first time customers will be eligible for rebate programs in three of the four agencies, it is expected that there is a significant population of high flow toilets remaining to be removed (**Table 3.3-2**).

Table 3.3-2: Age of Housing Stock

	Constructed pre-1992	Constructed 1992-present	Percentage Pre-1992
Golden Hills CSD	1,846	773	70%
Stallion Springs CSD	515	650	44%
Bear Valley CSD	1,677	1,005	63%
City of Tehachapi	1,723	799	68%
Total	**5,761**	**3,227**	**64%**

Projected savings, lifetime and other assumptions are based on the California Urban Water Conservation Council water savings assumptions (http://www.cuwcc.org/committees/details.aspx?taxid=7444&parentid=1924). The program will be implemented and administered by TCCWD for all of the retailers.

Goals and Objectives

The Tehachapi Regional Water Use Efficiency Project will help achieve the following IRWM Plan objectives:

1. Pursue and implement cost effective water use efficiency programs (Conserve 30,000 AFY by 2030).
2. Optimize local management of water resources to improve water supply reliability.
3. Improve water quality for DACs and the watershed over the planning horizon.
4. Increase educational opportunities to improve public awareness of water supply, conservation, and water quality issues throughout the planning horizon

The Goals and objectives for the specific programs are identified in **Table 3.3-3**.

Table 3.3-3: Project Goals and Objectives

	Objectives
Low-Income Direct Install Toilet Replacement and Audit Program (TCCWD-1)	• Install 1,000 HETs. • Conduct about 1,000 audits. • Provide efficient fixtures (showerheads, aerators etc) and fix leaks as needed. • Reduce potable water consumption by approximately 81 AFY, 2,042 AF over the device life. • Provide service to the City of Tehachapi's DAC. • Improve consumer acceptance of high-efficiency fixtures. • Increase product availability and move the market to the next segment of efficient fixtures.
High Efficiency Toilet Rebate Program (TCCWD-2)	• Replace 950 3.5 or more gpf residential and commercial toilets with HETs or UHETs. • Reduce potable water consumption by approximately 29 AFY or 733 AF in lifetime savings. • Incentivize purchase of qualified low water use products. • Improve consumer acceptance of high-efficiency fixtures. • Increase product availability and move the market to the next segment of efficient fixtures. • Improve affordability of high-efficiency fixtures.

Purpose and Need

The purpose of the project is to reduce water consumption and increase water use efficiency in residential and commercial sites and support the IRWMP's stated objectives to "Pursue and implement cost effective water use efficiency programs" and more specifically, to "Conserve 30,000 AFY by 2030."

As mentioned previously, one of most significant challenges in the Region and the State is the uncertainty of imported water supplies, which are used for direct delivery as well as for groundwater recharge. In addition to recent and ongoing drought conditions, recent regulatory and judicial decisions related to endangered species in the Delta have reduced the imported SWP supplies since 2008 and this trajectory is exacerbated by ongoing uncertainties related to climate change and drought. The Regional Urban Water Management Plan (RUWMP) shows

that the Region is planning for a critical single-dry- year SWP allocation of 6 percent. Deliveries are expected to average 61 percent of maximum contract amount under current conditions, but decrease to approximately 22, 27 and 26 (average 25) percent of the maximum contract amount over multiple dry years. Thus, the Region needs to increase the utilization of local water supplies and reduce dependency on imported water.

Regional conservation initiatives result in increased program visibility and consumer participation that is difficult and more costly to achieve by single agency implementation. Individually, the water purveyors are relatively small—less than 3,000 connections each—and have limited resources to implement, administer, promote and monitor a program. This Project, administered and implemented regionally by TCCWD with its two program elements, allows project participants to participate in water use efficiency programs in a way that is reasonable for agencies of that size, while contributing to regional water conservation through collaboration with other agencies.

Table 3.3-4 shows the project purpose and need by project element.

Table 3.3-4: Program Purpose and Need

Low-Income Direct Install Toilet Replacement and Audit Program (TCCWD-1)
Program Purpose
• Replace existing high-volume toilets. • Find leaks and install high efficiency household fixtures. • Provide service to a DAC. • Reduce potable water demand.
Program Need
Toilets are the single largest end user of water in the home, accounting for approximately 25 percent of indoor household usage. There are also many older toilets in the commercial, industrial and institutional sectors, especially in the City where about 70% of the housing stock was built pre-1992, there have been no rebate programs to date and the population is one that is less able to afford new fixtures. For these reasons, there likely remains a significant amount of older high-water-use toilets that, when replaced with UHETs reduce water usage by over 75 percent. Furthermore, anecdotal evidence suggests that lower income households tend to have both a larger number of persons per households as well as older model fixtures, both of which indicate a higher savings potential per fixture replaced. In addition to replacing toilets, the program also provides audit services whereby the contractor will survey the home, check for leaks and install efficient fixtures where appropriate. This will also provide a much needed service to a population that can less afford to do it on their own.

Toilet Rebate Program (TCCWD-2)
Program Purpose
• Reduce potable water demand. • Replace existing high-volume toilets. • Raise consumer awareness of the availability of HETs and UHETs and influence consumer choice towards water-efficient products. • Improve consumer acceptance of high-efficiency fixtures. • Help move the market toward more efficient products.
Program Need
Similar to the previous program, the end use of water for toilet flushing accounts for approximately 25 percent of indoor household usage and many older toilets remain because, on average, 64% of the housing stock is pre-1992 (**Table 3.3-2**) and only one of the purveyors— Bear Valley CSD— has had rebate programs in the past. The average costs for UHET/HETs are higher than for moderately priced standard toilets. Bridging the cost difference with a rebate or a direct-install program will increase demand for these models and thus help to transform the market.

Integrated Elements of Project

The agencies participating in the proposed Project have a long history of cooperation on various regional issues and have formed a Water Availability Preservation Committee comprised of representatives from each of these agencies. The Committee is composed of management-level employees who meet monthly to discuss water and wastewater-related issues and to coordinate efforts wherever possible. Over the years the Committee has cooperated in the creation of two groundwater basin model studies, emergency response plans, and a regional source water protection plan as well as other lesser studies. The participants share expertise with each other and have, on occasion, loaned personnel and equipment to each other. Most recently they collaborated on and submitted a 2010 Regional UWMP plan, as opposed to separate individual plans, to share information, avoid duplication of efforts, reduce costs, and implement a more coordinated regional approach to water management.

None of the participating agencies are required to submit an UWMP, as none of them serve 3,000 or more connections, nor do they supply 3,000 or more AF of water per year for urban uses. TCCWD, the wholesale agency for the area, provides SWP water primarily for agriculture but also for urban uses. TCCWD also acts as the court-appointed watermaster for the three adjudicated basins in the Greater Tehachapi Area (GTA), from which the water purveyors produce most of the water delivered in their service areas. Under Water Code Section 10617, TCCWD is also exempt from submitting an UWMP. This exemption is based on TCCWD providing untreated water for recharge that is then accessed by the retail providers.

Regardless of the exemption however, TCCWD submitted a regional UWMP to serve as a coordination effort with its local retail agencies so that the group has a better understanding of

the reliability of its supplies for future IRWMP efforts. Also, the participating agencies have agreed to set the baseline and conservation targets as a regional alliance. The group is committed to implementing conservation as identified both in the regional UWMP and the IRWMP.

Completed Work

The proposed projects represent the first Regional conservation program implemented among the purveyors as a region. TCCWD will be implementing the project, confirming customer eligibility, providing the rebates, managing contractors and monitoring success. TCCWD is the water wholesaler for all four of the water retailers and it maintains a master database of all improved properties within the four water service areas, which simplifies the administrative tasks. TCCWD will manage the programs on behalf of the water retailers, with their cooperation. TCCWD will handle all financial transactions associated with the programs (pay the contractors, issue the rebates, etc). Although each water retailer will interface with their customers as they should, all financial transactions will be performed by TCCWD until the program is completed.

By October 2014, TCCWD will have completed the following:

1. Prepare and issue an RFP for the direct install program.
2. Chosen a contractor for the direct install program.
3. Hired one full-time water conservation specialist to manage the programs and implement other DMMs pursuant to the RUWMP.
4. Develop outreach and information materials to support the rebate program.

No land acquisition, design, planning, environmental documentation (CEQA exempt) or permits are required for this project.

Existing Data and Studies

The agencies have prepared a Regional UWMP to identify and support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. Participating agencies are committed to make a good faith effort to implement the Demand Management Measures listed in the UWMP and to update the Plan on a five-year schedule. In addition, **Table 3.3-5** lists some of the key studies on water savings and conservation technologies that guide or influence conservation elements in this Project.

Note that HETs installed and/or rebated through this project will be required to meet the US EPA WaterSense standard and meet minimum MaP flush performance score of 600.

Table 3.3-5: Existing Studies Supporting the Proposed Project

Project	Existing Data and Studies
Low-Income Direct Install	• CUWCC Water Saving Tables for Residential and Commercial Applications, 2011

Toilet Replacement and Audit Program	http://www.cuwcc.org/WorkArea/showcontent.aspx?id=16988 • High-Efficiency Plumbing Fixture Direct Install Water Savings Analysis, SCWA / Koeller 2011 • http://www.map-testing.com/
Toilet Rebate Program	• CUWCC Water Saving Tables for Residential and Commercial Applications, 2011 http://www.cuwcc.org/WorkArea/showcontent.aspx?id=16988 • ***http://www.map-testing.com/***

Project Map

The Tehachapi-Cummings County Water District, City of Tehachapi, Golden Hills CSD, Bear Valley CSD, and Stallion Springs CSD boundaries are shown in **Figure 3.3-1**. Additionally, the developed residential and commercial parcels are colored to represent the potential participants in these programs.

Project Timing and Phasing

The Project is not part of a multi-phased project complex and will operate on a standalone basis. The Project will accomplish its goals without depending on any of the other proposed projects.

The Project can proceed upon Notice of Grant Award, with timing and phasing as further described in Attachment 5 - Project Schedule.

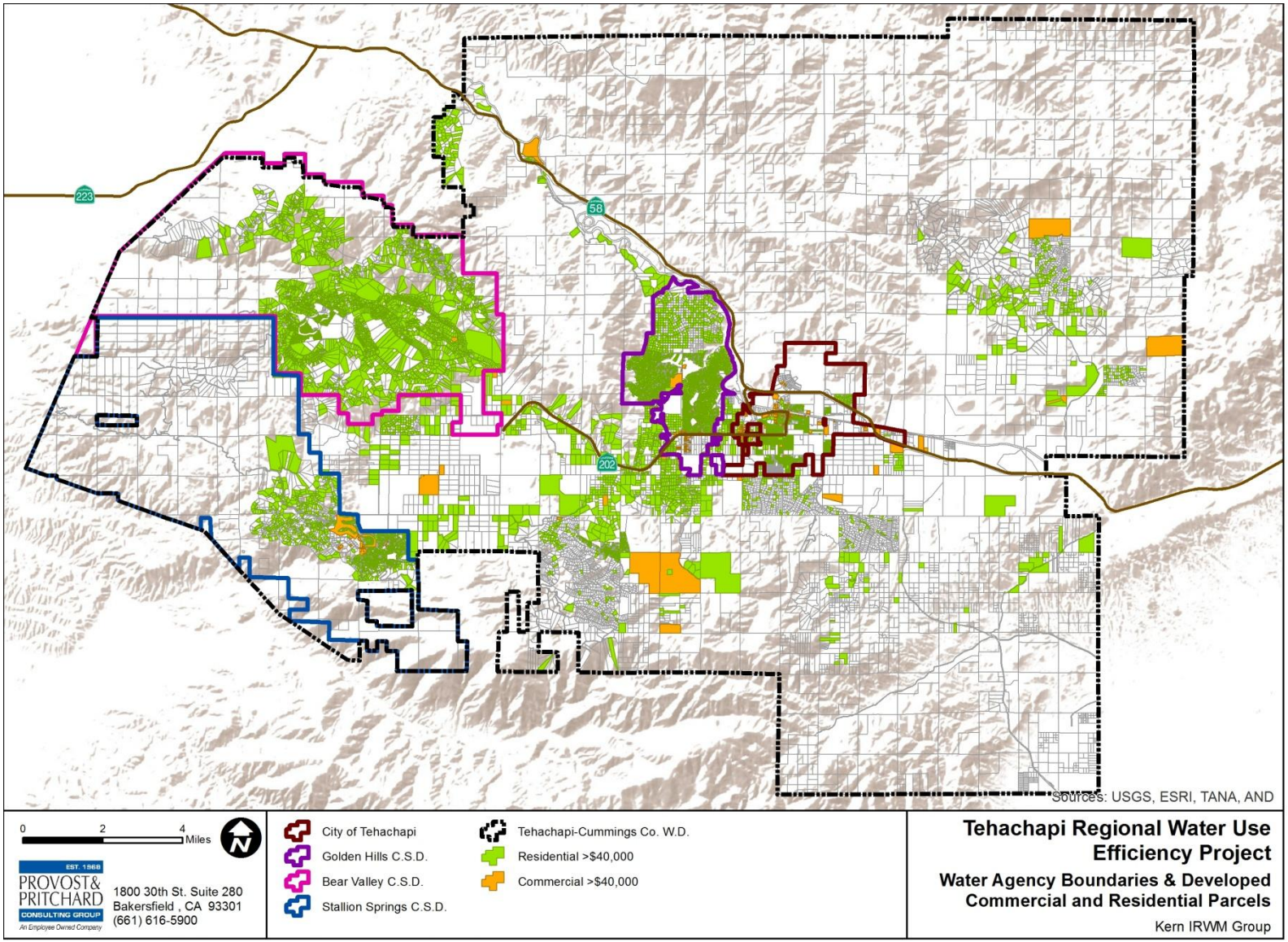


Figure 3.3-1: Tehachapi Regional Water Use Efficiency Project Area

3.3.2 Work Plan

Category (a): Direct Project Administration

Task 1: Administration

TCCWD will be the lead administrative agency and responsible for preparing and submitting invoices to DWR, and overall project management, including coordination of project team, vendors, and contractors. With the assistance of a consultant, TCCWD will administer its Project and work to manage and account for all aspects of the Project. TCCWD staff will take the lead in contracting and bidding phase services, construction services and construction review for the project. Work performed by TCCWD, with the assistance of a consultant, in this task will be coordination with consultants and stakeholders, attending meetings, and processing performance measures and invoices. This effort will be regularly evaluated at monthly project meetings between TCCWD's Project Manager and other implementing agencies' staff working on the project, plus selected consultants and contractors. At these meetings, progress over the previous month will be reviewed, issues in implementing the project will be discussed, and action items will be established for the next month.

Deliverable(s): TCCWD will deliver monthly invoices of work accomplished to DWR and copies of staff work orders, consultant contacts/task-orders, and/or construction contracts.

Task 2: Labor Compliance Program

TCCWD will retain a consultant to prepare a labor compliance program for all projects within this Proposal upon notice of grant award, in accordance with the requirements of California Labor Code §1771.5(b) for pertinent contracts. Implementation of TCCWD-1 is anticipated to be completed by contractors who regularly comply with prevailing wage requirements, and will be required to continue that practice on pertinent contracts.

Upon award of the grant, TCCWD will also retain a labor compliance consultant to assist its staff to assure that contractors for the TCCWD's project comply with the overall labor compliance program. Another part of the TCCWD's standard practice is to verify that all contractors employed are appropriately licensed by the State of California and are in good standing

Deliverable(s): TCCWD will submit its Labor Compliance Program to DWR. This program will be adhered to throughout the project in all dealings with the retained contractors and their personnel. Also, copies of all contracts signed by the TCCWD for contracted services will be supplied to DWR, as requested for verification that they are consistent with the California Labor Code.

Task 3: Reporting

Task 3.1 – Quarterly Reports and Project Completion Report

TCCWD will act as the grant administrator, and will be responsible for compiling quarterly progress reports and invoices for submittal to DWR.

Reports will meet generally accepted professional standards for technical reporting and terms of the contract with DWR. The Quarterly Reports will explain the status of the project and will include the following information:

- Summary of the work completed for the project during the reporting period (including rebate/direct install activity levels within the reporting period, marketing efforts and effectiveness, challenges and how they were overcome, customer satisfaction, and any modifications made to the Program)
- Activities and milestones achieved
- Accomplishments and any problems encountered in the performance of work

A Project Completion Report documenting actual work done, changes and amendments to each project, a final schedule showing actual progress versus planned progress, and copies of final documents and reports generated during the project. Specifically the Report will address:

- Description of the actual work done, such as the number of installations of high efficiency toilets,
- Number of toilet rebates provided.
- Final schedule showing actual progress versus planned progress
- Marketing methods and associated performance
- Water savings, where possible
- Lessons learned

The Report will be submitted to DWR within ninety (90) calendar days of DWR verification that all tasks associated with the project have been completed.

Deliverable(s): TCCWD will deliver quarterly progress reports as well as the Final Report to DWR for this project. A Certificate of Project Completion will be submitted in accordance with DWR's requirements.

Task 3.2 – Project Monitoring Plan

A Project Monitoring Plan (PMP) shall be submitted to the State prior to disbursement of grant funds for construction or monitoring activities for this Project. Along with the Attachment 6 Project Performance Measures Tables requirements for the Project, the PMP will also include: a) Baseline conditions, b) Brief discussion of monitoring systems to be utilized, c) Methodology of monitoring, d) Frequency of monitoring, and e) Location of monitoring points.

City staff will lead work for monitoring and performances measures verification after Project completion. Costs for monitoring and performance measures are not included in the budget (funding match or grant award).

Deliverable(s): PMP as required by conditions in grant contract.

Category (b): Land Purchase/Easement

Task 4: Land Purchase/Easement

Description: Not applicable. No land purchases or right-of-way easements are required for implementing the Tehachapi Regional Water Use Efficiency Project

Category (c): Planning/Design/Engineering/Environmental Documentation

Task 5: Assessment and Evaluation

Task 5.1 – Feasibility Analysis

TCCWD, at its own cost, retained Kennedy/Jenks Consultants and Provost & Pritchard Consulting Group in February of 2013 to prepare a feasibility analysis and develop and submit to the State this proposal including: the Project Work Plan, Budget, Schedule, Monitoring/Assessment/Performance Measures, Technical Justification of Project, and the Benefits and Costs Analysis.

Deliverable(s): TCCWD to send documentation of expenditures for the work by Kennedy/Jenks and Provost & Pritchard utilizing its own funds as local cost share prior to grant award.

Task 6: Design

Not applicable. This project does not require design studies

Task 7: Environmental Documentation

Task 7.1 – File Categorical Exemption

The Programs were determined to be Categorically Exempt from CEQA under the CEQA Guidelines, Section 15061 (b)(3). A Notice of Exemption will be filed with the Kern County clerk.

The tribal notification requirement (PRC §75102) is not applicable to this project, as the project will not use a negative declaration or an EIR to comply with CEQA.

Deliverable(s): Notice of Exemption in accordance with CEQA.

Task 8: Permitting

No permits are required for implementation

Category (d): Construction/Implementation

This task involves contracting with Contractors and/or vendors to implement the project. Please refer to the individual program elements for details.

Task 9: Construction/Implementation Contracting

Task 9.1 Contracting for the Low-income Direct Install Toilet Program (TCCWD-1)

The third-party Contractor providing program administration, management, installation and audit services for the Low-income direct install toilet replacement and audit program will be selected via a competitive bidding process which will be conducted by TCCWD. The intention is that the contractor will provide a turnkey service. TCCWD will provide customer information and oversee contractor and program management. Contracting specifics and structure are likely to include the following steps:

1. Prepare and issue request for proposal (RFP) for purchase and installation services, program management and administration;
2. Evaluate proposals;
3. Select highest-scoring vendor; and
4. Enter into agreement and award contract.

The Contractor will be responsible for some of the marketing efforts, identifying potential project participants based on data provided by TCCWD, contacting potential participants, scheduling home visits, performing audits, determining eligibility, installing the toilet, installing devices as needed, removing and recycling old toilets, providing an installation and product warranty and preparing comprehensive quarterly program activity status reports and a final program report.

The toilets installed will be the Niagara 0.8 gpf Stealth™ UHET and the Western 822 HET, both which meet Watersense specification and a MaP flush volume of 600. Alternate models will be considered where necessary.

Deliverable(s): Signed contract

Contracting for the Toilet rebate program (TCCWD-2) is not applicable. Purveyors will not contract with a third party; TCCWD will provide rebates directly to customers.

Task 10: Construction/Implementation

The Tehachapi Regional Water Use Efficiency Project will be implemented by five (5) participating agencies: Tehachapi-Cummings County Water District, Golden Hills CSD, Stallion Springs CSD, Bear Valley CSD and the City of Tehachapi. The lead agency, TCCWD, will administer the two proposed programs by hiring a full-time water conservation specialist. This person will also implement other DMMs for the participating agencies as shown in the RUWMP

as time permits.

TCCWD is the water wholesaler for all four of the water retailers and will manage the programs on behalf of the water retailers, with their cooperation. TCCWD will handle all financial transactions associated with the programs (pay the contractors, issue the rebates, etc). Although each water retailer will interface with their customers as they should, all financial transactions will be performed by TCCWD until the program is completed.

TCCWD will be responsible for reviewing and approving rebate applications, issuing customer rebates, contracting with and managing the Contractor, and submitting invoices and final reports to DWR. TCCWD is in a unique situation in that it houses the master database of improved properties and therefore it can determine eligibility and issue rebates directly to qualifying water customers.

The program activity reports would include the following information:

- Program activity levels by customer class, agency and totals
- Review of water savings
- Description of marketing efforts
- Satisfaction survey results and other follow up efforts

Deliverable(s): Program activity reports included in the Quarterly Reports

No interagency agreements will be required as TCCWD will be funding the program in its entirety.

Task 10.1 Implementation of Low-income Direct Install Toilet Program (TCCWD-1)

This task involves coordination with the contractor to implement the program. The main implementation components to the direct install program are:

<u>Contractor replaces inefficient toilets and performs audits</u>

Contractor will replace only toilets that flush at 3.5 gpf or more, with approved models.

<u>Contractor bills water agency monthly for each installation</u>

Contractor provides complete database with all participation details, along with invoice.

Projected cost, with prevailing wage, for each installation are approximately:

Niagara Stealth	$360.00
Western 822 HET	$305.00
Showerhead	$ 9.25
Aerator	$ 6.50

Deliverable(s):

- Eligible customer list
- Completed install List
- Database of participant rebate application forms

Task 10.2 Implementation of the Toilet Rebate Program (TCCWD-2)

This task involves coordinating with customers who participate in the program to ensure they receive a check rebating the cost of installing a Toilet. There will be a limit of two toilet rebates per residence. The customer must provide receipts for the installation before rebates will be issued. The main implementation components to the rebate program are:

Rebate Applications Evaluation

- TCCWD will review and confirm applicants meet program eligibility requirements.
- TCCWD will review applications to ensure they meet program terms and conditions.
- A pre-post inspection may be required to verify toilet meets program terms and conditions.

Rebate Processing

- TCCWD will provide rebates based on toilet cost, up to $125 per unit for tank-type toilets and up to $200 per unit for flush-valve type toilets.
- Rebates will be issued in the form of a check
- TCCWD will maintain a database to track program activities

Deliverable(s):

- Database of program participation

Task 10.3 Marketing and Public Outreach

Participating agencies will develop, design and print marketing materials describing the project. Specific marketing efforts may include: back of bill messages, bill inserts, newsletters, electronic mail, direct mail to customers and local plumbers, newspaper advertisements, theater screen advertisements, public service announcements and press releases.

Deliverable(s):

- Program Marketing Materials
- Rebate Application

Category (e): Environmental Compliance/Mitigation/Enhancement
Task 11: Environmental Compliance/Mitigation/Enhancement The Programs were determined to be Categorically Exempt from CEQA under the CEQA Guidelines, Section 15061 (b)(3). No mitigation or enhancement is required. .
Category (f): Construction Administration
Task 12: Construction Administration **Task 12.1: Construction Administration for Low-income Direct Install Toilet Program (TCCWD-1)** This task involves review of contractor submittals for materials to be used in Low-income direct install toilet replacement and audit program, and review and approval of invoices from the contractor. TCCWD will manage the master database of eligible customers, coordinate efforts with the contractor to access properties for construction work. Participating property owners will contact TCCWD, being prompted by the marketing program. Other participants will be identified as significant multi-family residential developments which can be easily saturated by a targeted program. The contractor will contact the owners of these types of developments (primarily apartment complexes) and initiate the project. TCCWD will also identify single-family residential dwellings built prior to 1992 with high winter usage, indicating high indoor use and will target these customers with direct mail solicitations. TCCWD will follow up with customer satisfaction surveys. Deliverable(s): • Database of program participation
Category (g): Other Costs
No other costs are anticipated for this Project.

3.3.3 Other Required Information

Standards Used During Project

Toilets installed or rebated through this project will be required to meet the US EPA WaterSense standard and meet minimum MaP flush performance score of 600.

3.4 Snyder Well Intertie Pipeline for Irrigation and Nitrate Removal Project

3.4.1 Introduction

Background

As mentioned previously, the City of Tehachapi was incorporated in 1909, and is located in the Tehachapi Mountains between Bakersfield and Mojave in Kern County, at an elevation of 4,000 feet. The City serves a population of 8,673 and maintains 2,965 water service connections. The City is classified as a DAC with a median household income of $46,250, which is 75% of the State MHI.

The City obtains groundwater from the Tehachapi Groundwater Basin which is located on the Tehachapi Valley floor, encircled on the west by foothills, low-lying ridge running between the Tehachapi Mountains on the south, the Sierra Nevada Mountain range on the north, and on the east by a ridge of the Sierra Nevada and the Tehachapi Mountains, known as Proctor Gap, a subsurface barrier ridge (refer to **Figure 1-2**). The Tehachapi Groundwater Basin is generally elongated east and west, approximately nine miles long and five miles at its widest.

The need for imported water to supplement the Tehachapi area's dwindling groundwater supply was foreseen in 1947. The City draws from the Tehachapi Groundwater Basin, an adjudicated basin under California Superior Court Order. With the adjudication of the basin, "allowed pumping allocations" were created for each party of the Court Order and party domestic rights which restricted total annual extractions within the Tehachapi Basin to the safe yield of 5,500 AF. Of this safe yield amount, the City of Tehachapi has an allowed pumping allocation of 1,822 acre-feet/year (AFY). The City currently pumps all of its allowed pumping allocation and currently leases additional groundwater rights. The current and projected water demands for the City of Tehachapi are shown in **Table 3.4-1**. Besides the City of Tehachapi, Golden Hills CSD is the other predominate groundwater user in the basin.

In addition, the City purchases SWP water from TCCWD for recharge in the Tehachapi Basin. The City owns this imported water as soon as it is delivered to the Basin. Thus, the City is able to purchase water in advance of their needs. This flexibility enhances the ability of the entire region to meet the challenges presented by the varying supply of the SWP.

Groundwater in and around the City contains elevated nitrate concentrations. In some cases, the nitrate concentration in wells is higher than 45 mg/L, the Maximum Contaminant Level (MCL) as defined by the California Department of Public Health (CDPH). Multiple sources of nitrate have caused the elevated nitrate levels including: effluent from the wastewater treatment facilities (WWTF), wastewater discharge from septic tanks, existing nitrates in the soils beneath former wastewater lagoons, and nitrates from historical and current agricultural and domestic fertilizer applications.

Table 3.4-1: City of Tehachapi Past, Current and Planned Water Deliveries (AFY)

	2005	2010	2015	2020	2025	2030	2035	2040
Metered Deliveries	1,563	1,810	1,886	1,851	2,043	2,256	2,491	2,750
Total Potable Demand	1,563	1,810	1,886	1,851	2,043	2,256	2,491	2,750
System Losses	270	148	154	151	167	184	204	225
Total Deliveries	*1,833*	*1,958*	*2,040*	*2,002*	*2,211*	*2,441*	*2,695*	*2,975*

Source: 2010 Tehachapi Regional Urban Water Management Plan

The City currently has seven wells that are available to meet their customer water demands (locations of wells are shown in **Figure 3.4-1**). However, the Snyder Well has exceeded the nitrate MCL for a number of years and is currently placed on standby. Prior to being placed on standby, the groundwater from the Snyder Well was blended with other wells, but with the construction of additional wells, the Snyder Well capacity was not needed. Recently, CDPH has put the City on notice to permanently remove the Snyder Well from the City's potable water distribution system. Although the City has enough groundwater pumping capacity available at other wells when all wells are in service, the water system does not meet CDPH minimum supply requirements without the Snyder well and with the next largest well out of service for maintenance or repairs. The City's water system currently supplies water for significant irrigation demands that could be more efficiently and economically supplied by non-potable sources.

Project Description

The Snyder Well Intertie Pipeline will connect the Snyder Well to the TCCWD raw water pipeline system that delivers SWP water to agricultural water users. The primary goal of this project is to utilize non-potable water from the Snyder well or SWP water from TCCWD for irrigation of the turf on athletic fields as well as crops. This will offset at least 65 AFY of potable water demand that would otherwise have to be satisfied from the City's other potable wells and limited Tehachapi Basin allocation. TCCWD will take over providing service to the athletic fields and will bill TUSD for the water use. A draft Joint Agencies Agreement has been prepared discussing the future ownership and use of the pipeline system and the Snyder Well and is included as **Appendix 3.4-A**. TCCWD will own the proposed pipeline system, while the City will retain ownership of the well (with TCCWD paying for all O&M costs for the water that is pumped from the well). TCCWD will have the flexibility to either irrigate athletic fields using SWP water from the TCCWD pipeline, which is already at a pressure sufficient for landscape irrigation, or to irrigate the fields using non-potable water produced by the Snyder Well. The project will also provide TCCWD with the flexibility of extracting conjunctive use water at the Snyder Well, which offers two advantages over their other extraction wells: 1) the nitrate in the water produced by the Snyder Well is beneficial for crop irrigation, and 2) extracting high nitrate groundwater from underneath the City could, over time, reduce the nitrate levels in the underlying groundwater.

Water pumped from the Snyder well by TCCWD would provide additional conjunctive use extraction capacity that may be needed during drought years when the allocation of SWP water is reduced, and would not count against the City's Tehachapi Basin allocation.

Additionally, substituting non-potable water for the potable water currently used to irrigate 16 acres of athletic fields at the Jacobsen Junior High School will result in significant cost savings for the Tehachapi Unified School District (TUSD) while at the same time providing the City with additional revenue. The school is currently billed for potable water under the City's Zone A rate structure. The rate charged by TCCWD for the non-potable water will be significantly less than the Zone A rates. The potable water that will be made available to the City will be supplied to other City customers under the City's Zone B rates, which are higher than the Zone A rates paid by the school.

The project involves constructing approximately 3,300 feet of 8" and 10" PVC pipe that will connect the Snyder Well with the existing TCCWD raw water pipeline. The TCCWD raw water pipeline currently terminates at the intersection of East Valley Blvd and South Dennison Rd. The Snyder Well discharge plumbing will be modified so as to isolate the well from the City's water system preventing raw water from contaminating the domestic water. Refer to **Figure 3.4-2**.

The existing athletic fields' irrigation systems will have to be isolated from the school's domestic water system and suitable backflow prevention devices and protocols will be implemented. The City will also have to obtain an easement through the school's property for construction, maintenance and operation of the proposed pipeline. The City has obtained a letter of support from the school district for the project and assurance that the easement will be granted to the City after design has been completed (see **Appendix 3.4-B**).

The Snyder Well project allows the City of Tehachapi, TCCWD, and TUSD to work together to use their existing water resources in the most beneficial way to meet the needs of the area's residents. Non-potable water will be used for irrigation and landscaping in lieu of potable water, which will result in a more efficient use of water resources and a cost savings for multiple parties within this Disadvantaged Community.

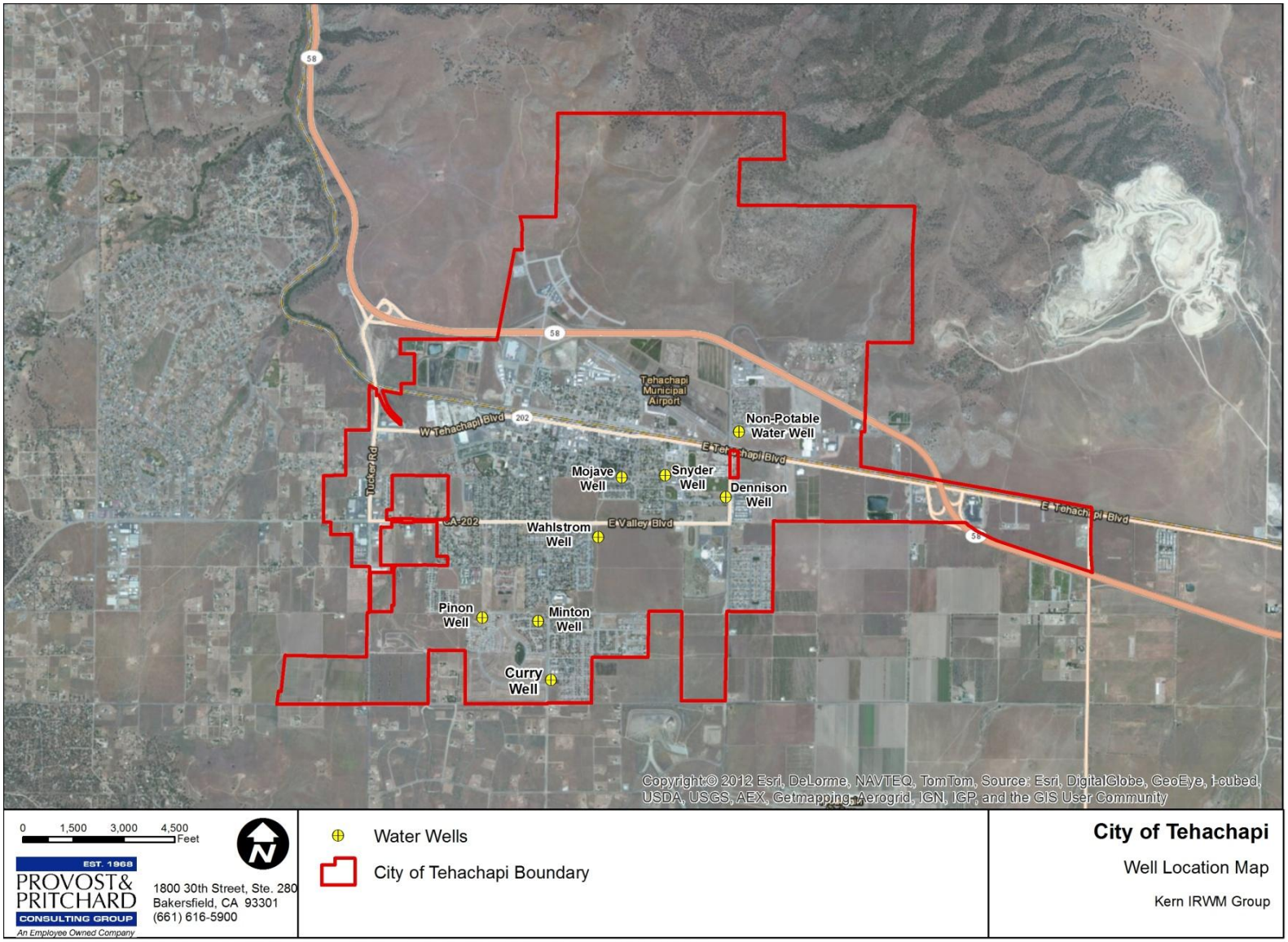


Figure 3.4-1: City of Tehachapi Wells

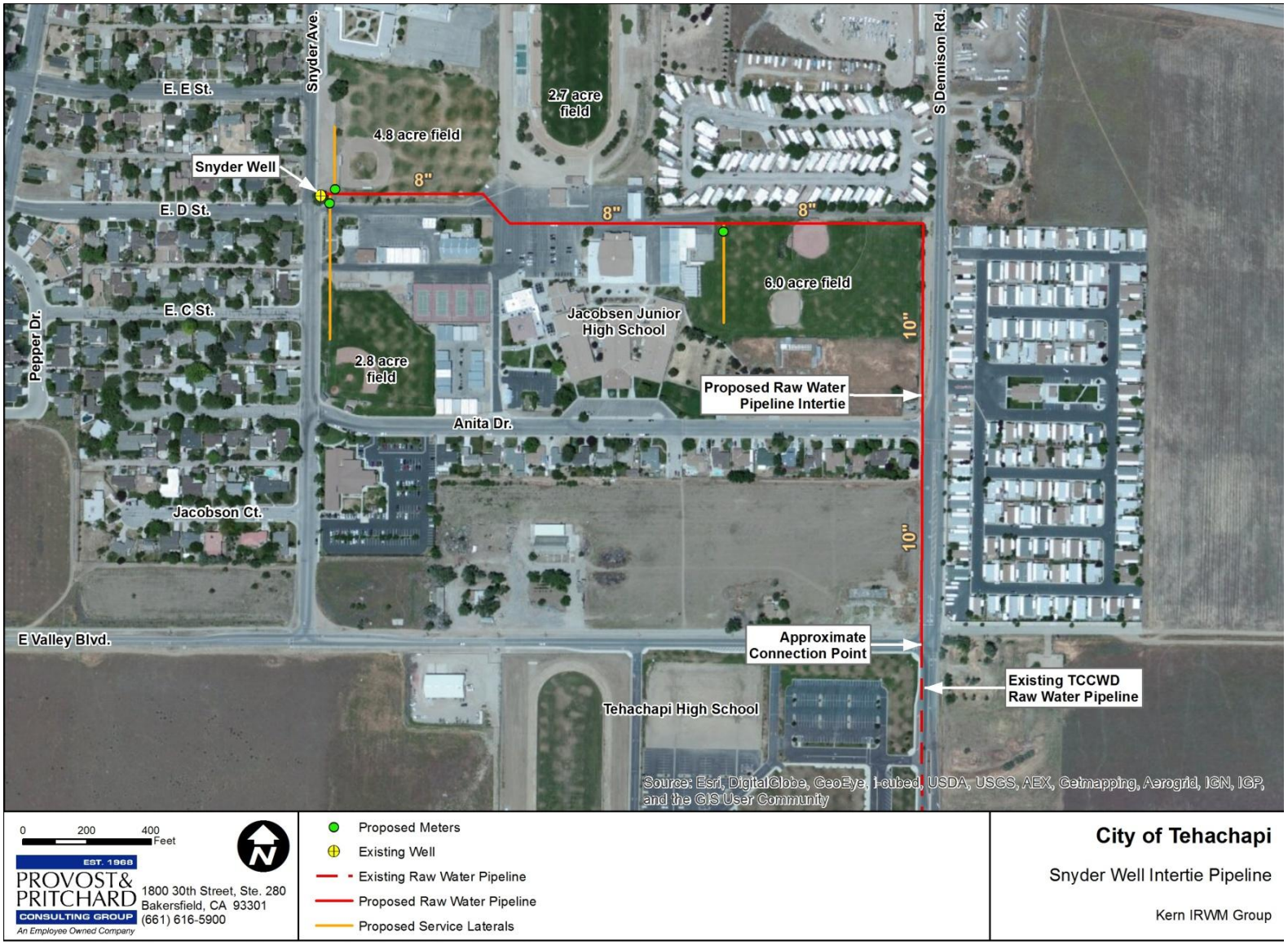


Figure 3.4-2: Snyder Well Intertie Pipeline for Irrigation and Nitrate Removal Project Map

Goals and Objectives

The goals of the Project consist of:

- Reduce the demands on the City's water system by approximately 65 AF/year by using non-potable water from the Snyder Well and/or SWP water from TCCWD.
- Delay the need for constructing new well(s) (both by the City and TCCWD) to meet peak day water demands. The peak pumping capacity required for maximum day demands will be reduced by 105 gallons per minute (gpm).
- Remove nitrate from the aquifer underlying the City.
- Reduce fertilizer requirements (and costs) to TUSD for the athletic fields by as much as 1,000 pounds per year.
- Reduce water costs for TUSD by about $45,000 per year.
- Increase revenues to the City.
- Reduce the potential need for either a wellhead water treatment system or a regional water treatment plant.

The Snyder Well project will help achieve the following IRWM Plan objectives:

- *Maximize the use of lesser quality water for appropriate uses (landscaping, agricultural crops, "aesthetic" projects)*
- *Optimize local management of water resources to improve water supply reliability*
- *Improve water quality for disadvantaged communities and the watershed over the planning horizon*
- *Continue to provide drinking water that meets or exceeds water quality standards; and support efforts to attain appropriate standards*
- *Increase distribution efficiencies and reduce energy usage over the planning horizon*

In addition, the project meets the following two Water Management Strategies outlined in the Kern IRWMP:

11.2.4.3 Matching Quality to Use

Matching water quality to water use is a management strategy that recognizes that not all water uses require the same quality water. One common measure of water quality is its suitability for an intended use, and a water quality constituent is often only considered a contaminant when that constituent adversely affects the intended use of the water. High quality water sources can be used for drinking and industrial purposes that benefit from higher quality water, and lesser quality water can be adequate for some uses, such as irrigation. Further, some new water supplies, such as recycled water, can be treated to a wide range of purities that can be matched to different uses.

11.2.4.2 Groundwater/Aquifer Remediation

Groundwater remediation involves extracting contaminated groundwater from the aquifer, treating it, and discharging it to a water course or using it for some purpose. It is also possible to inject the treated water back into the aquifer. Contaminated groundwater can result from a multitude of sources, both naturally occurring and anthropogenic.

Examples of naturally occurring contaminants include arsenic, high TDS, and high salinity from specific geologic formations or conditions. Groundwater can also be contaminated from anthropogenic sources with organic constituents, inorganic constituents, and radioactive constituents from many point and non-point sources. These anthropogenic sources include industrial sites, mining operations, leaking tanks and pipelines, landfills, impoundments, dairies, agricultural and storm runoff, and septic systems. Current groundwater concerns within the Region are dealt with via blending of supplies.

Purpose and Need

The purpose of this project is to re-purpose a valuably City asset, the Snyder Well, to the benefit of the City, TCCWD, and the local school district. Water from the formerly potable Snyder Well will be conveyed through a new non-potable water pipeline and used for irrigation of nearby school athletic fields as well as agricultural fields served by TCCWD. The athletic fields and crops will utilize the nitrogen contained in the water to reduce the necessary fertilizer usage by school district/farm personnel. Through this project, nitrates harmful to humans are removed from the groundwater aquifer, the source of drinking water from the City's wells, and applied to uses where they are a benefit. Over time, it may even be possible to return the Snyder Well to domestic service in the City's water system should nitrate levels diminish at the well.

The Project will help the City in meeting the following needs of the community:

Facilitate Meeting Peak Demands – One of the City's primary needs for the proposed Project is to salvage beneficial use of a currently unusable water supply well to help meet peak water demands that occur principally during the summer months. The City can meet current water demands with its existing water wells; however, if its largest water well is non-functioning the City would not be able to meet peak demands without using the Snyder Well and implementing a blending program. CDPH requires that water systems have the ability to meet maximum day demand with the highest capacity well out of service, for systems that rely solely upon groundwater (Section 64554(c) of the California Waterworks Standards).

The City's current flow capacity required to meet maximum day demands (MDD) was calculated based on the highest monthly demand during the past 5 years. The following table provides the monthly flow rates for the peak months during this period.

Table 3.4-2: City of Tehachapi Peak Monthly Water Demands (2008-2012)

Year	Month	Acre-Feet (AF)	MMD (MGD)
2008	July	300	3.16
2009	July	304	3.20
2010	Aug	295	3.11
2011	Aug	297	3.13
2012	July	301	3.17

As the table shows, during this five year period the peak monthly demand of 3.2 million gallons per day (MGD) occurred during July 2009 and 2011. The California Waterworks Standards requires a 1.5 peaking factor be used to account for higher daily usage during the month. With this peaking factor the MDD is 4.8 MGD or 3,336 gpm.

The City owns seven wells as listed in **Table 3.4-3** along with each well's flow capacity.

Table 3.4-3: City of Tehachapi Well Flow Capacities

Well	Flow Capacity (gpm)
Snyder Well	710
Dennison Well	600
Mojave Well	600
Wahlstrom Well	900
Minton Well	600
Pinon Well	850
Curry Well	120
Total Capacity	**4,380**
Total Capacity w/o Snyder	**3,670**

As the Snyder Well is currently on standby (and potentially be disconnected from the City's water system as recommended by CDPH), the City's total capacity is only 334 gpm more than the MDD. If the next largest well were unavailable during peak events, the water supply would be deficient compared to the MDD. As the City's demands continue to grow, the City will eventually need to construct a new well. With this project, the portion of the City's peak demand that contributes to the athletic fields will be removed because it will be served by the Snyder Well and/or SWP water. Additionally, through the cleanup of the aquifer, the Snyder Well may be able to return to active service in the City's water system. It should also be noted that the Mojave Well is hovering around the Nitrate MCL as well increasing the concerns for water supply reliability. Therefore, the project helps meet the following IRWMP objective:

- *Optimize local management of water resources to improve water supply reliability.*

Improve Water Quality – By removing nitrate-laden water from the aquifer and applying it where the nitrate can be beneficially used, the groundwater produced by the City's wells (particularly the Snyder and Mojave Wells) are expected to have lower nitrate levels over time. This Project helps maintain the sustainability of the water supply minimizing the potential health risks to its citizens. The Project helps implement the following IRWMP objectives by using the IRWMP strategy of *Groundwater/Aquifer Remediation*:

- *Improve water quality for disadvantaged communities and the watershed over the planning horizon, and*
- *Continue to provide drinking water that meets or exceeds water quality standards; and support efforts to attain appropriate standards.*

Reduce Costs - The City of Tehachapi provides domestic water service to a Disadvantaged Community. Because of this issue it is of paramount importance that the City deliver high quality water at economical water rates. With the City currently exercising its full groundwater pumping allocation, the City must obtain expensive additional water supplies from other groundwater rights holders and SWP water through conjunctive use. With these additive costs, the City strives to reduce capital and operating costs as much as possible. By transitioning turf irrigation from a potable water supply to a non-potable supply, the City will be able to delay the need for the construction of a new groundwater well with uncertain water quality and/or production. Additionally, by removing the nitrate-laden groundwater from the aquifer the need for either water treatment facilities at well(s) or a regional water treatment plant may be reduced.

Additionally, by enabling the Snyder Well to be placed back into beneficial service, the City can operate this important asset rather than keeping it on standby or abandoning it, decreasing the well's value to the City.

Lastly, the conversion from potable to non-potable use for the school facilities represents a significant immediate cost savings in water costs to the School District and added revenue for the City.

Match Quality of Water to Use – The proposed Project will enable non-potable water to be delivered to the school athletic fields and to TCCWD for crop irrigation. This will allow TCCWD to increase use of its available SWP water supply and system capacity and charge the school district at a lower water rate than the City. Additionally, the nitrate-laden groundwater will be used to help meet nitrogen uptake requirements for the turf grass or crops. By meeting this need the following IRWMP objective is met:

- *Maximize the use of lesser quality water for appropriate uses (landscaping, agricultural crops, "aesthetic" projects)*

Integrated Elements of Projects

The Snyder Well Project has an integration element with the Tehachapi Regional Water Use Efficiency Project. Both projects work to provide the City with adequate capacity to meet demand. Both projects also reduce the water demands for the City. The Tehachapi Regional Water Use Efficiency Project will reduce water use by the City's residents by providing water conservation tools to them. While the Snyder Well Intertie Pipeline for Irrigation and Nitrate Removal Project will remove the athletic field's irrigation water demand from the City's water system. Both projects also contribute toward meeting the IRWMP Objectives and Water Management Strategies. Although the projects work together to meet a common goal, they both add value without requiring coordinated implementation or operation.

Completed Work

The City has identified the alignment for the intertie pipeline and has hired an engineering firm to provide the pipeline design and specifications. The pipeline design is currently 30% complete. A copy of the 30% plans and a list of project specifications that will be required for contracting the work are included as **Appendix 3.4-C**.

Additionally, the City has prepared a CEQA Negative Declaration document that is out for public comment. The Negative Declaration is expected to be adopted on August 15, 2013. A copy of the document is included as **Appendix 3.4-D**

Existing Data and Studies

The City samples their water supply wells on a quarterly basis as required by CDPH. The Snyder Well has had an average nitrate concentration of 54.5 mg/L from 2009-2011. California's MCL for nitrate is 45 mg/L. Other wells in the area have nitrate concentrations that range from 10 mg/L to 45 mg/L. **Figure 3.4-3** is a graph that shows the nitrate concentrations in Snyder Well and the City's other wells.

Project Map

A site map showing the project's location and the surrounding areas has been included as **Figure 3.4-2** shown previously in this section. This map includes locations of the City's Snyder Well, the proposed intertie pipeline alignment, and the laterals that serve the athletic fields. A map of the other city wells is included as **Figure 3.4-1**. The proposed monitoring locations will consist of:

- Snyder Well and other City wells– monitoring locations for nitrate concentrations and water meters to measure groundwater usage from the wells.
- Athletic Field turnouts – location of water meters to measure amount of water applied to the fields and to determine nitrate loading.

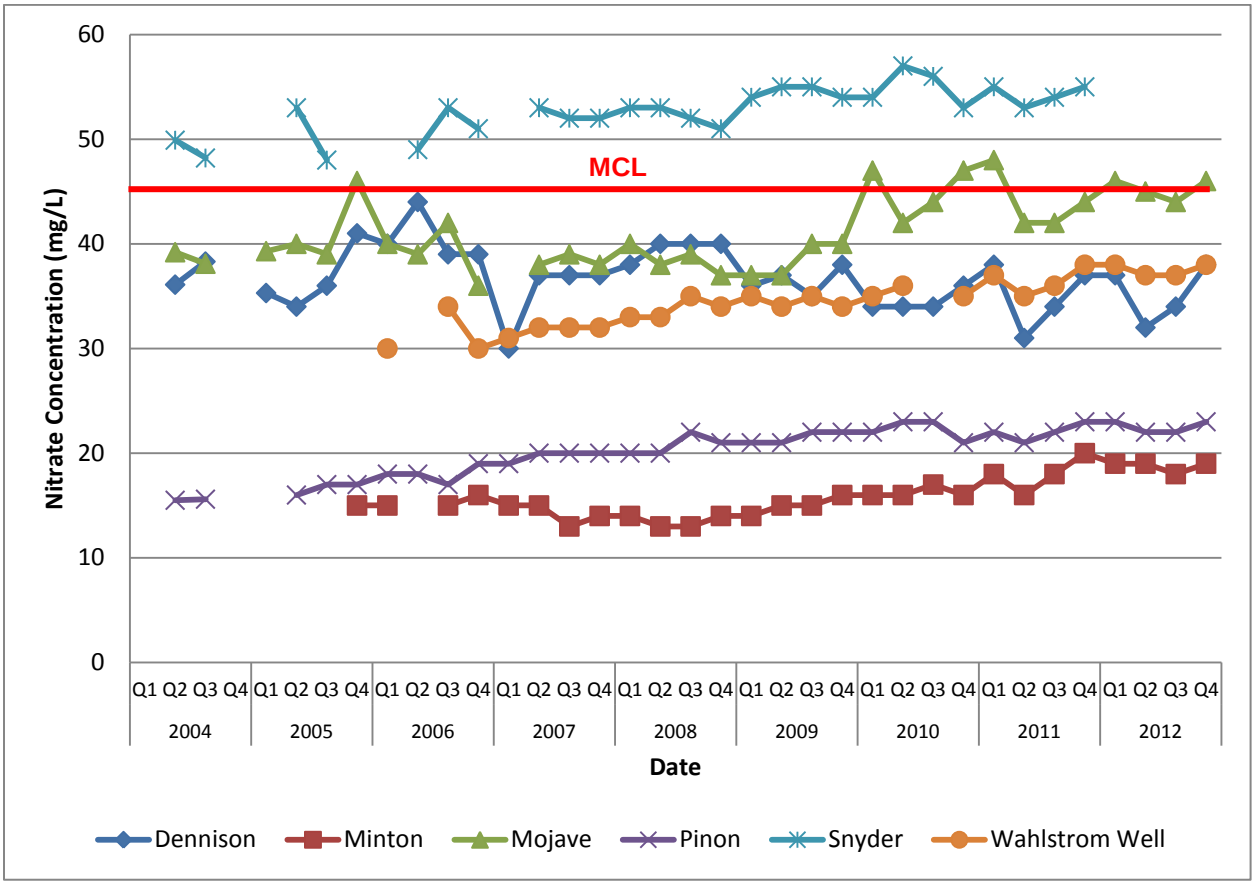


Figure 3.4-3: Nitrate Concentrations in City Wells

Project Timing and Phasing

The Snyder Well Intertie Pipeline for Irrigation and Nitrate Removal Project is not part of a multi-phased project complex and will operate on a standalone basis. The Project will accomplish its goals without depending on any of the other proposed projects.

The Project can proceed upon Notice of Grant Award, with timing and phasing as further described in Attachment 5 Project Schedule.

3.4.2 Proposed Work Plan

Category (a): Direct Project Administration

Task 1: Administration

TCCWD will be the lead administrative agency and responsible for preparing and submitting invoices to DWR, and overall project management, including coordination of project team, vendors, and contractors. With the assistance of a consultant, TCCWD will work with City staff to administer its Project and work to manage and account for all aspects of the project. City staff will take the lead in retaining consultants for design and bidding phase services, construction services and construction review for the project. Work performed by TCCWD in this task will be coordination with consultants and stakeholders, attending meetings, and processing performance measures and invoices. This effort will be regularly evaluated at monthly project meetings between TCCWD's Project Manager, City staff working on the project, consultants working for TCCWD and/or City, plus selected consultants and contractors. At these meetings progress over the previous month will be reviewed, issues in implementing the project will be discussed, and action items will be established for the next month.

Deliverable(s): TCCWD will deliver monthly invoices of work accomplished to DWR and copies of agency staff work orders, consultant contacts/task-orders, and/or construction contracts. Within these reports pay requests from contractors, certified weekly payroll records, and verifications of prevailing wage compliance will be included.

Task 2: Labor Compliance Program

TCCWD will retain a consultant to prepare a labor compliance program for all projects within this Proposal upon notice of grant award, in accordance with the requirements of California Labor Code §1771.5(b) for pertinent contracts. Construction of the Snyder Well Intertie Project is anticipated to be completed by construction contractors who regularly comply with prevailing wage requirements, and will be required to continue that practice on pertinent contracts.

The City of Tehachapi has a long-standing prevailing wage compliance program for its public contracts. Upon award of the grant, the City will also retain a labor compliance consultant to assist its staff, and the City's staff to assure that contractors for the City's project comply with TCCWD's labor compliance program.

Another part of the City's standard practice is to verify that all contractors employed are appropriately licensed by the State of California and are in good standing

Deliverable(s): TCCWD, will submit its Labor Compliance Program to DWR. This program will be adhered to throughout the project in all dealings with the retained contractors and their personnel. Also, copies of all contracts signed by the City for contracted services will be supplied to DWR, as requested, for verification that they are consistent with the California Labor Code.

Task 3: Reporting

Task 3.1 – Quarterly Reports and Project Completion Report

TCCWD will act as the grant administrator, and will be responsible for compiling quarterly progress reports and invoices for submittal to DWR. TCCWD will coordinate with City staff to retain consultants as needed to prepare and submit reports.

Reports will meet generally accepted professional standards for technical reporting and terms of the contract with DWR. The Quarterly Reports will explain the status of the project and will include the following information:

- Summary of the work completed for the project during the reporting period
- Activities and milestones achieved
- Accomplishments and any problems encountered in the performance of work

A Project Completion Report documenting actual work done, changes and amendments to each project, a final schedule showing actual progress versus planned progress, and copies of final documents and reports generated during the project. The Report will be submitted to DWR within ninety (90) calendar days of DWR verification that all tasks associated with the project have been completed.

Deliverable(s): TCCWD will deliver quarterly progress reports as well as the Final Report to DWR for this project. Included within these reports will be site pictures of progress will be included, applicable construction review logs, and project team meeting agendas and minutes. The Civil Engineer of record for the project will submit to DWR a Final Inspections and Certification along with a Certificate of Project Completion in accordance with DWR's requirements.

Task 3.2 – Project Monitoring Plan

A Project Monitoring Plan (PMP) shall be submitted to the State prior to disbursement of grant funds for construction or monitoring activities for this Project. Along with the Attachment 6 Project Performance Measures Tables requirements for the Project, the PMP will also include: a) Baseline conditions, b) Brief discussion of monitoring systems to be utilized, c) Methodology of monitoring, d) Frequency of monitoring, and e) Location of monitoring points.

One particular item in the PMP will be recommended fertilizer application rates based on the actual nitrate concentration at the well. This information will be provided to school district maintenance staff for implementation.

City staff will lead work for monitoring and performances measures verification after Project completion. Costs for monitoring and performance measures are not included in the budget (funding match or grant award).

Deliverable(s): PMP as required by conditions in grant contract.

Category (b): Land Purchase/Easement

Task 4: Land Purchase/Easement

Task 4.1 – Easement Document Preparation and Acquisition

The east-west segment of proposed pipeline alignment is located on the school property. Because the project benefits the school district financially, the City has received a letter from the school district providing assurance of an easement being granted to the City at no cost.

Prior to preparing the 100% design package, an easement document with legal description will be prepared by a Licensed Land Surveyor for the easement across the school property. The document will be reviewed by the City, TCCWD and the school district and revised if necessary. The document will then be authorized and then recorded at the County Recorder's Office.

Deliverable(s) – Recorded easement document

Category (c): Planning/Design/Engineering/Environmental Documentation

Task 5: Assessment and Evaluation

Task 5.1 – Feasibility Analysis/30% Plans

At its own cost, the City of Tehachapi retained Provost & Pritchard Consulting Group and AECOM in February of 2013 to develop and submit to the State with this proposal: 30% Plans with list of Specification Sections, the Project Work Plan, Budget, Schedule, Monitoring/Assessment/Performance Measures, Technical Justification of Project, and the Benefits and Costs Analysis.

Deliverable(s): On behalf of the City, TCCWD will send documentation of expenditures for the work by Provost & Pritchard and AECOM utilizing its own funds as local cost share prior to grant award.

Task 6: Final Design

Task 6.1 – Project Organization and Kickoff

The City will contract with an engineering consultant and kickoff the work. Consultant will meet with the City to discuss the project scope, budget, and schedule. Key milestones will be discussed. A visit to the project site will be scheduled to immediately follow the kickoff meeting. Consultant will visit the site to gather layout information, take photographs, and assess site constraints.

Task 6.2 – Project Survey

A local land surveyor will be retained to perform a topographic and boundary survey of the proposed alignment. Surface features and utilities point data will be collected the corridor of the project. A project basemap will be developed based on survey data collected.

Task 6.3 – Utility Coordination

Consultant will contact utility companies with facilities in the project area to review the project and identify potential conflicts. Consultant will meet with TCCWD staff to review the point of connection and design criteria. Utility data will be incorporated into the project basemap.

Task 6.4 – 60% (Concept) Design

Using the updated basemap, 60% (Concept) Design construction drawings will prepared and submitted to the City of Tehachapi for comments. Site exploration (potentially included as-built plan review, site walks with school personnel, cross-connection pressure testing, and minor potholing) is also anticipated in order to assure that only non-potable services on the school site are connected to the proposed pipeline.

Task 6.5 – 90% (Pre-Final) Design

The 90% design is a final unstamped submittal to the City of Tehachapi, TCCWD, the Tehachapi Unified School District and other CDPH for review and comment. Complete plans, specifications and a detailed estimate of probable anticipated cost (PS&E) will be available to the City of Tehachapi for this review.

Task 6.6 – 100% (Final) Design

After final comments have been received from the City of Tehachapi and other stakeholders on the 90% design, the 100% design package will be generated. The 100% design will be ready for advertisement by the City of Tehachapi through a notice to bidders for the project. The package will include complete, signed and "as-advertised" plans and specifications. It is anticipated that the final design of the project will be completed by April 2014.

Deliverable(s): The City of Tehachapi will deliver the final PS&E signed by a registered Civil Engineer in the State of California. These documents will be provided to DWR within 30 days of being finalized.

Task 7: Environmental Documentation

As mentioned previously, a CEQA Negative Declaration document is currently out for public comment. Additionally, the City has notified the tribes of the local area regarding the project nature and location, providing the full 90 days for them to reply to the notification and provide input to the project. After this process is complete the City will adopt the Negative Declaration.

Deliverable(s): Approved and adopted environmental documents

Task 8: Permitting

Task 8.1 – SWPPP Erosivity Waiver

With the project impacting between 1 and 5 acres of area, a SWPPP Erosivity Waiver will be prepared for the project in accordance with the State Water Resources Control Board's requirements. The Waiver will be uploaded to the SWRCB's website.

Sample Deliverables: SWPPP Waiver document

Category (d): Construction/Implementation

Task 9: Construction Contracting

Task 9.1 – Construction Bid Process

The City will utilize the 100% PS&E to pursue responsive bids from qualified and responsible contractors. In the bid solicitation package the City will require proof of appropriate state licensing in order be selected for the work. The request for submittal of bids will be made public by newspaper notice(s), consistent with State law. The City will conduct a pre-bid meeting with interested contractors to go over information in the construction documents and answer questions submitted by contractors. An attendance list will be generated for the meeting and meeting record will be made. Contractors who submit bids will be required to provide unit costs for listed items included in the work, an anticipated schedule for accomplishing the work, bid bonds, performance bonds, and adequate insurance to cover the work.

Task 9.1 – Bid Award and Execute Contract Documents

The responsive and responsible low bidder who has fully satisfied the bid solicitation shall be awarded the work from the City. The City will execute contract documents with the contractor to begin work and the Notice to Proceed will be issued. The selected contractor will be required to submit monthly invoices to the City for payment on the work accomplished and approved.

Deliverable(s): Copies of: advertisement for bids and records of pre-bid meeting, bid evaluation, and awarded contracts, as requested by DWR.

Task 10: Construction

Task 10.1 – Construction Staking

Construction stakes will be provided by the selected contractor as part of his bid. The City will review this information for conformance to the project plans. Construction staking will also

reference location of critical underground utilities. Cutsheets will be provided to the City upon completion of each staking request, displaying stake locations and details.

Task 10.2 – Construction of Intertie Pipeline

This work item will include furnishing and installing approximately 3,300 feet of 8-inch and 10-inch AWWA C900 PVC pipe along South Dennison Road and through the school property. This pipeline will include service laterals for the athletic fields, modified Snyder Well discharge plumbing, isolation valves, and other appurtenances.

Category (e): Environmental Compliance/Mitigation/Enhancement

Task 11: Environmental Compliance/Mitigation/Enhancement

This task consists of conditions that will be imposed upon the Contractor in the performance of the work in accordance with the specifications. The minimum preventative measures that will be used during construction to minimize potential impacts to the environment, include:

- 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.
- 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 are to 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).

The City will require that contractors monitor for cultural resources throughout the construction process. If during the course of the project construction, any archaeological or historical resources are uncovered, discovered or otherwise detected or observed, activities within 50 feet of the find shall be ceased.

Deliverable(s): Construction inspection reports with discussion of environmental compliance measures.

Category (f): Construction Administration

Task 12: Construction Administration

Task 12.1 – Contract Administration

Contract administration will consist of tasks related to managing the contract with the

Contractor. These tasks will consist of:

- Leading a pre-construction meeting with the Contractor and other project stakeholders.
- Reviewing and authorizing requests for changes. If unforeseen circumstances are encountered by the contractor, City staff will expeditiously work to make a determination whether the circumstance is a material change to the work described in the contract. If this is determined, the contractor shall be compensated for this change according to the contract documents.
- Reviewing and approving requests for payments.
- Performing other administrative duties required for managing this phase of the project.

Task 12.2 – Material Submittal Review

Prior to construction, City of Tehachapi staff will work with the contractor to verify that the material and equipment proposed to be used in the construction of the pipeline is consistent with applicable contract document requirements and that material suppliers are identified and approved.

Task 12.3 - Construction Inspection

The construction inspector will be required to make site visits to the Project site to check on the construction of facilities as per the intended design. It is expected that the City staff will inspect the project each day construction occurs, and that field reports would be generated for each visit.

Task 12.4 - Soils/Materials Testing

Trench backfilling will be tested for compaction per the requirements of the project specifications. It is assumed that approximately 8 visits will be required by the soils technician to obtain moisture-density curves for the different soil types and perform compaction testing. As construction proceeds, the project inspector will obtain a familiarity with the compaction effort required to obtain proper soil compaction, reducing the number of visits by the soil technician, keeping testing costs at a moderate level for the project.

Task 12.5 - Project Closeout

At the end of the project a punch list will be developed ensuring that all remaining project requirements are met by the contractor. At completion, the City will file the Notice of Completion with the recorder to ensure that no claims or liens are filed by subcontractors or materials suppliers, and final payment will be made to the contractor. Changes to the original design would be logged throughout construction and documented in an as-built set of plans for the City of Tehachapi records. As part of the specifications, a one year warranty over the work is required, in which the contractor will have to correct any work that fails during this time period.

Deliverable(s): Pre-construction and progress meeting minutes, change orders, partial and final pay requests, construction inspection reports, Notice of Completion, copy of as-built set of plans, and other similar items requested by the State.

Category (g): Other Costs
Task 13: Other Costs No other costs are anticipated for this Project.

3.4.3 Other Required Information

Standards Used During Project

Project Design and Construction

- Applicable AWWA Standards and Design Manuals for the pipes materials and installation, air release valves, gate valves, backflow prevention and cross connection control.
- 2010 State Standard Specifications
- CDPH Drinking Water Regulations and Waterworks Standards
- ASTM Standards for construction materials

Health and Safety

- OSHA Standards – Part 1926
- Backflow Prevention – AWWA Manuals and CDPH Regulations

Laboratory Analysis

- Lab analysis for nitrate sampling *shall be in accordance with Standard Methods for Examination of Water and Wastewater American Public Health Association Manual*
- Soil Compaction – ASTM D1557, in accordance with the City's specifications.

Relevant Project Technical Specifications to be included in the Contract Documents

- 030500 General Concrete Construction
- 099000 Painting and Coating
- 099754 Polyethylene Sheet Encasement (AWWA C105)
- 312316 Trenching, Backfilling and Compacting
- 321216 Asphalt Concrete Paving (California)
- 400500 General Piping Requirements
- 400515 Pressure Testing of Piping
- 400520 Manual, Check, and Process Valves
- 402092 PVC Distribution Pipe (AWWA C900)

3.5 Kern Water Bank Recharge and Recovery Enhancement Project

3.5.1 Introduction

Background

Groundwater banking, which is a form of conjunctive use (IRWMP Management Strategy 11.2.3.1) is a key component of the Region's integrated water management, assisting in meeting a number of IRWMP objectives. The Kern Water Bank is a major existing groundwater banking facility that serves and provides benefits to many of the IRWMP Group's participants. The Kern Water Bank Authority (KWBA) is the implementing agency of its proposed Project that continues build-out of the Kern Water Bank's long-planned facilities.

KWBA is a public agency which is a Joint Powers Authority (JPA). The JPA members include: Dudley Ridge Water District, Kern County Water Agency on behalf of its Improvement District 4, Semitropic Water Storage District, Tejon-Castac Water District, Westside Mutual Water Company, and Wheeler Ridge-Maricopa Water Storage District. KWBA members participating in the project are hereafter referred to as "KWBA Participating Members or KWBA Members." The JPA is governed by a board of directors which oversee operation of the Kern Water Bank. The JPA operates the Kern Water Bank on approximately 20,500 acres in Kern County, for the benefit of its members and their constituents including farmers and residents in the City of Bakersfield and Kern and Kings Counties. The primary purpose of the Kern Water Bank is to recharge, store, and recover water to improve water supply for KWBA members. Adjoining districts also gain benefits from water recharged in advance of, and in excess of, recovery.

Both KWBA members and adjoining entities have been impacted by a variety of actions that have reduced their water supplies, and made them less reliable. Without supplemental water supplies and improved reliability, the future stewardship of agricultural lands and sustainability of urban areas in the Region may be threatened.

Recharge of high quality surface water and recovery of groundwater on the Kern Water Bank improves Kern Fan groundwater quality (an area of concern for agricultural and urban water users).

The Kern Water Bank also provides significant environmental benefits, including the enhancement of habitat for threatened and endangered species, water birds, and other wildlife. These are State and Region concerns. Some of the flood waters captured by the Kern Water Bank would otherwise flood improved land in the San Joaquin Valley. This flooding is also of concern to the State and Region.

The proposed project will provide quantifiable improvements to water supplies and water supply reliability. Other non-quantifiable benefits include improvements in groundwater quality, increased intermittent wetland habitat (associated with recharge pond use), and reduction in flooding of improved lands in the San Joaquin Valley.

Project Description

The proposed Project consists of the design and construction within the Kern Water Bank of approximately 189 net acres of recharge ponds fed from the Cross Valley Canal, Kern Water

Bank Canal, and/or Kern River via existing turnouts, pipelines, ditches, and ponds, three new recovery wells in various locations, approximately 1.7 miles of 15 inch diameter recovery pipelines from the new wells, and associated facilities (pumps and electric motors in the wells, power supply and controls fed from existing power lines, pump discharges, and pipeline discharges to existing larger recovery facilities. Refer to **Figure 3.5-1** for the location of these proposed facilities in relation to the existing Kern Water Bank facilities. Recovery pipelines return previously banked water to the Kern Water Bank Canal. This allows return of banked water to Kern Water Bank Members via existing connection to the California Aqueduct and existing operational exchange agreements.

Design is approximately 30% complete.

Goals and Objectives

The goals and objectives are to enhance the Kern Water Bank's recharge capacity by approximately 1,730 AF per month and recovery capacity by approximately 910 AF per month, and thus: increase dry period supplies for participants by approximately 75,200 AF over the life of the project (about 1,500 AF per year), with stored water of approximately 127,000 AF of water stored underground at the end of project life. These give increased water supplies with improved water supply reliability, and increased operational flexibility in recharge and recovery operations, net improvements to Kern Fan groundwater quality, and reduced flooding in areas currently flooded by excess waters captured by the Project. Incidental improvements to intermittent wetland habitat associated with operation of approximately 189 net more acres of recharge ponds are expected.

The Project will help achieve the following IRWM Plan Objectives by making progress toward Water Management Strategies identified in the Plan:

> IRWMP Objective 10.2.1 Increase Water Supply
>
> *Strategy 11.2.3.1 through cooperation and collaboration with other regions restore water supplies to levels that will mitigate for water lost from the region and eliminate overdraft (400,000 – 1 million acre-feet (MAF))*
>
> *Increase water storage capacity in the region by increasing recharge acreage and expanding groundwater banking programs before all prime recharge land has been developed (8,000 recharge acres as soon as practicable)*
>
> *Increase/augment water supplies to meet region demands (e.g., municipal and industrial, agricultural, environmental) by 2050*

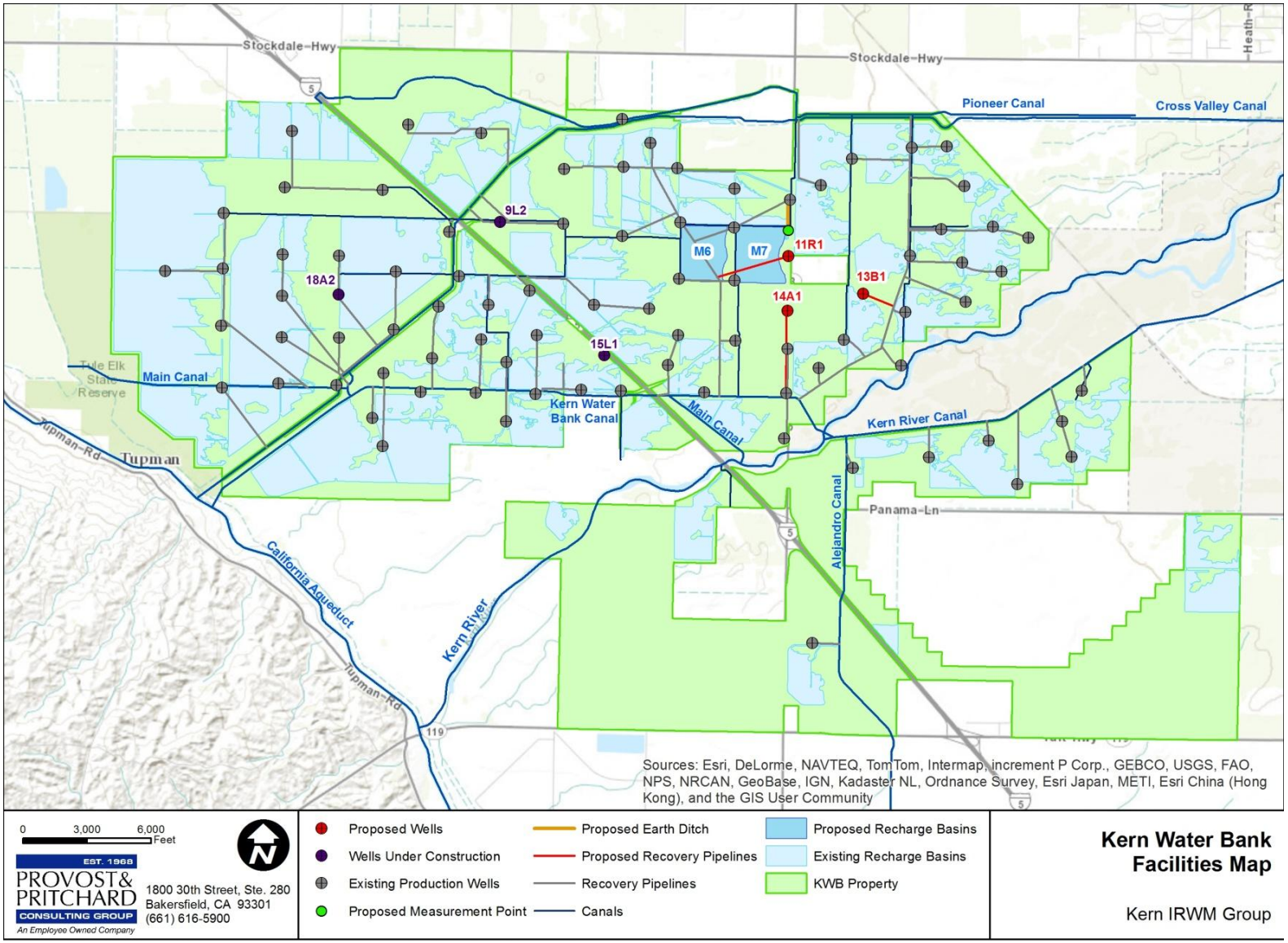


Figure 3.5-1: Kern Water Bank Recharge and Recovery Enhancement Project Map

IRWMP Objective 10.2.4 Promote Land Use Planning and Practice Resource Stewardship

Strategy 11.2.5.1 Agricultural Lands Stewardship

Agricultural lands stewardship broadly means conserving natural resources and protecting the environment by land managers whose stewardship practices conserve and improve land for food, fiber, watershed functions, soil, air, energy, plant and animal and other conservation purposes. It also protects open space and the traditional characteristics of rural communities. Further, it helps landowners maintain their farms and ranches rather than being forced to sell their land because of pressure from urban development.

Strategy 11.2.5.3 Ecosystem Restoration

The California Water Plan defines ecosystem restoration as "improving the condition of modified natural landscapes and biotic communities to provide for the sustainability and for the use and enjoyment of those ecosystems by current and future generations." The benefits of ecosystem restoration in the Kern Region are numerous, and depending on the type of ecosystem restored, they can include: capturing and storing stormwater, groundwater recharge, flood protection, increasing water supply reliability, wildlife habitat creation, restoration and enhancement, water quality enhancement, flood management, and recreation.

Strategy 11.2.5.6 Recharge Areas Protection

Recharge area protection includes keeping groundwater recharge areas from being paved over or otherwise developed and guarding the recharge areas so they do not become contaminated. Protection of recharge areas, whether natural or man-made, is necessary if the quantity and quality of groundwater in the aquifer are to be maintained. Existing and potential recharge areas must be protected so that they remain functional and they are not contaminated with chemical or microbial constituents.

Purpose and Need

The Kern Water Bank provides critical dry-year water supplies to KWBA Participating Members by capturing water available in wet periods, storing it in the Kern Water Bank, and then returning those supplies in times of need. This project will increase the ability of the Kern Water Bank to capture wet-year supplies and then return those supplies in dry years by adding 189 acres of recharge ponds and three recovery wells.

The Project will help meet the needs of the KWBA Participating Members and neighboring water districts, which represent a substantial area of the Kern IRWM Region. The benefits of the project that help meet these needs are listed below and described in further detail in the following sections:

- Water Supply
- Groundwater Quality
- Groundwater Overdraft Reduction
- Flood Protection

- Resource Stewardship
- Climate Change Mitigation

Water Supply Benefit - With respect to water supply, the additional recharge ponds will provide approximately 1,730 AF/month of recharge capacity. Wet-period supplies (e.g. SWP Article 21, CVP Section 215, and Kern River flood waters) are typically available only during high-flow, short-duration events. If these supplies are not captured during the event, they are lost to Kern County.

The additional wells will provide approximately 910 AF/month of recovery. These wells will help alleviate expected production declines as water levels drop during times when supplemental water supplies are most critical and allow for adjustments in pumping operations in response to changing water quality conditions and/or potential impacts from adjacent pumping operations.

Groundwater Quality Benefit - With respect to improving groundwater quality, the project will recharge very good to excellent quality water from the SWP, CVP, and/or Kern River and recover and export slightly lower quality groundwater, both of which will have a net beneficial impact on groundwater quality in the Kern Fan Area. This area has some localized areas of concern for salinity, naturally occurring arsenic, and other constituents. These contribute toward Regional Objective 10.2.3 "Improve Water Quality".

Groundwater Overdraft Reduction Benefit - Groundwater overdraft will be reduced because the Project increases dry period water supplies for KWBA Members and other IRWMP agencies that rely on KWB members for supplies (e.g. urban purveyors within Improvement District 4). Adjoining districts also purchase a portion of KWB recharge for overdraft reduction purposes.

These purposes are driven by the needs of the associated agencies, and the Region as a whole, to increase water supply (IRWMP Objective 10.2.1) and improve dry period water supplies and reliability.

In particular, the Project is part of Regional *Strategy 11.2.3.:*

"Through cooperation and collaboration with other regions restore water supplies to levels that will mitigate for water lost from the region and eliminate overdraft (400,000 AF – 1 MAF)

> *Increase water storage capacity in the region by increasing recharge acreage and expanding groundwater banking programs before all prime recharge land has been developed (8,000 recharge acres as soon as practicable)*
>
> *Increase/augment water supplies to meet region demands (e.g., municipal and industrial, agricultural, environmental) by 2050"*

The Project will also help address Regional Objective 10.2.2 to Improve Operational Efficiency, with Strategy 11.2.2 to "*optimize local management of water resources to improve water supply reliability over the planning horizon"* through increasing capture of lost local Kern River flood water.

Flood Protection Benefit - The project will also provide for flood control measures through the diversion of flood waters for beneficial purposes. The increased flood protection resulting from the Project is driven by the need of areas within Kern County, Kings County, and counties further north which are periodically flooded by rivers and streams that originate in the Sierra

Nevada and Tehachapi mountains. Increasing flood protection in those areas is consistent with IRWMP Objective 10.2.5 "Improve Flood Management". Some of the areas receiving improved flood protection from the Project would be north of Kern County (Tulare Lake, and along the San Joaquin River in particular). This is because from the Kings River and south, floodwaters captured by the Kern Water Bank would have flooded agricultural lands in the Tulare Lake bed in Kings County; and floodwaters of the San Joaquin River (Section 215 water KWBA purchases from the U.S. Bureau of Reclamation otherwise would cause flooding of agricultural and other developed lands along the River from Firebaugh to Stockton).

Resource Stewardship Benefit - The additional recharge ponds will aid owners of agricultural lands to maintain the productivity of their land, and provide intermittent wetland habitat for migratory birds along the Pacific Flyway. The Project's net addition of 370 acres of recharge ponds with associated intermittent wetland habitat for water and shore birds is consistent with Regional Strategy 11.2.5.3:

"*Improve and coordinate integrated land use planning to support stewardship of environmental resources, such as local rivers and streams and the Kern Fan, and integrate with habitat conservation plans and other ongoing planning efforts from this point forward.*

Preserve and improve ecosystem/watershed health throughout the planning horizon."

The need for conserving habitat and natural communities of State and Federal threatened and endangered species drives this purpose, and is consistent with IRWMP Objective 10.2.4 to promote land use planning and resource stewardship.

Climate Change Mitigation Benefit - The need for agencies in the Region to adapt to Climate Change, discussed in Section 2.10.11 of the IRWMP, will also be addressed to some extent by the Project through expansion of storage and further protection of recharge areas within Kern Water Bank. Additional recharge capability provides tremendous flexibility in demand to take and store water whenever it is available. This is very valuable in creating flexibility to adjust to whatever conditions climate change may force upon Regional water supply availability.

Integrated Elements of Projects

There is a linkage between the Kern Water Bank Recharge and Recovery Enhancement Project and the Urban Bakersfield Water Use Efficiency Project as discussed previously. This linkage adds value without requiring coordinated implementation or operation (projects can be done independently). In particular value is added through combining to improve water supply, water supply reliability, water quality, and climate change adaption for the Region and those Sub-regions.

Completed Work

The Project represents a step in the overall development of the Kern Water Bank, consistent with its prior planning and environmental compliance efforts. In 1996, Kern Water Bank Authority acquired about 20,000 acres then known as the Kern Fan Element lands from the Kern County Water Agency (which had acquired them from DWR as part of the Monterey Amendment to the SWP). In recognition of KWBA's development of the Kern Water Bank project on the 20,000 acres, the lands are now known as the Kern Water Bank Lands. KWBA is a signatory to a settlement agreement with parties in *PCL v. DWR and SWP contractors*, dated

May 5, 2003, which confirms: "KWBA shall retain title to the [Kern Water Bank] Lands." No property will be acquired for the project.

The CEQA Process for "build out" of the Kern Water Bank Project, including the facilities that are the subject of this Proposal, was completed during planning and agreement formation, with Notice of Determination for Kern Water Bank Project adopted by KWBA and posted in 1997. KWBA's CEQA review of the Kern Water Bank Project was not challenged. Under NEPA, the U.S. Fish and Wildlife Service ("Service") prepared an Environmental Assessment ("EA") for the Kern Water Bank Project and by publication of notice in the Federal Register initiated a 45-day public comment period that closed on June 30, 1997. On or about October 2, 1997, the Service completed a final EA and issued a Finding of No Significant Impact for the Project. The NEPA review was not challenged. Effective October 2, 1997, based on said environmental review, among other things, KWBA was issued federal ESA permits and CESA management authorization for an initial term of 75 years.

Key agreements covering development, operation, maintenance, and monitoring of the Kern Water Bank were developed from 1995 through 1997, and have been successfully implemented since. These include the Memorandum of Understanding Regarding Operation and Monitoring of the Kern Water Bank Program with water agencies and districts surrounding the Kern Water Bank and KWBA's Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) (collectively "HCP"). The HCP includes permitted procedures and protocols that are followed for any construction by KWBA (and will be followed for construction of facilities included in this Proposal) to minimize interference with endangered and other species (see **Appendix 3.5-A**).

Major construction of the Kern Water Bank began in about 1998, and was supplemented by additional River Area Project facilities in 2004. Infrastructure constructed to date has included approximately 7,000 acres of recharge ponds, 85 recovery wells (including some rehabilitated wells acquired with the property), 36 miles of pipeline, and a 6 mile long canal with associated water control structures and lift pump stations. The main existing features of the Kern Water Bank can be seen in the map at: http://www.kwb.org/store/files/5.pdf.

There will be no need for additional agreements or environmental documents to cover the Project. The Kern Water Bank has been a model in the development of water infrastructure in an environmentally sound and compatible manner, and was the recipient of the "Clair A. Hill Award for Excellence" for "fostering excellence in California water agencies dealing with our state's most precious natural resource," among others.

It is important to note that through March 2013, the Kern Water Bank has recharged approximately 2 MAF, and recovered approximately 1 MAF, leaving a balance of approximately 1 MAF in storage (refer to **Figure 3.5-2** and **Figure 3.5-3**). Thus the feasibility of groundwater banking at the Kern Water Bank has been both studied and demonstrated.

Figure 3.5-2: Kern Water Bank Historical Recharge and Recovery

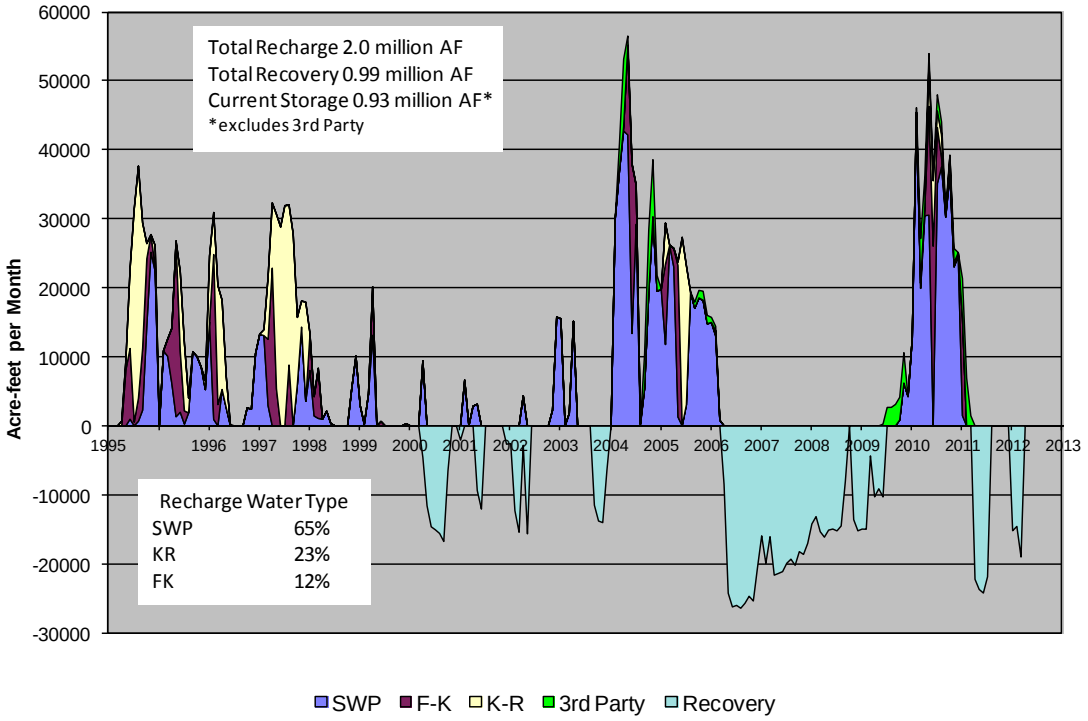
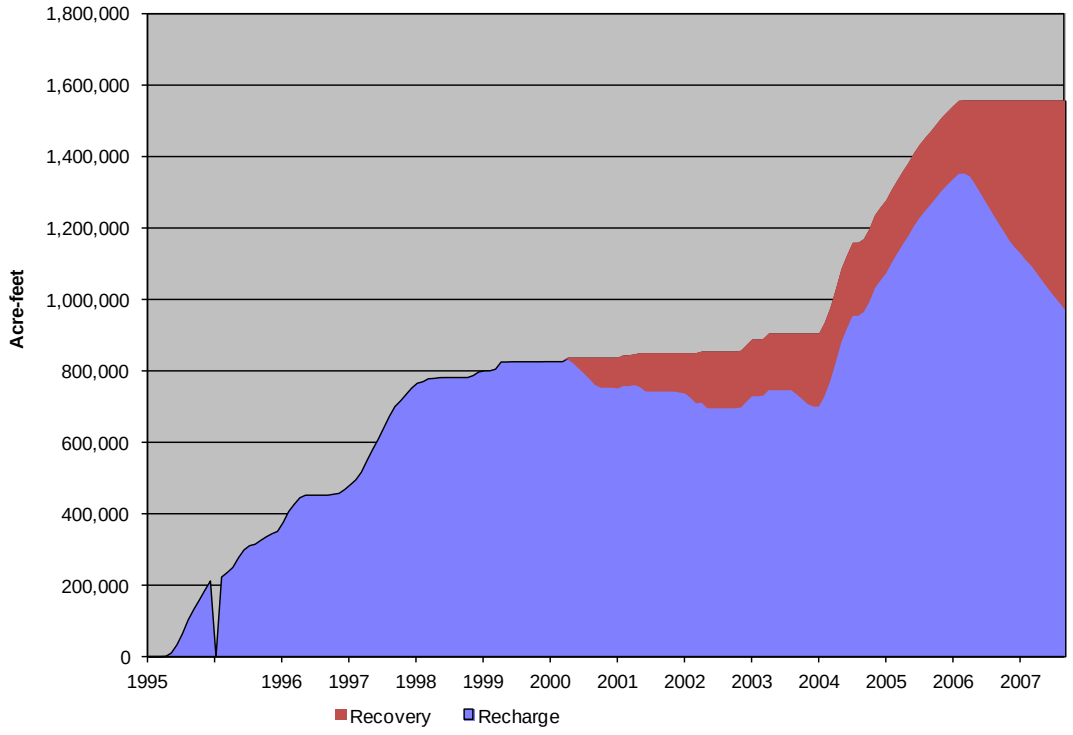


Figure 3.5-3: Kern Water Bank Cummulative Recharge and Recovery



Experience and knowledge gained from prior construction and operations have aided in conceptual planning for the Project. This planning has been based on using prior design standards of various key features that have been proven to work well at the Kern Water Bank, and based upon KWBA staff's working knowledge of water supply availability for banking, typical recharge and recovery rates, KWBA Member water needs, and refinements needed to enhance the Kern Water Bank's operations.

Work to develop the proposed project work plan, budget, and schedule, as well as work to complete 30% plans with specification section list (see **Appendix 3.5-B**); and to develop improved technical support for benefits, and updated cost-benefit analysis began in February 2013 utilizing KWBA funds. That work is proposed as a portion of the Project's local cost share.

Existing Data and Studies

As mentioned above, the Kern Water Bank, including the Recharge and Recovery Enhancement Project features has been previously studied and demonstrated by facilities previously constructed and operated in the areas surrounding the new proposed facilities (see **Appendix 3.5-C**).

A complete discussion of existing data and studies is given in **Appendix 3.5-D**.

Project Map

Existing and proposed Project facilities are shown in **Figure 3.5-1**. The proposed monitoring locations will consist of:

- Production wells – monitoring of flow meters to determine groundwater recovery volumes from each well, and periodic water quality sampling.
- Proposed Monitoring Point (Pond E5 Inlet Structure) – monitoring of water volume delivered into both Pond E5 and Pond E6.

Project Timing and Phasing

The Kern Water Bank Recharge and Recovery Enhancement Project is not part of a multi-phased project complex and will operate on a standalone basis. The Project will accomplish its goals without depending on any of the other proposed projects.

The Project can proceed upon Notice of Grant Award, with timing and phasing as further described in Attachment 5 Project Schedule.

3.5.2 Proposed Work Plan

Category (a): Direct Project Administration

Task 1: Administration

TCCWD will be the lead administrative agency and responsible for preparing and submitting invoices to DWR, and overall project management, including coordination of project team, vendors, and contractors. With the assistance of a consultant, TCCWD will work with KWBA staff to administer its Project and work to manage and account for all aspects of the project. KWBA staff will take the lead in retaining consultants for design and bidding phase services, construction services and construction review for the project. Work performed by TCCWD in this task will be coordination with consultants and stakeholders, attending meetings, and processing performance measures and invoices. This effort will be regularly evaluated at monthly project meetings between TCCWD's Project Manager, KWBA staff working on the project, consultants working for TCCWD and/or KWBA, plus selected consultants and contractors. At these meetings progress over the previous month will be reviewed, issues in implementing the project will be discussed, and action items will be established for the next month.

Deliverable(s): TCCWD will deliver monthly invoices of work accomplished to DWR and copies of agency staff work orders, consultant contacts/task-orders, and/or construction contracts. Within these reports pay requests from contractors, certified weekly payroll records, and verifications of prevailing wage compliance will be included.

Task 2: Labor Compliance Program

TCCWD will retain a consultant to prepare a labor compliance program for all projects within this Proposal upon notice of grant award, in accordance with the requirements of California Labor Code §1771.5(b) for pertinent contracts. Construction contractors selected to work on the Kern Water Bank Recharge and Enhancement Project will be those who regularly comply with prevailing wage requirements, and they will be required to continue that practice on pertinent contracts.

KWBA has a long-standing prevailing wage compliance program for its public contracts. Upon award of the grant, KWBA will retain a labor compliance consultant, as needed, to assist its staff to assure that contractors for KWBA's project comply with TCCWD's labor compliance program.

Another part of the KWBA's standard practice is to verify that all contractors employed are appropriately licensed by the State of California and are in good standing

Deliverable(s): TCCWD, will submit the overall programmatic Labor Compliance Program to DWR. This program will be adhered to throughout the project in all dealings with the retained contractors and their personnel. Also, copies of all contracts signed by KWBA for contracted services will be supplied to DWR, as requested, for verification that they are consistent with the California Labor Code.

Task 3: Reporting

Task 3.1 – Quarterly Reports and Project Completion Report

TCCWD will act as the grant administrator, and will be responsible for compiling quarterly progress reports and invoices for submittal to DWR. TCCWD will coordinate with KWBA staff to retain consultants as needed to prepare and submit reports.

Reports will meet generally accepted professional standards for technical reporting and terms of the contract with DWR. The Quarterly Reports will explain the status of the project and will include the following information:

- Summary of the work completed for the project during the reporting period
- Activities and milestones achieved
- Accomplishments and any problems encountered in the performance of work

A Project Completion Report documenting actual work done, changes and amendments to each project, a final schedule showing actual progress versus planned progress, and copies of final documents and reports generated during the project. The Report will be submitted to DWR within ninety (90) calendar days of DWR verification that all tasks associated with the project have been completed.

Deliverable(s): TCCWD will deliver quarterly progress reports as well as the Final Report to DWR for this project. Included within these reports will be site pictures of progress will be included, applicable construction review logs, and project team meeting agendas and minutes. The Civil Engineer of record for the project will submit to DWR a Final Inspections and Certification along with a Certificate of Project Completion in accordance with DWR's requirements.

Task 3.2 – Project Monitoring Plan

A Project Monitoring Plan (PMP) shall be submitted to the State prior to disbursement of grant funds for construction or monitoring activities for this Project. Along with the Attachment 6 Project Performance Measures Tables requirements for the Project, the PMP will also include: a) Baseline conditions, b) Brief discussion of monitoring systems to be utilized, c) Methodology of monitoring, d) Frequency of monitoring, and e) Location of monitoring points.

KWBA staff will lead work for monitoring and performances measures verification after Project completion. Costs for monitoring and performance measures are not included in the budget (funding match or grant award).

Deliverable(s): PMP as required by conditions in grant contract.

Category (b): Land Purchase/Easement

Task 4: Land Purchase/Easements

No land or right-of-way will need to be acquired for this project, as KWBA has owned all of the property involved since 1996.

Deliverable(s): TCCWD will deliver copies of KWBA land title reports if requested by DWR

Category (c): Planning/Design/Engineering/Environmental Documentation

Task 5: Assessment and Evaluation

Task 5.1 – Feasibility Analysis/30% Plans

As a continuation of prior Kern Water Bank work, at its own cost, KWBA retained Provost & Pritchard Consulting Group in February of 2013 to develop and submit to the State with this proposal: 30% Plans with list of Specification Sections, Attachment 2 (Documentation of the adopted Groundwater Management Plan), Attachment 3 (further developed project Work Plan, Attachment 4 (further developed project Budget), Attachment 5 (further developed project Schedule), Attachment 6 (further developed Monitoring, Assessment, and Performance Measures), Attachment 7 (further developed Technical Justification of Projects, and Attachment 8 (further developed Benefits and Costs Analysis).

Deliverable(s): TCCWD to send documentation of KWBA expenditures for the Assessment and Evaluation work by Provost & Pritchard Consulting Group utilizing its own funds as local cost share prior to grant award.

Task 6: Final Design

As mentioned above, Provost & Pritchard Consulting Group's Conceptual (30%) design of the Kern Water Bank Recharge and Recovery Enhancement Project began in February 2013 utilizing topographic survey information and modified construction detail drawings from prior work on the Kern Water Bank. See **Appendix 3.5-B**.

Task 6.1 Design Surveys and Utility Location

KWBA will retain a consulting engineering firm to continue Project design after Notification of Grant Award and pre-construction protocols of KWBA's Habitat Conservation Plan/ Natural Community Conservation Plan (described in Task 7 below) are completed. Field surveys will be performed under the direction of a Licensed Land Surveyor to collect additional topographic information and updated identification of buried and above-ground facilities to guide design and construction work. Initiation of new service requests to Pacific Gas & Electric Company

(PG&E), and accompanying initiation of engineering of new services by PG&E will be done during this phase of work.

Task 6.2 Design and Development of Bid and Permit Documents

The consulting engineering firm will assist KWBA in preparing necessary final plans, specifications, and contract documents for use in obtaining bids, obtaining encroachment permits, and constructing the Project.

Deliverable(s): Copies of Plans and Specifications prepared for the Project, as requested by DWR

Task 7: Environmental Documentation

As described above, both CEQA and NEPA have previously been addressed for this project.

Task 7.1 – HCP Pre-Construction Procedures and Protocols

Pre-construction procedures and protocols required in the Kern Water Bank HCP will be followed after grant award notification with the assistance of the Kern Water Bank's consulting biologist and consulting cultural resource specialist, both of whom currently work on KWBA's behalf to perform monitoring protocols.

Deliverable(s): Copies of notifications and monitoring reports required by HCP, as requested.

Task 8: Permitting

Task 8.1 – New PG&E Service Applications

While not a permit per se, as mentioned above, applications for new electrical services for the three new wells will be made to PG&E during Final Design. PG&E conducts all of the design and construction of the new services, and will collect reimbursement for those costs through a combination of deposits made with the application, deposits made with electrical service contract, and in rates collected monthly during operation.

Task 8.2 - Stormwater Pollution Prevention Plan

KWBA will retain a consultant to prepare Storm Water Pollution Prevention Permit (SWPPP) application to the Regional Water Quality Control Board for the earthwork contractor's use during final design. The SWPPP will be prepared in accordance with the State Water Resources Control Board regulations and guidelines for Project construction. The consultant will act as the Qualified SWPPP Developer and prepare the SWPPP document.

Task 8.3 – Dust Control Plan

The consultant will also prepare Dust Control Permit (DCP) application to the San Joaquin Valley Air Pollution Control District for the earthwork contractor's use during construction.

Task 8.4 – Well Drilling Permits

Applications for well drilling permits to Kern County (through their Environmental Health Department, with co-review by Kern County Water Agency) will be made during the design process. These reviews typically provide feedback regarding well seals, perforation interval, and backflow prevention requirements. General requirements have been settled with Kern County and Kern County Water Agency staff on KWBA's prior wells in the area.

Deliverable(s): TCCWD will deliver to DWR copies of the well drillers permits, SWPPP, and DCP as requested.

Category (d): Construction/Implementation

Task 9: Construction Contracting

Task 9.1 – Solicitation, Procurement, Contracting

KWBA, with assistance from its consulting engineer will utilize deliverables from Task 6 (Final Design) to solicit bids from qualified contractors for the following portions of the work: a) earthwork and structures, b) well drilling, development, furnishing and equipping of wells and their pumps (with discharge piping at the well sites, c) electrical supply and controls for wells, and d) recovery pipelines and their discharges into existing large pipelines and canals. KWBA will follow KWBA procurement rules, and may retain Semitropic Water Storage District, which has recently drilled three replacement wells for KWBA, for well drilling and development of some or all of the wells.

Selected contractors will be required to submit monthly invoices to KWBA for payment on the work accomplished and approved.

Deliverable(s): Copies of construction contracts, as requested.

Task 10: Construction/Implementation

Task 10.1 – Clearing and Grubbing

The earthwork and structures contractor will clear and grub the extent of borrow and fill sites for pond construction and associated features to prevent vegetation and unsuitable materials from getting into compacted fill areas.

Task 10.2 – Earthwork Construction

After construction staking, the earthwork and structures contractor will construct pond levees, well site pads, and other associated earthwork shown on the grading plans and in earthwork detail drawings.

Task 10.3 – Structure Construction

When earthwork construction allows it, the earthwork and structures contractor will construct inter-basin structures, overflow structures, and other structures shown in structure details. Final grading will be done after structure construction and backfilling.

Task 10.4 - Well Drilling, Development, and Test-pumping

After well pads are built, the well contractor will drill, develop, and test-pump the three wells according to well drilling plans and specifications.

Task 10.5 – Well Pump and Discharge Construction

After each well has been test-pumped, final pump and motor selection will be made by the consulting engineer, well contractor, and KWBA staff. Well pump, motor, and discharge piping will then be ordered and delivered to the site. The responsible contractor will then install pumps in the wells, install motors, and install discharge piping at each well site according to the well pump, motor, and discharge detail drawings. Well canopy covers will also be constructed at each well site according to the plans, after electrical installations.

Task 10.6 – Pipeline and Discharge to KWB Canal and Canal Construction

After test-pumping is done for each new well, final pipeline sizing will be done by the consulting engineer. The pipeline contractor will then order pipe and associated materials. The pipeline contractor will excavate trenches; install pipe and associated fittings and vents, and backfill trenches per pipeline detail drawings.

Pipeline discharges to the KWB Canal will be constructed by the pipeline contractor according to the pertinent details on the plans.

Task 10.7 – Construct Electrical Supply and Controls

Electrical power supply and motor Control Centers, with associated conduit wiring, and grounding, including site lighting, will be installed by the electrical contractor at each well site, according to electrical plans.

Task 10.8 – Construct Electrical Services

After notification from KWBA staff regarding final motor selection, studies and engineering by PG&E, and after service contract execution by KWBA, PG&E will construct new power service

line extensions and associated transformers and metering equipment to serve each new well.

Deliverable(s): Opportunity to visit during construction, and copies of selected construction photos

Category (e): Environmental Compliance/Mitigation/Enhancement

Task 11: Environmental Compliance/Mitigation/Enhancement

Task 11.1 – HCP Compliance and Reporting

KWBA's consulting biologist and cultural resources specialist will assist the various contractors and KWBA staff to perform the various procedures and protocols in KWBA's HCP associated with construction activities on the Kern Water Bank.

Task 11.2 – SWPPP Compliance and Reporting

KWBA will retain a SWPP monitoring and compliance specialist as a consultant to perform monitoring of construction activities and aid in assuring SWPP compliance during construction. The SWPP specialist will attend meetings with the contractor to confirm that Best Management Practices are being implemented, and prepare up to two Annual Reports.

Deliverable(s): Copies of compliance monitoring report(s), as requested.

Category (f): Construction Administration

Task 12: Construction Administration

Task 12.1 – Contract Administration

KWBA staff, led by the General Manager and Facilities Manager, with the assistance of its consulting engineer, will administer construction contracts, periodically meeting with contractors' and/or Semitropic WSD's representatives, reviewing and processing submittals, requests for changes, and payments, and other administrative duties as required of the owner and engineer.

Task 12.2 – Construction Staking

Construction staking to guide construction activities will be done by crews under the supervision of a consulting Licensed Land Surveyor retained by KWBA.

Task 12.3 – Construction Review and Project Startup

KWBA staff, led by the Facilities Manager, a Registered Civil Engineer, with assistance from the consulting engineer, will periodically review construction for conformance to contract documents

at intervals appropriate for the work, and participate in working with the Contractor and/or Semitropic WSD staff through issues that come up during construction. Start up and initial testing of the constructed works will be supervised by KWBA staff, with assistance from the consulting engineer. Construction records will be kept by the contractors and Semitropic WSD, with assistance from KWBA staff and the consulting engineer to document final construction.

Deliverables to DWR – Copies of construction administration and construction review paperwork, as requested by DWR.

Category (g): Other Costs

Task 13: Other Costs

No other costs are anticipated for this Project.

3.5.3 Other Required Information

Standards Used During Project

Project Design and Construction

- Applicable AWWA Standards and Design Manuals for the pipes materials and installation, air release valves, gate valves, check valves, etc.
- DWR Water Well Standards Bulletin 74-90
- Kern County Environmental Health Services – Water Well Permits Policy Manual
- 2010 State Standard Specifications
- ASTM Standards for construction materials

Health and Safety

- OSHA Standards – Part 1926

Procurement Documents

KWBA is a Joint Powers Authority that exercises powers in the manner and according to methods provided under the laws applicable to California Water District Law and has developed rules and methods to ensure that competitive pricing is procured for its projects.

3.6 Sycamore Road Flood Reduction Project

3.6.1 Introduction

Background

The City of Arvin was incorporated in 1960, and is located at the southern end of the San Joaquin Valley floor, approximately 15 miles southeast of the City of Bakersfield. The City serves a population of 19,304 as of the 2010 census. The City is classified as a severely Disadvantaged Community with a median household income of $29,740, which is 48% of the State MHI according to the American Community Survey of the US Census (2011).

Stormwater management has been a critical issue for the City of Arvin due to historical flooding that has impacted its community and homes. To reduce flooding that occurs in multiple locations in Arvin, City staff has worked with consultants to develop a Master Grading/Drainage Plan which has identified multiple stormwater management facilities for implementation. The most critical project from this Plan involves storm drains and a retention basin to reduce flooding in and around the vicinity of Sycamore Road.

Historically, flooding along Sycamore Road and adjacent areas has occurred on an annual basis due to the lack of adequate surface stormwater drainage capacity along Sycamore Road. This causes the stormwater to pool at lower lying elevations causing significant problems to the City's residents and City staff that try to mitigate the problem. In certain large storm events (e.g. 50 and 100 year return interval), flooding threatens to damage up to 29 homes at lower lying elevations. The proposed project, as described below, helps to reduce flooding in the area thereby reducing potential flood damage to property and other impacts.

Project Description

The Sycamore Road Flood Reduction Project will consist of constructing underground storm drainage facilities to convey stormwater that currently floods areas along Sycamore Road and other minor tributary roads to a regional stormwater retention basin. Approximately 275 acres of existing commercial and residential properties within the City of Arvin lack adequate stormwater drainage facilities. These areas currently drain to existing undersized retention basins or surface drain to the edge of the City, which has resulted in the accumulation of stormwater and localized flooding.

The proposed storm drain pipeline and retention basin will reduce flooding in those areas by collecting stormwater runoff from the 277 acres of commercial and residential properties and convey it through an underground pipeline system to a below-grade retention basin located to the south of Sycamore Road. The project map (**Figure 3.6-1**) shows the location of these proposed facilities. The storm drain pipeline and retention basin project will consist of approximately 2.4 miles of reinforced concrete pipe, approximately 31 manholes, 8 catch basins, and a 36 AF stormwater retention basin. The reinforced concrete pipe ranges in size from 21-inch to 48-inch in diameter as shown in the Project Map. The pipeline alignments will be located within the existing road right-of-way, eliminating the need for pipeline easements.

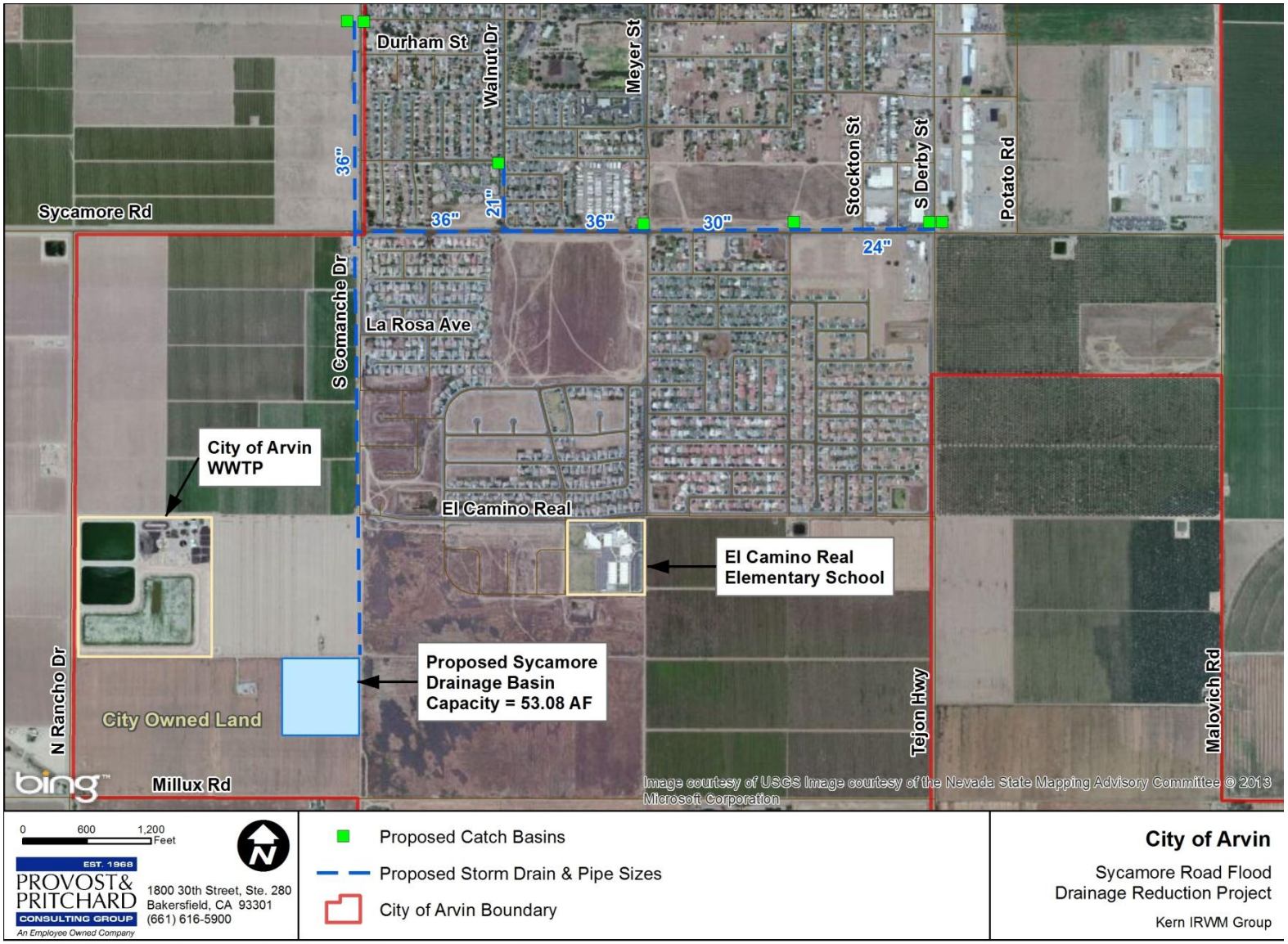


Figure 3.6-1: Sycamore Road Flood Reduction Project Map

The proposed drainage basin will be located on property owned by the City, to the east of the City's wastewater treatment plant (WWTP). Currently the property is used for recycling treated effluent from the WWTP for irrigation of crops. By constructing the basin, the City still has sufficient area for land application of WWTP effluent. The proposed basin is sized to handle a storm beyond the minimum City standards for the 10-year storm and could be enlarged at a later date. Should a large storm event occur, the basin will be designed to overtop and sheet flow over the City's 80-acre property avoiding flooding impacts to surrounding lands.

In 2013, the City of Arvin began to pursue the design and the development of construction plans for the project. Currently, project plans are developed to a 15% complete stage. Final design including the preparation of construction bid documents and plans, along with CEQA documentation, is anticipated to be completed in the summer of 2014 if the project is awarded grant funds. The project could move into the construction phase before the end of 2014.

Goals and Objectives

The goals of the Project consist of:

- Eliminate flooding that occurs annually, and reduce flooding from large storm events.
- Reduce property damage that could occur from a large storm event.
- Reduce potential life safety concerns including the safety of children traveling to school.
- Reduce impacts to pedestrian and vehicular traffic by maintaining accessibility throughout the project area during and after storm events.
- Reduce potential flood damage to vehicles.
- Improve property values for properties that have been impacted by past storm events or could be impacted by a large storm event.
- Reduce degradation road pavement.
- Reduce the use of City resources (manpower and equipment) for mitigating the impacts of flooding.

The Project will help achieve the following IRWM Plan objectives:

- *Identify and promote innovative flood management projects to protect vulnerable areas. (Reduce flood flows by an average of 2% per year through 2020)*
- *Improve regional flood management by addressing preparedness, response, and post flood actions throughout the planning horizon*
- *Plan new developments to minimize flood impacts from this point forward.*

In addition, the project meets the following Water Management Strategy outlined in the Kern IRWMP.

11.2.6.1 Flood Risk Management

Flood management includes minimizing impacts of floods on buildings and farmland, removing obstacles in the floodplain, voluntarily or with compensation, preventing interference with the safe operation of flood management systems, preserving or restoring natural floodplain processes, educating the public about avoiding flood risks and about planning for emergencies, and reducing flooding risks to humans. Opportunities exist in the Kern Region for minimizing flood risk and regional coordination of flood management activities

Purpose and Need

The purpose of the Sycamore Flood Reduction Project is to reduce the risk of damage to property and life safety concerns. Secondary to these issues, the Project improves accessibility, decreases costs associated with City resources, improves property values, and increases the life of the pavement.

The Project will help the City in meeting the following needs of the community:

Disadvantaged Community – As mentioned previously, the City of Arvin's MHI is $29,740, which is significantly below the classification for a severely disadvantaged community (48% of the California MHI). Because of this low MHI, the City of Arvin does not have the significant capital resources to implement a project of this scale for the community.

Flooding and Property Damage – Inefficient drainage and retention of stormwater in the City of Arvin is caused by insufficient underground storm drains as well as inadequately-sized retention basins. These basins have been built in the past for local subdivision storm drainage, and it is the City's estimation that they can only handle half of the volume of a large storm event. Flooding near residences can lead to property damage and loss of property value. In the recent December 2010 storm events, two homes were flooded requiring the families to permanently vacate their residences; since that time, one of these homes has been demolished and the other home has been condemned.

As detailed in Attachment 7, the mobile homes west of Meyer Street are located at a lower elevation than the crown of Sycamore Road, which acts as the downstream water surface control for the drainage area. Because of this factor, the modeled water surface based on topographic survey data shows flooding occurring within the mobile home park for large storm events. Up to 29 homes could be damaged by flood waters and threaten the habitability of these homes. The reason the flooding did not occur in recent large storm events is due to mounds of soil placed so as to prevent stormwater from entering the mobile home park. This is a temporary solution and may fail at any time during a flood event.

The potential flooding at the mobile homes is estimated to be below the finished floor of the home. Mobile homes are built with a crawl space that elevates the finished floor by 2.5 to 3 feet above the ground surface. With this added height, the flooding is projected to be up to 12 inches within the crawl space. The flooding of the crawl space can result in structural damage to the mobile home foundation, a sagging floor due to rotting wood, mold development with potential harmful spore allergens, and damage to personal property stored in the crawl space. Each of these issues can lead to expensive repair and renovation costs that would be borne by mobile home owners who are typically low income residents.

The proposed Project will result in the elimination of crawlspace flooding for most storm events. For the larger storm events (e.g. the 50 year or 100 year return interval) the number of mobile homes with flooded crawlspaces will be reduced significantly. Additionally, the accessibility of property owners to their homes will be improved substantially, allowing vehicular egress and ingress for all areas, preventing residents from being stranded at their homes or from returning to their homes. By reducing the potential for flood damage (and maintaining accessibility), the mobile home owners will be able to maintain the habitability of their homes.

The Project helps achieve the following IRWMP objectives by implementing the IRWMP strategy of 11.2.6.1 Flood Risk Management:

- Identify and promote innovative flood management projects to protect vulnerable areas.

Flooding Impacts to Transportation – Flooding occurs on an annual basis. This flooding typically results in the closure of Meyer Street, an arterial road in the City, at the intersection of Sycamore Road. Prior to the closure of the Meyer Street (or vehicles that ignore the signage), vehicles with low clearance can be damaged from flooding. The City has in the past assisted vehicles that have been stranded at the intersection because the vehicle stalled when trying to drive through the intersection. To the City's knowledge this occurs almost annually. There is also the higher potential for traffic accidents at the flooded intersections and along Sycamore Road (which in the past has risen to the crown of the road).

Additionally, the City of Arvin has higher pedestrian traffic because of the smaller community and lower access to vehicular transportation for economic reasons. The flooding makes it difficult for residents to travel to stores without increasing their travel time. A large component of this pedestrian traffic is from children traveling south across Sycamore Road to the El Camino Real Elementary School. Based on studies of similar low-income elementary schools, approximately a quarter of students walk or bicycle to school, which could be upwards of one hundred (out of 880) students for the El Camino Real (http://www.saferoutespartnership.org). Because the typical route along Meyer Street is closed, these students must cross Sycamore Road at an alternate location that does not have a designated cross-walk (although a crossing guard is there during school hours) during a low visibility period.

The proposed Project will eliminate annual flooding that currently impedes accessibility, vehicular damage, and potential life safety concerns.

Flooding Impacts to City Resources – When flooding occurs along Sycamore Road, the City has to devote additional City staff manpower or assistance from the Arvin Police Department to the area to mitigate the impacts to the residents. This can include re-routing traffic away from the flooded area, assistance with stranded vehicles, and maintaining drainage basin levels so as to not overtop and impact neighboring homes. Additionally, for larger storm events, like the event that occurred in 2010, the City had to rent 3-inch and 4-inch trash pumps (in addition to available City owned portable pumps) to pump stormwater from the local detention basin across Sycamore Road to the undeveloped parcel to the south. This required overtime pay for City staff and added costs in renting and using the equipment.

Degradation and Decreased Life of Road Pavement – With the roadway inundated with floodwaters, water can get trapped under the pavement which softens the subbase and subgrade making the road more vulnerable to traffic loads. Sycamore road, including the portion that has the most flood impacts, was recently reconstructed in 2011 at a cost of approximately $700,000. Part of the damage to the previous road surface was due to the length of time the road is submerged. With the proposed project the frequent flooding that occurs will be mostly eliminated. This will extend the life of the current road surface and result in fewer repairs at the City's and tax payers' expense.

Integrated Elements of Projects

The Sycamore Road Flood Reduction Project does not have any common linkages with the other projects of this Proposal. However, part of the purpose of Integrated Regional Water Management planning is to implement objectives that benefit the various geographies and communities of the region. Through this effort, the City of Arvin, a small, severely Disadvantaged Community is represented in this Proposal and has the opportunity to receive grant funding through the Kern IRWM Group.

Completed Work

The City of Arvin began pursuing the concept of improving their stormwater conveyance system several years ago. The 2001 and 2009 City of Arvin Master Grading/Drainage plan identified drainage impaired areas within the City limits. The City of Arvin Sycamore Road Storm Drain Project was identified within the Master Grading/Drainage Plan as a project that would improve stormwater conveyance within the City. The recent December 2010 flood caused significant flooding along Sycamore Road and motivated the City to further refine the project requirements and to produce a preliminary set of construction drawings that identify the basin size and location, along with storm drain pipeline alignment, pipe sizes, and catch basin locations.

Currently, project (City of Arvin Storm Drain Pipeline and Retention Basin) plans are developed to a 15% complete stage (see **Appendix 3.6-A**). Environmental Documentation (CEQA), Final Construction Documentation, and Permitting are not anticipated to begin until Grant funding for the project has been awarded.

Existing Data and Studies

- Project need was identified in the 2001 City of Arvin Master Grading/Drainage Plan.
- Project need was again identified in the 2009 City of Arvin Master Grading/Drainage Plan Update. Conceptual design of the project was performed in the 2009 City of Arvin Master Grading/Drainage Plan Update.
- Preliminary 15% design of City of Arvin Sycamore Road Storm Drain Project;

Project Map

The proposed storm drainage facilities are shown in **Figure 3.6-1**. The proposed monitoring locations will consist of:

- Flooded area - The area served by the storm drain inlets and underground facilities. If flooding occurs, the limits of the flooding will be recorded on a map, similar to the exhibits prepared in Attachment 7.

Project Timing and Phasing

The Sycamore Road Flood Reduction Project is not part of a multi-phased project complex and will operate on a standalone basis. The Project will accomplish its goals without depending on any other proposed projects.

The Project can proceed upon Notice of Grant Award, with timing and phasing as further described in Attachment 5 Project Schedule.

3.6.2 Proposed Work Plan

Category (a): Direct Project Administration

Task 1: Administration

TCCWD will be the lead administrative agency and responsible for preparing and submitting invoices to DWR, and overall project management, including coordination of project team, vendors, and contractors. With the assistance of a consultant, TCCWD will work with City staff to administer its Project and work to manage and account for all aspects of the project. City staff will take the lead in retaining consultants for design and bidding phase services, construction services and construction review for the project. Work performed by TCCWD in this task will be coordination with consultants and stakeholders, attending meetings, and processing performance measures and invoices. This effort will be regularly evaluated at monthly project meetings between TCCWD's Project Manager, City staff working on the project, consultants working for TCCWD and/or City, plus selected consultants and contractors. At these meetings progress over the previous month will be reviewed, issues in implementing the project will be discussed, and action items will be established for the next month.

Deliverable(s): TCCWD will deliver monthly invoices of work accomplished to DWR and copies of agency staff work orders, consultant contacts/task-orders, and/or construction contracts. Within these reports pay requests from contractors, certified weekly payroll records, and verifications of prevailing wage compliance will be included.

Task 2: Labor Compliance Program

TCCWD will retain a consultant to prepare a labor compliance program for all projects within this Proposal upon notice of grant award, in accordance with the requirements of California Labor Code §1771.5(b) for pertinent contracts. Construction of the Snyder Well Intertie Project is anticipated to be completed by construction contractors who regularly comply with prevailing wage requirements, and will be required to continue that practice on pertinent contracts.

The City has a long-standing prevailing wage compliance program for its public contracts. Upon award of the grant, the City will also retain a labor compliance consultant to assist its staff to assure that contractors for the City's project comply with TCCWD's labor compliance program.

Another part of the City's standard practice is to verify that all contractors employed are appropriately licensed by the State of California and are in good standing

Deliverable(s): TCCWD, will submit its Labor Compliance Program to DWR. This program will be adhered to throughout the project in all dealings with the retained contractors and their personnel. Also, copies of all contracts signed by the City for contracted services will be supplied to DWR, as requested, for verification that they are consistent with the California Labor Code.

Task 3: Reporting

Task 3.1 – Quarterly Reports and Project Completion Report

TCCWD will act as the grant administrator, and will be responsible for compiling quarterly progress reports and invoices for submittal to DWR. TCCWD will coordinate with City staff to retain consultants as needed to prepare and submit reports.

Reports will meet generally accepted professional standards for technical reporting and terms of the contract with DWR. The Quarterly Reports will explain the status of the project and will include the following information:

- Summary of the work completed for the project during the reporting period
- Activities and milestones achieved
- Accomplishments and any problems encountered in the performance of work

A Project Completion Report documenting actual work done, changes and amendments to each project, a final schedule showing actual progress versus planned progress, and copies of final documents and reports generated during the project. The Report will be submitted to DWR within ninety (90) calendar days of DWR verification that all tasks associated with the project have been completed.

Deliverable(s): TCCWD will deliver quarterly progress reports as well as the Final Report to DWR for this project. Included within these reports will be site pictures of progress will be included, applicable construction review logs, and project team meeting agendas and minutes. The Civil Engineer of record for the project will submit to DWR a Final Inspections and Certification along with a Certificate of Project Completion in accordance with DWR's requirements.

Task 3.2 – Project Monitoring Plan

A Project Monitoring Plan (PMP) shall be submitted to the State prior to disbursement of grant funds for construction or monitoring activities for this Project. Along with the Attachment 6 Project Performance Measures Tables requirements for the Project, the PMP will also include: a) Baseline conditions, b) Brief discussion of monitoring systems to be utilized, c) Methodology of monitoring, d) Frequency of monitoring, and e) Location of monitoring points.

City staff will lead work for monitoring and performances measures verification after Project completion. Costs for monitoring and performance measures are not included in the budget (funding match or grant award).

Deliverable(s): PMP as required by conditions in grant contract.

Category (b): Land Purchase/Easement

Task 4: Land Purchase/Easement

The proposed pipeline alignment is located within Kern County and the City of Arvin's right of way. No land or easement acquisitions will be required by the City. The land for new retention basins is already owned by the City of Arvin and will not require any additional land purchases by the City.

Category (c): Planning/Design/Engineering/Environmental Documentation

Task 5: Assessment and Evaluation

In 2001, the City of Arvin contracted with Helt Engineers to develop a Master Grading and Drainage Plan for the City. As a result, a project was conceptualized that would improve storm drain runoff along Comanche Drive, Sycamore Road, and South Derby Street by installing a new storm drain pipeline along Sycamore Road and new retention basin. This same project was re-evaluated in more detail by AECOM Engineering in the 2009 Master Grading/Drainage Plan Update.

Task 5.1 – 15% Design

The City of Arvin recently contracted with Helt Engineering to produce preliminary construction drawings for the project at its own cost. Research was conducted using existing recorded maps, previously generated improvement plans, and topographic maps to develop the pipeline alignment, catch basin locations, and retention basin location. From the gathered information a project basemap was generated along with preliminary construction documents.

Tasks 5.2 – Sycamore Flooding Analysis

As part of this grant application, a flood study was prepared to evaluate flooding along Sycamore Road and the adjacent residential properties between Walnut Drive and Meyers Street. To prepare the flood study, a topographic survey was prepared for the general area to determine the potential extents of flooding. Findings from the study show that flooding along Sycamore Road is quite common and can result in damage to property. This task also included the feasibility analysis of the project including developing a work plan, schedule, technical justification, and benefit-cost analysis. This task was also performed at the City's own cost.

Task 5.3 – Basis of Design Report

A finial design report detailing the design methodology for sizing the storm drain pipeline and retention basin along with drawings showing the location of the proposed improvements will be submitted to the City of Arvin for review by the City staff before moving forward with final design of the construction drawings.

Task 6: Final Design

The City of Arvin has contracted with Helt Engineering for design services related to construction documentation of the proposed pipeline and retention basin. Currently the project is at a 15% level of completion. At this level, the approximate storm drain alignments have been determined, the storm drains and retention basin have been adequately sized, and the level of protection offered by the proposed system is understood.

Task 6.1 – Storm Drain Pipeline Design

If awarded Grant funding, the City will contract with a civil engineering consultant to conduct a detailed topographic and boundary survey of the proposed alignment, finalize the pipeline and develop details for the final design construction documents.

The construction documents will be submitted to the City of Arvin for comments at the 60% (conceptual) design level, 90% (pre-final) design level and then eventually at the 100% (final) design level. The 90% design is a final unstamped submittal to the City of Arvin and other project consultants for review and comment. Complete plans, specifications and a detailed estimate of probable anticipated cost will be provided to the City of Arvin. After final comments have been received from the City of Arvin on the 90% design, the 100% design package will be generated. The 100% design will be ready for advertisement by the City of Arvin through a notice to bidders for the project. The package will include complete, signed and "as-advertised" plans and specifications.

Task 6.2 – Regional Retention Basin Design

The process of design for this task will be similar to Task 6.1 and will proceed concurrently. Added tasks for this portion of the project include the preparation of the soils report to provide design guidance regarding the construction details of the basin as well as confirming the percolation rate of the pond ensuring that the drains in accordance with Kern County standards. The reviews by the City staff will proceed in sequence after the storm drain pipeline design to help facilitate a quicker implementation of the project.

Deliverable(s): The City of Arvin will deliver the final PS&E signed by a registered Civil Engineer in the State of California. These documents will be provided to DWR, at its request, within 30 days of being finalized and accepted by the City of Arvin.

Task 7: Environmental Documentation

The proposed Project currently has not prepared environmental documentation. The City of Arvin has owned and managed the stormwater drainage system for many years, so City of Arvin staff members are well acquainted with the issues associated with the proposed Project Area of Effect (PAE). Given this familiarity, there is a general view by City of Arvin staff that the

appropriate scope for the Environmental Documentation Task pursuant to the California Environmental Quality Act (CEQA) will need to include:

1.) A Cultural Records Search at the CHRIS Center housed at CSU, Bakersfield

2.) A Biological Site Reconnaissance and Study Report prepared by a qualified biological consultant

3.) Consultation with the Native American Heritage Commission and identified Native American Tribes with past cultural associations within or proximate to the Project Area of Effect pursuant to PRC § 75102 and 21000 et seq. and GC § 15000 et seq.

4.) Preparation of an Environmental Checklist/Initial Study & Mitigated Negative Declaration (IS/MND)

Because most of the Project work will be performed within the already heavily disturbed areas of existing rights-of-way, it is anticipated that only a few impacts may be found that will require mitigation. The extent of significant environmental issues are expected to be similar to those that may have been identified in the past for other comparative public works types of projects within road rights-of-way within the City of Arvin. Nothing out of the ordinary is anticipated by this proposal.

Task 7.1 – Project Initiation/Data Collection/Project Management

This task will involve the necessary efforts to launch the project work effort and is anticipated to include a Project kickoff meeting and site walk with City staff and consultants. The environmental consultant will review existing Project information, including review of the City-provided site plan, all available existing environmental documents, technical studies, data or information related to the Project site and surrounding area, and other pertinent background information. The kickoff meeting will also allow the Project team to coordinate with the City on any needed field work, Project schedule, document reviews, and communication protocol. A site walk with the City staff is proposed to commence immediately follow the kick-off meeting. This task also includes activities related to preparation of needed exhibit maps and figures, literature review, and Project Management efforts.

Task 7.2 -- Environmental Checklist/Initial Study and MND

The consultant will then proceed with preparing an IS/MND as the appropriate CEQA environmental clearance document for the proposed Project. This work effort will require the consultant to retain a qualified biological to conduct a CEQA-level biological reconnaissance of the Project's area of effect and prepare a Study Report in support of the determinations, findings, and mitigation measures, if necessary, pursuant to CEQA. The consultant will also conduct a cultural record search via the CSU Bakersfield CHRIS Center, and the necessary consultations with the NAHC and Native American Tribes TBD), all pursuant to the PRC and GC. The consultant will also prepare an air quality/greenhouse gas assessment. These consultations and technical assessments will be included in the CEQA document as appendices and relied upon to support the findings and conclusions within the IS/MND. An administrative

draft of the completed IS/MND will be provided to the City for review and comment. The City's comments will be incorporated and published for circulation to the public and agencies by City of Arvin as required by CEQA. The consultant will prepare the Notice of Intent to Adopt a (Mitigated) Negative Declaration for newspaper publication and distribution by the City, announcing the required public comment period for the Draft IS/MND.

Task 7.3 – Final IS/MND

Upon termination of the public review/comment period as prescribed by CEQA, all comments on the draft IS/MND will be collected and reviewed. The City will prepare for its Administrative Record, responses to any comments received by the City. These responses to comments may be necessary to support the findings and conclusions of the environmental disposition of the proposed Project, and can be further utilized in the findings that may be necessary for approval of the Project.

The resolution of approval for the Project will authorize the Arvin City Manager to file a Notice of Determination (NOD) for the Project with the State Clearinghouse and the County Clerk and to pay the applicable County and California Department of Fish & Wildlife fees.

Deliverable(s): Approved and adopted CEQA documentation, including the Initial Study and associated technical appendices, adopted Mitigated Negative Declaration, the Notice of Completion submitted to the State Clearinghouse, the Resolution adopted by the City of Arvin City Council, and the Notice of Determination, including filing receipt, will be provided to DWR in printed and electronic versions within 30 days of document adoption.

Task 8: Permitting

Project permitting has not yet begun; however, it appears that permits for the construction of the stormwater pipeline and the retention basin will be necessary from, the Regional Water Quality Control Board, the Air Resources Board, and Kern County. The following permitting tasks are anticipated to be required for the project:

Task 8.1 – Indirect Source Review (ISR) with the Air Resources Board

Given the area of the retention basin that is to be developed, it is it is anticipated that an ISR will be required from the Air Resources Board. The City of Arvin will work with a local consultant to generate the permit application based on project information from the final design and the Initial Study developed during environmental documentation. The City of Arvin staff and consultants will work with staff from the Air Resources Board to work out any potential issues in the permitting so that a successful permit can be issued for the construction by the Air Resources Board. Requirements from this permit will be incorporated into the construction documents for the project.

Task 8.2 – Stormwater Pollution Prevention Permit from the Regional Water Quality Control Board

The City of Arvin will retain a consultant to prepare Storm Water Pollution Prevention Permit (SWPPP) application to the Regional Water Quality Control Board for the construction of the project. The SWPPP will be prepared in accordance with the State Water Resources Control Board regulations and guidelines for Project construction. The consultant will act as the Qualified SWPPP Developer and prepare the SWPPP document. Requirements from this permit will be incorporated into the construction documents for the project.

Task 8.3 – Dust Control Plan (DCP) with the Air Resources Board

Given the amount of earthmoving involved in the construction of the project, it is it is anticipated that a DCP will be required from the Air Resources Board. The City of Arvin will work with a local consultant to generate the permit application based on project information from the final design and the Initial Study developed during environmental documentation. Requirements from this permit will be incorporated into the construction documents for the project.

Task 8.4 – Kern County Permits

As a portion of the anticipated construction area will be within Kern County right-of-way, it will be necessary to apply for an encroachment permit from the County. This permit could be delayed and applied for by the selected contractor who will build the facility, but it is believed that it would be better to work through the project issues prior with the County before the project is awarded so that bidding contractors can be made aware of the requirements of the permit that will become a part of the construction documents. This encroachment permit is anticipated to specify the acceptable traffic control plan for project construction in County roadways and the required replacement pavement section for all locations where existing pavement is disturbed.

A grading permit will also be obtained from Kern County for the earthwork operations involved with constructing the retention basin.

Deliverable(s): City of Arvin will deliver project permits from the Regional Water Quality Control Board, the Air Resources Board, and Kern County to DWR. These documents will be provided to DWR within 30 days of being finalized and received by the City of Arvin. No other permits are anticipated to be required.

Category (d): Construction/Implementation

Task 9: Construction Contracting

Task 9.1 – Construction Bid Process

The City will utilize the 100% PS&E to pursue responsive bids from qualified and responsible contractors. In the bid solicitation package the City will require proof of appropriate state

licensing in order be selected for the work. The request for submittal of bids will be made public by newspaper notice(s), consistent with State law. The City will conduct a pre-bid meeting with interested contractors to go over information in the construction documents and answer questions submitted by contractors. An attendance list will be generated for the meeting and meeting record will be made. Contractors who submit bids will be required to provide unit costs for listed items included in the work, an anticipated schedule for accomplishing the work, bid bonds, performance bonds, and adequate insurance to cover the work.

Task 9.1 – Bid Award and Execute Contract Documents

The responsive and responsible low bidder who has fully satisfied the bid solicitation shall be awarded the work from the City. The City will execute contract documents with the contractor to begin work and the Notice to Proceed will be issued. The selected contractor will be required to submit monthly invoices to the City for payment on the work accomplished and approved.

Deliverable(s): Copies of: advertisement for bids and records of pre-bid meeting, bid evaluation, and awarded contracts, as requested by DWR.

Task 10: Construction/Implementation

Task 10.1 – Survey and Construction Staking

The contractor shall use the Consultants construction plans to stake pipeline alignment and the retention basin, referencing a fixed design feature (i.e. centerline, inside toe of slope, inside hinge point, but not slope stakes). Construction staking will also reference location of critical underground utilities.

Task 10.2 – Stormwater Pipeline Construction

This work item will include furnishing and installing approximately 700 feet of 21-inch RCP, 1,400 feet of 24-inch RCP, 1,400 feet of 30-inch RCP, 4,400 feet of 36-inch RCP, and 4,500 feet of 4,800-inch RCP pipeline along Comanche Drive and Sycamore Road to the proposed retention basin. This work will include approximately 31 manholes and 8 catch basins.

Task 10.3 – Stormwater Retention Basin Construction

This work item will include constructing a new below grade retention basin that will require approximately 86,000 cubic-yards of excavation. The construction of the basins will include an inlet structure, concrete spillway and riprap for energy dissipation. The basin will also be constructed with 6’ high chain link fence around the perimeter for public safety. The excavated material will be hauled offsite by the contractor to a suitable stockpile location to be ascertained during the 60% design.

Category (e): Environmental Compliance/Mitigation/Enhancement

Task 11: Environmental Compliance/Mitigation/Enhancement

The construction of the project will involve excavation of approximately 6 acres of land and the installation of approximately 2.4 mile of RCP stormwater pipeline. CEQA documentation is not anticipated to begin until after the grant funds have been awarded. However, this task has been developed as the minimum mitigation measures to be implemented to reduce potential disturbance or impacts to protected species or communities. Any additional mitigation identified in the CEQA findings will be employed during construction. The minimum preventative measures that will be used during construction to minimize potential impacts to wildlife, include:

- Vehicles will 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.
- Open pipes and culverts shall be inspected before being moved or altered to prevent wildlife from being injured or trapped.
- A pre-construction survey shall be performed to determine if there was a presence of any protected species identified in the CEQA findings.
- If special status species are encountered during an inspection, they shall be left alone to passively exit the area unless otherwise authorized by CDFG or USFWS.
- Any migratory birds and their nests shall 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).

The City of Arvin will require that contractors monitor for cultural resources throughout the construction process. If during the course of the project construction, any archaeological or historical resources are uncovered, discovered or otherwise detected or observed, activities within 50 feet of the find shall be ceased.

This work item also includes the cost for implementation of: (1) the Dust Control Plan (DCP), and all revisions the City deems necessary to comply with all federal, state, and local air pollution laws and regulations and (2) implementation of the Stormwater Pollution Prevention Plan (SWPPP), and all revisions the City deems necessary to comply with all federal, state, and local water pollution laws and regulations.

Category (f): Construction Administration

Task 12: Construction Administration

Task 12.1 – Contract Administration

Contract administration will consist of tasks related to managing the contract with the Contractor. These tasks will consist of:

- Leading a pre-construction meeting with the Contractor and other project stakeholders.
- Reviewing and authorizing requests for changes. If unforeseen circumstances are encountered by the contractor, the consultant, in coordination with City of Arvin staff, will expeditiously work to make a determination whether the circumstance is a material change to the work described in the contract. If this is determined, the contractor shall be compensated for this change according to the contract documents.
- Reviewing and approving requests for payments.
- Performing other administrative duties required for managing this phase of the project.

Task 12.2 – Material Submittal Review

Prior to construction, the consultant will work with the contractor to verify that the material and equipment proposed to be used in the construction of the pipeline is consistent with applicable contract document requirements and that material suppliers are identified and approved.

Task 12.3 - Construction Inspection

The construction inspector will be required to make site visits to the Project site to check on the construction of facilities as per the intended design. It is expected that the inspector will review the project 4 to 5 days per week when construction occurs, and that field reports would be generated for each visit.

Task 12.4 - Soils/Materials Testing

Trench backfilling will be tested for compaction per the requirements of the project specifications. It is assumed that approximately 16 visits will be required by the soils technician to obtain moisture-density curves for the different soil types and perform a compaction testing. As the construction proceeds the project inspector will obtain a familiarity with the compaction effort required to obtain proper soil compaction, reducing the number of visits by the soil technician, keeping testing costs at a moderate level for the project.

Task 12.5 - Project Closeout

At the end of the project a punch list will be developed ensuring that all remaining project requirements are met by the contractor. At completion, the City will file the Notice of Completion with the recorder to ensure that no claims or liens are filed by subcontractors or materials suppliers, and final payment will be made to the contractor. Changes to the original design would be logged throughout construction and documented in an as-built set of plans for the City

of Arvin's records. As part of the specifications, a one year warranty over the work is required, in which the contractor will have to correct any work that fails during this time period.

Deliverable(s): Pre-construction and progress meeting minutes, change orders, partial and final pay requests, construction inspection reports, Notice of Completion, copy of as-built set of plans, and any other items requested by the State.

Category (g): Other Costs

Task 13: Other Costs

Task 13.1 – Attorney Review of Contract Documents

During the Final Design phase, the City's attorney will review the contract documents to ensure that they meet the current State laws and the City of Arvin's requirements.

3.6.1 Other Required Information

Standards Used During Project

Project Design and Construction

- Kern County Hydrology Manual
- 2010 State Standard Specifications
- ASTM Standards for construction materials including storm drainage pipelines, manholes, drop inlet structures
- Kern County Grading Code (Chapter 17.28)

Health and Safety

- OSHA Standards – Part 1926

Laboratory Analysis

- Concrete Compressive Strength Test – ASTM C39
- Soil Compaction Testing – ASTM D1557, in accordance with the City's specifications.