



Applicant:
Southern San Joaquin Municipal Utility District
11281 Garzoli Avenue
Delano, CA 93215

August 2020

WaterSMART Drought Response Program:
Drought Resiliency Projects for Fiscal Year 2021
Funding Opportunity Announcement No. BOR-DO-20-F002

SSJMUD-NKWSD Intertie Pipeline for Regional Drought Resiliency

**Project Location—Southern San Joaquin Valley,
Kern County, California**



1.0 Title Page

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11281 Garzoli Avenue

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August 5, 2020

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3.0 Technical Proposal

<i>Project Information</i>	
Date	August 5, 2020
Project Name	SSJMUD-NKWSD Intertie Pipeline for Regional Drought Resiliency
Expected Completion	Less than 26 months (December 2022)
Near a Federal Facility?	Yes, adjacent to CVP’s Friant-Kern Canal
<i>Applicant Information</i>	
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City, County, State	Delano, Kern, California

3.1 Executive Summary

The Southern San Joaquin Municipal Utility District (SSJMUD, District) proposes to utilize their resources in a cost-shared project with North Kern Water Storage District (NKWSD) and the US Bureau of Reclamation (Reclamation, USBR) to construct an intertie pipeline within District boundaries. The *SSJMUD-NKWSD Intertie Pipeline (Project)* is a Task A Project – increasing the reliability of the District’s water supply through infrastructure improvements. The Project solves a major problem observed over recent years: not having an efficient conveyance mechanism for return of previously stored water during wet years. Presently, CVP Class I, Class II, and surplus floodwater is delivered to the District’s groundwater banking partner, NKWSD, from the Friant-Kern Canal (FKC) for groundwater banking or irrigation purposes during wet years. This Project removes the need to involve a third-party in an agreement with North Kern for banking since it will establish a direct connection to return water to SSJMUD from NKWSD, thereby increasing operational flexibility and reliability to deliver previously stored water from groundwater storage during times of drought. This Project helps complete the mechanism for return of previously stored water, which helps build long-term resiliency to drought by returning an average annual amount of approximately 2,814 AFY of banked water to SSJMUD. The Project will directly help with SSJMUD’s drought resiliency and help increase access to groundwater supplies that were previously, and will continue to be, recharged in NKWSD. The project is supported by SSJMUD’s Drought Contingency Plan.

It is anticipated the Facilities can be completed within 26 months from October 2020. The Project would start in October 2020 with construction and implementation of all components completed by December 2022. The Project is currently in the preliminary design phase and bidding for construction is expected to start by the mid-2021.

Anticipated construction duration of no more than 17 months. Assuming funding is secured, construction is scheduled to begin after July 1, 2021 for completion by December 2022.

The Project is to provide the following annual benefits, in acre-feet-per-year:

Table 3-1. SSJMUD Annual Water Benefits

Avg. Annual Surface Water Supply	73,813 AFY
Avg. Annual Water Demand	126,292AFY
Est. Annual Water Recharged in a wet year and the Average Annual Recharge based on 6 months of recharge, 4 out of 10 years.	4,200 AF in a wet year
Est. Annual Water Conserved, based on return of previously banked water	2,814 AFY

3.2 Background Data

The following section provides background regarding the District and information on general water management and water use considerations, not necessarily specific to the proposed Project but to provide context for the Project need.

3.2.1 Geographic Location, Major Crops and Total Acres Served

The Southern San Joaquin Municipal Utility District (District) is located in Kern County, California, approximately 75 miles southeast of Fresno and 30 miles northwest of Bakersfield. The District includes lands in the southeastern San Joaquin Valley and the adjacent low foothills of the Sierra Nevada mountains. Its northern boundary is the Kern-Tulare Counties line, from which it extends southward about 13 miles. Its greatest width east and west is also about 13 miles. The principal town and location of the District's headquarters is Delano, located in the north-central part of the District. The community of McFarland is also in the District and is located about six miles south of Delano.

The District provides water deliveries to agriculture water users. All deliveries made by the District are exclusively used for irrigated agriculture. However, the City of Delano and community of McFarland are located within the boundaries of the District and pump groundwater to meet municipal and industrial water needs and are not served by the District. The two cities have a combined population of 69,000 (2019 Census) and pump a combined groundwater volume of 8,398 AF/year to meet municipal, commercial, industrial, and landscaping demands.

The District's size is approximately 64,711 acres with irrigated acreage totaling 52,527 acres. The cropping pattern within SSJMUD water service area has changed significantly from row crops to permanent plantings over the past 25 years. The principal annual crops are vegetable row crops, while the principal perennial crops are almonds, alfalfa, pistachios, and grapes, with the latter accounting for about 34% of the irrigated acreage. As of 2019 crop survey by the District, about 90% of the District's irrigated lands are planted to permanent crops, primarily almonds (34%), grapes (34%), pistachios (10%), and oranges (10%).

3.2.2 Primary Water Supplies and Sources

The Southern San Joaquin Municipal Utility District (District) under its present name was organized in 1935, in accordance with the provisions of California laws pertaining to the formation and operation of municipal utility districts. The District was formed for the purpose of entering into a contract to purchase and distribute water from the Central Valley Project (CVP). At present, the District's only source of irrigation water is their surface supply from the Central Valley Project. A sizable portion of the District overlies a usable groundwater basin; in particular, the Kern County Sub basin of the Tulare Lake Basin, with an estimated 40 million acre-feet total capacity (DWR, 2004). Landowners in the District utilize wells to extract underlying groundwater resources to meet water demands when surface water supplies are inadequate. The District does not own any groundwater production facilities. Landowners in the District continue to own and operate groundwater production facilities aside from the District; however, pumping from privately owned wells is not reported to the District unless the water is pumped into the District's system for conveyance and delivery. The City of Delano and community of McFarland are located entirely within the District's service area boundary. The District does not make any direct deliveries to either community and is therefore not an urban water provider. The cities, however, do rely on the local groundwater supply, which is naturally recharged. The District provides a small amount of recharge to the groundwater reservoir supply through on-farm, in-lieu recharge efforts, and recharge efforts through District reservoirs. A portion of this recharge would accrue to the benefit of the urbanized areas.

The following table describes the District's existing contract supplies and does not include the recent agreement for banking surplus water, when available, in North Kern Water Storage District:

Table 3-2. Existing District Contract Supplies

Water Supply	Annual Contracted Allocation (AF)
Central Valley Project (CVP) – Class 1	97,000
Central Valley Project (CVP) – Class 2	45,000
Total	142,000

SSJMUD has based its water distribution system on conjunctive management of its surface water and groundwater resources, to ensure long-term sustainability for water users. In addition, the District coordinates its activities with neighboring districts and continually reviews and modifies its water supply management practices to preserve and enhance the groundwater resources for the benefit of its landowners.

Average Annual Acre-Feet of Water Supply: *Central Valley Project (CVP) Class-1 and Class-2 water* – The District entered into a contract with Reclamation (Contract # Ir1-1460D) for an all year availability of Class-1 and Class-2 water. The District has a combined 142,000 AFY contract from the Friant-Kern Canal (FKC). However, the recent drought resulted in reduced surface water supplies through the FKC; since this is the only surface supply source, the District landowners were forced to pump groundwater in-lieu of surface water. Also, subsidence has lessened the capacity in sections of the Friant-Kern Canal – further exasperating issues from decreased surface water supplies. Central Valley Project (CVP) wet period Water – Based on historical availability

of “Other Water” supplies available to divert from the FKC during wet period months, delivery of wet period water will occur in 4 out of 10 years for up to a 6-month duration.

The District’s primary water supply is San Joaquin River water that supplies the Friant Canal as part of the CVP contracts. The San Joaquin River also supplies the Bay-Delta, making these deliveries subject to the “protection, restoration, restoration, and enhancement of fish and wildlife” as specified by the mandated operational changes in the Central Valley Project Improvement Act. As such, the District shares Reclamation’s goals of managing, developing, and protecting the water and related resources of the California Bay-Delta, in an environmentally and economically sound manner in the interests of the public and water users. SSJMUD recognizes that, for District landowners to continue receiving water supplies from the CVP, the Bay-Delta region has to carefully manage to provide quantifiable benefits to multiple water users and applied to beneficial uses.

Through the proposed Project, an additional volume of surface water supplies will be integrated into the District’s water distribution system to offset the lack of water supplies during dry years or for environmental reasons. In addition to direct and independent water supplies, the project will result in conserving the beneficial use of groundwater, increased regional flexibility, increased operational efficiency, and water quality benefits.

The U.S. Bureau of Reclamation has historically made available purchase and diversion of wet period, “Section 215” water, which is generally characterized as un-storable and unmanaged flood flows of short duration. The availability of CVP Section 215 water depends on the hydrologic conditions of the San Joaquin River and diversions are made from the Friant-Kern Canal. SSJMUD can receive CVP Section 215 deliveries once this proposed Project is completed through the absorptive capacity it provides.

The following table is a summary of SSJMUD’s Historical Deliveries from the Friant Kern Canal, USBR, which shows deliveries to SSJMUD for a five-year period. The table highlights surface water deliveries to the District over a 5-year period indicating differences in dry and wet year operations. The average amount of SSJMUD water supply received from a shared source with the Bay-Delta can be represented by an average of CVP deliveries of 73,813AF over the last five years.

Table 3-3. District Surface Water Supplies (AF)

Source	Diversion Restriction	2015	2016	2017	2018	2019	Average
CVP ¹	Water year type and priority rights	3,318	73,206	122,137	101,439	109,744	82,369

¹ Includes allocated water supplies from the Central Valley Project, including Class 1, Class 2, and Flood water.

Water Use: The crop irrigation water requirement is estimated in SSJMUD’s 2019 AWMP update by multiplying crop-specific gross crop water usage (AF / acre) by the number of acres for each respective crop. With this method, it was estimated that approximately 126,292 acre-feet per year is needed to meet crop water demand. Presently, there are no apparent long-term trends toward increasing irrigated acreage within the District.

Water Delivery System: The distribution system is designed for a capacity of one (1) cubic foot per second per 80 acres, with a delivery pressure of 10 feet of head available at the highest point in each quarter section (160 acres). The Friant Kern Canal (FKC or Canal) runs through the District and bisects SSJMUD into the East and West half. There are multiple turnouts and laterals connected to the Canal to supply water throughout the District. The portion of the District lying west of the Friant-Kern Canal is served by a 1-4 combination gravity and pumping system, with the pumping being confined to the first sub lateral. The portion of the District lying east the canal is served by pumping through three (3) pumping stations on the canal and two re-lift plants on each of the three (3) laterals. The District has eleven (11) regulating reservoirs in total. Each has an area of approximately two (2) acres. Their locations within the distribution system are shown in Table 3-4.

SSJMUD’s system consists of 158 miles of pipelines. The original pipelines, completed in the early 1950’s, were made of concrete. Portions of the pipelines were of non-reinforced pipe with mortar joints, while portions were constructed of reinforced concrete pipe with rubber gasketed joints.

SSJMUD presently has 539 active deliveries and approximately 30 that are not currently in use. All deliveries are metered. Older meters are being replaced by a propeller type meter that indicates instantaneous flow rate and records the total flow (totalizer) that is supplied to the user. The District does not own any groundwater pumping facilities now. However, landowners in the District continue to own and operate groundwater pumping facilities aside from the District.

While the District is in the process of developing its own banking facilities, it has an existing agreement with NKWSD which allows SSJMUD to bank water in the Kern Subbasin. The implementation of the proposed project would provide SSJMUD with conveyance to return banked water to the District from NKWSD. Due to climate change and regulatory requirements the District does not always receive water at times when it is needed the most to meet crop water requirements through irrigation. With the implementation of the proposed intertie project, the SSJMUD helps provide a reliable water supply for the District and landowners to pump without depleting the aquifer.

Table 3-4. Incoming flow locations and measurement methods from FKC

<i>Location Name</i>	<i>Physical Location</i>	<i>Type of Measurement Device</i>	<i>Accuracy</i>
Friant-Kern Canal & Lateral 1	FKC Mile Post 119.6	Propeller Meter	±2%
Friant-Kern Canal & Lateral 2	FKC Mile Post 122.5	Propeller Meter	±2%
Friant-Kern Canal & Lateral 3	FKC Mile Post 124.5	Propeller Meter	±2%
Friant-Kern Canal & Lateral 4	FKC Mile Post 126.7	Propeller Meter	±2%
Friant-Kern Canal & Lateral 5	FKC Mile Post 128.3	Propeller Meter	±2%
Friant-Kern Canal & Lateral 6	FKC Mile Post 129.8	Propeller Meter	±2%
Friant-Kern Canal & Lateral 7	FKC Mile Post 124.5 E	Propeller Meter	±2%
Friant-Kern Canal & Lateral 8	FKC Mile Post 127.7 E	Propeller Meter	±2%
Friant-Kern Canal & Lateral 9	FKC Mile Post 130.4 E	Propeller Meter	±2%

3.2.3 Regional Climate

The climate of the District is typical of the San Joaquin Valley, being semiarid and characterized by mild winters and hot, dry summers. Regarding the anticipated changing climate, several

investigations have been conducted by the USGS California Water Science Center (CAWSC) regarding hydrological effects of typical climate change scenarios. Each of these investigations predict that California's climate will become warmer (+2 to +4° C) and drier (10 to 15 percent) during the mid- to late-21st century, relative to historical conditions. If these predictions materialize, the level of runoff from the Sierra Nevada Mountains, and thus the Kern River Watershed, is expected to be much less reliable with quantities presumably declining over time limiting Kern River supplies.

Reduced surface water deliveries to the District, as well as for other regional districts and agencies, which can be dedicated for agricultural uses, combined with increased demands for irrigation water due to the increasingly warmer, drier climate, will result in increased use of groundwater resources, the impacts of which could include the following:

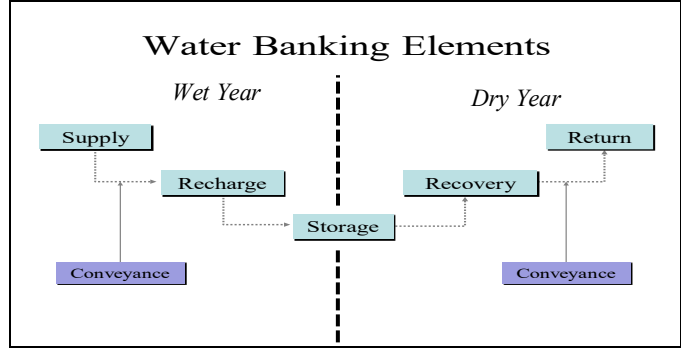
- Reduced base flow in streams;
- Reduced groundwater outflows;
- Increased depths to groundwater, and
- Increased land subsidence.

Local communities, rural residences, and businesses also rely on groundwater from the Kern County Sub basin as their main supply. Should climate change result in a reduction in water available from traditional surface supplies, the increased frequency of groundwater pumping, from agricultural water districts and other users, will lead to a decrease in groundwater storage without the necessary means of replenishing the depleted storage. Climate change concerns, such as those listed above, set a high priority for exploring and importing any other available surface water supplies, such as CVP wet period water

3.2.4 Other Relevant Background Information – Conjunctive Use

Conjunctive use is practiced by SSJMUD and its neighboring districts in this region. Recharge of surface water, when it is available, has a positive impact on groundwater levels, by reducing the lift, which reduces the amount of energy for groundwater pumping. To the extent that SSJMUD is unable to divert and use all their water available to them during the irrigation season in a wet year, the District will make use of recharge facilities in-district and continue to use recharge capacity in NKWSD for additional groundwater banking in the Kern Subbasin. Since SSJMUD bases their water distribution system on conjunctive management of their surface water and groundwater resources to ensure long-term sustainability for water users, this Project will enhance the capability and flexibility for SSJMUD to return water to the District from NKWSD without requiring the use of the FKC or a third-party's conveyance.

To date, SSJMUD has banked 23,000 AF in NKWSD. The District has not withdrawn any of that banked supply. The key improvement of this Project is to develop the capacity for SSJMUD to return banked water from NKWSD to the district. As part of the Poso Creek Integrated Regional Water Management (IRWM) Plan, the District is coordinating activities regularly with neighboring districts and reviewing and modifying water supply management practices to preserve and enhance the groundwater resources for the benefit of its landowners and for the region. That added conveyance for return capacity into SSJMUD will add flexibility for completing banking and exchange agreements with NKWSD by allowing SSJMUD to have access to up to 40 cfs of return capacity, based on SSJMUD's priority of use.



3.2.5 *Prior Working Relationships with USBR*

Examples of SSJMUD’s working relationships with the USBR include the following:

Various: SSJMUD has entered into numerous Warren Act contracts for the wheeling of agricultural water supplies with and between neighboring Federal CVP surface water contractors in Kern and Tulare Counties.

2008-2010: The Semitropic Water Storage District, acting as lead agency for the Poso Creek Integrated Regional Water Management (IRWM) Group, was awarded a USBR WaterSmart Grant in fall 2008 to prepare a System Optimization Review (i.e., analysis of system-wide efficiency for the Region). SSJMUD, was a stakeholder member of the Poso Creek IRWM Group during the study period and formally joined the Poso Creek IRWM Group as an active, voting participant in 2016 after negotiating an equitable buy-in for the past years of stakeholder only activity. The focus of the SOR was to (1) prioritize the implementation of structural water management measures for the Region based on their expected benefits to the region’s water reliability and (2) identify and resolve institutional constraints to exchanges between districts and enhance the use of district groundwater storage facilities that will help mitigate the projected loss of water reliability to the Region. In this regard, the IRWM Group worked with the USBR to prepare an Environmental Assessment (EA) to cover long-term groundwater storage and exchange activities among neighboring districts in the Poso Creek IRWM Plan Area.

2017: Reclamation action to add in SSJMUD to the Poso EA that allow for banking, transfers, and exchanges with non-CVP districts. FONSI-1636. San Joaquin Municipal Utility District – Poso Creek Integrated Regional Management Plan.

2019: SSJMUD applied for and was awarded funding through the Bay-Delta Restoration Program: CALFED Water Use Efficiency Grant (FOA No. BOR-MP-19-F002) (CALFED Grant). The project proposed for the CALFED Grant includes the construction of 40 acres of spreading ponds within SSJMUD and the installation of a recovery well to create an in-district recharge facility. The project proposed under the CALFED Grant is anticipated to result in a total annual average water savings of 1,116 AFY. Agreement No. R19AP00259 was finalized and signed on September 20, 2019.

3.3 **Project Location**

This Project location for the proposed intertie pipeline is south of the Friant-Kern Canal crossing at California State Highway 99. The proposed pumping plant, is the Project

location, south of Phillips Road, approximately one-half miles north of the unincorporated community of Famoso. The proposed pipeline would run parallel to the NKWSD 8-31 lateral and into NKWSD's conveyance system, where a pump station proposed as part of the project would be installed. The proposed pipeline would extend beyond the 8-31 lateral's terminus to Phillips Road, where it would parallel the road and a portion of SSJMUD's existing conveyance (the SSJMUD 9 Line) to an existing regulation reservoir. At this reservoir, the water would enter SSJMUD's conveyance system for delivery throughout the district. The location of existing conveyance for both SSJMUD and NKWSD and the proposed pipeline are shown in Figure 1.

3.4 Proposed Project Description

The proposed Project is for the construction of an intertie pipeline for the delivery of return water from North Kern Water Storage District (North Kern or NKWSD), which is conveyance of previously stored water, through a 2.75-mile, unidirectional, pumped fed, 36-inch diameter pipeline starting at the 8-29 ditch next to the 8-31 lateral belonging to North Kern and terminating at the regulating reservoir that feeds Pump Station 16 in Lateral 9 of Southern San Joaquin Municipal Utility District (District or SSJMUD). The location and details of the Project is shown in Figure 1 and Figure 2. (Figures included at the end of this section). Through agreements with North Kern (a member of the Poso Creek IRWM Group, of which SSJMUD is also a part), the Project is anticipated to return previously stored water into the District at an average rate of 40 cfs.

The total Project cost for installation of the Project is approximately \$4.8M (see Section 4 for budget estimation). This estimation only includes construction costs, as described in the following sub-section, since that projected costs provide enough cost match and reimbursement for the overall project. SSJMUD is requesting \$1,500,000 from the USBR towards this Project, with the remainder (\$3.3M) provided by the District.

3.4.1 Tasks and Project Work

Several tasks are defined below to accomplish the Project work and are organized to track budget and schedule items. The District will work with the USBR to address any environmental compliance or planning documentation, while adhering to project reporting and update requirements as defined in the potential grant agreement. The following list details the anticipated task associated with the Project work:

Task 7: Project Construction

Once design is completed, and necessary environmental documentation and permits are secured, SSJMUD staff, with the assistance of the Engineering Consultants, will conduct construction contracting, consisting of contractor bidding and selection (as necessary). A Contract for construction of the Project is to be competitively bid. Accordingly, the work will include publishing the notice bid solicitation; conducting a job-site tour for prospective bidders; responding to contractors' questions; issuing addenda to the specifications if required; opening and evaluating bids, including costs, required bonds, suppliers and subcontractors, and checking bidder's references and experience successfully executing this type of work; awarding of contract; and issuance of the Notice to Proceed. ***Expected Deliverables: Bid abstracts, Proof of Advertisement, Award of Contract, and Notice to Proceed.***

3.5 Performance Measures

The delivery pipeline of the proposed Project will have a flowmeter with a totalizer capability that will allow SSJMUD to measure the deliveries it receives through the pipeline connecting the new pump station and the existing regulating reservoir; these deliveries of water into SSJMUD will be measured at the discharge side of the pump station using an accurate flowmeter which will be periodically checked for measurement accuracy as part of the District's routine maintenance program. When properly calibrated, this flowmeter with a totalizer provides an accurate method of measuring both the instantaneous flowrate at any given time and the total volume of water delivered to the District's system during a period of operation (SSJMUD AWMP, 2019). By measuring the volume of water delivered, the District will be able to determine the total amount of water supply delivered to the District and can report the measured volume that is returned as a benefit of the Project. Records of monthly average flowrate and volume deliveries will be monitored and reported.

3.6 Evaluation Criteria

3.6.1 *Evaluation Criterion A: Project Benefits*

How will the project build long-term resilience to drought? How many years will the project continue to provide benefits? Presently, SSJMUD does not have in-district, direct recharge facilities, like adjacent districts, such as NKWS D. Because of not having a direct recharge facility in-district, SSJMUD has recently missed opportunities to capitalize on wet period storage of Central Valley Project (CVP) supplies due to the complex changes to timing of available CVP supplies. The District relies on North Kern and through an existing agreement has been delivering water for, and will continue to do so, storing surface supply in wet period for later recovery during drought. As of the writing of this funding opportunity request, the District has already delivered about 23,000 AF for banking to North Kern which have not been able to be recovered and delivered back due to the lack of appropriate infrastructure. SSJMUD often has a right to surplus CVP flows in addition to its CVP Class 1 and Class 2 supplies, which in wet years need direct recharge capacity to increase the reliability of their supply. The main benefit of the Project stems from its ability to receive recovered water previously stored in North Kern. As the District does not have a direct recharge facility of their own and wells to recover and return previously stored water, SSJMUD must involve CVP third parties, whom also require a portion of the water banked, as a water fee to complete the banking agreement.

The existing agreement helps to ensure the District will continue to deliver wet period water to North Kern that adds supply to the subbasin, increases regional reliability, and adds drought resiliency. This Project will help SSJMUD to recover the water previously delivered (stored) surplus CVP supply to North Kern thus increasing its resiliency to drought. The diverted floodwater would have otherwise been destined outside of the region and possibly for the ocean as a waste without beneficial use. For the purposes of this application, the 'life' of the project is estimated as 30-years for conveyance pipe and pump station operational life. This timeframe for life cycle analysis has been used in prior grant applications.

Will the project make additional water supplies available? The proposed Project provides a delivery facility for return of stored water. The water supply return through the Project would add supply to the District, thus increasing its resiliency to drought. The historical period of record

provides an indication of the frequency of use for recharge. An analysis of historical supplies on the CVP system suggests that the **Project would continue to facilitate the capture for delivery to North Kern of about 4,200 AFY or more of water in a wet year and guarantee the return from North Kern to the District of about 2,814 AFY or more in a dry or critical year type.** The calculation above is based on the analysis of the frequency of available “Other Water” (surplus floodwater or Section 215 water) at the Friant Kern Canal (FKC) during a historical 83-year hydrology. This analysis identified event with an amount of floodwater on the FKC of 100,000 AF or more of water occurring at a frequency stated indicating 10,000 AF supplies are available to SSJMUD for delivery to North Kern. A detailed review of the 83 years of historical water supply at the FKC, an excess of 100,000 AFY of available FKC supply occurred at a frequency of 42% over the 83-year hydrology or about 4.2 years per decade. This yields an estimated amount of water available to deliver to recharge of at least 4,200 AFY (10,000 AF x 4.2 years / 10 years). Therefore, the entire groundwater basin boundary gains 4,200 AFY by virtue of SSJMUD banking the FKC water in North Kern. If the available surplus is delivered to an out-of-district facility, it is expected that North Kern will keep about one-third of the water as part of banking agreements (4,200 AFY x 0.33) or approximately 1,386 AFY for potential recharge of its groundwater basin, and SSJMUD will realize the remaining two-thirds for an average water benefit of 2,814 AFY (4,200 AFY x 0.67). Considering the San Joaquin Index, the frequency of dry and critical year type is 3.3 out of 10 years, the resulting total benefit of returned banked water is **9,300 AF** (2,814 x 3.3) in a 10-year period. It is to be noted that SSJMUD is a licensed Class-1 (12.3%) and Class-2 (3.13%) CVP contractor. Therefore, they are entitled to their contracted percentage on any flow through the FKC.

The benefit of out-of-district recharge facilities is demonstrated in the following estimates after considering the realized benefit of SSJMUD (2,814 AFY). The amount to recharge in SSJMUD represents about **3.4 percent** (2,814 AFY / 81,655 AFY) of their ten-year average surface water supply, **11.9 percent of their 2019 groundwater supply** (2,814 AFY / 23,491 AFY), and **2.2 percent of their combined supply** (2,814 AFY / 126,292 AFY). Water stored in North Kern is available during dry and critical dry year type. Flood or surplus water capture projects are instrumental to increasing regional flexibility and drought resiliency. By the same token, the delivery capacity of 40 cfs estimated for the Project represents the expected recovery capacity of about 2,380 AFM or an annual capacity of 10,000 acre-feet per year (AFY) during an estimated period of about 4.2 months corresponding to the seasonal use of the pipeline to meet part of the District irrigation demand; the seasonal use would be during the shoulder months in a dry and critical year type which account for about 3.3 out of 10 years.

Environmental constraints on delivery of surface supplies from the CVP into the District and the recent exceptional drought in California have caused growers to meet shortfalls in surface supplies by pumping groundwater. As the volume of pumped water in Kern County often exceeds the volume replenishing the aquifers, several undesirable results (as defined by recent legislation and the California Department of Water Resources (DWR)) may occur. These results include reduced groundwater storage, subsidence, and increased pumping lifts due to lower groundwater tables. Flood capture infrastructure and return water delivery capacity such as the proposed Project work to mitigate each of these effects by direct recharge, or by delivering previously stored surface water supplies.

Will the project improve the management of water supplies? Wet year, flood capture projects

are instrumental to increasing regional flexibility and drought resiliency. Environmental constraints on delivery of surface supplies from the CVP into the District, the recent exceptional drought in California, and conveyance constraints resulting from subsidence on the FKC, have caused growers to meet shortfalls in surface supplies by pumping groundwater. As the volume of pumped water in Kern County often exceeds the volume replenishing the aquifers, several undesirable results (as defined by recent legislation and the DWR) may occur. These results include reduced groundwater storage, subsidence, and increased pumping lifts due to lower groundwater tables. Flood capture infrastructure and return water delivery capacity such as in this Project work to mitigate each of these effects by direct recharge, or by delivering previously stored surface supplies.

The Project helps to offset reliance on other environmentally sensitive supply sources, by providing flexibility to deliver supply to the District. Note that CVP Other Water supplies are only released as floodwater (Section 215) after all environmental and contract supplies (Class 1 or 2) have been met at the time of release. Constructing this Project will give the District a tool to offset the effects of drought and increase drought resiliency, each time there is the opportunity to deliver water previously stored and recovered. Without a banking agreement and recharge facilities, surplus or floodwater would have otherwise been destined for the ocean without beneficial use.

With the addition of this Project, it is expected to increase the operational flexibility of the District to meet the in-District critically dry year needs by providing a reliable return way for previously banked supplies. Increasing the District's operational flexibility improves water supply management for the District's groundwater management and conjunctive use program; specifically, the *Recharge and Recovery* elements of the program while still fulfilling in-District landowner needs. Increasing their delivery system's return capacity will improve the District's ability to return banked water in a dry and critical year type: operating the Proposed project over 4 months would add to the local water supplies by **10,000 AFY in a dry and critical dry year type**.

Will the project make new information available to water managers? If so, what is that information and how will it improve water management? The Project will add recharge and delivery capacity of recovered water for the District. District manager and managers affiliated with the Poso Creek IRWM Plan will benefit from observing greater flexibility for recharge, recovery, and return of stored, surplus water supply in times of drought or shortage. Added recovery capacity will allow for greater flexibility in meeting the in-district needs of landowners and at the same time the ability for the District to meet the needs of the district. In the overall, the Project will help SSJMUD complete their agreements with North Kern within the Poso Creek IRWM Group due to the increased recovery and return capacity. Data collected pertaining to extraction volume will be made available to water managers. A Letter of Support has been included.

Will the project have benefits to fish, wildlife, or the environment? If so, please describe those benefits. Any measure which captures floodwater and enables later delivery of banked surface water directly to water users improves the efficiency of water management in the entire region, reduces demand on the Delta and, supports the environmental objectives of the California Bay-Delta Conservation Plan and the San Joaquin River Restoration Program.

Regarding the Delta, relevant species include the following:

- Delta Smelt, Federally endangered
- Longfin Smelt,
- Chinook Salmon federally threatened (spring runs)/endangered (winter runs).

Increasing regional drought resiliency will result in decreased reliance of surface water from the Delta during a dry and critical year type.

Describe the groundwater monitoring plan that will be undertaken and the associated monitoring triggers for mitigation actions. Describe how mitigation actions will respond to or help avoid significant adverse impacts to Third Parties that occur from groundwater pumping.

Long-term water-level data in selected wells within the District representing the unconfined to semi-confined aquifers are used to evaluate groundwater movement, storage conditions, and pumping costs. Historically, water levels in farmers' supply wells have been measured twice a year, in both the "spring" and "fall", with the timing of these measurements intended to coincide with the annual water level high and low, respectively. These data have been made available to Reclamation and the California DWR for the farmers-owned wells as part of CASGEM and SGMA; the District though does not own any wells.

3.6.2 Evaluation Criterion B: Drought Planning and Preparedness

SSJMUD is a long-standing stakeholder and member of the Poso Creek IRWM Group. The IRWM Group published an Integrated Regional Water Management Plan (IRWM Plan), updated in 2019, that in part discusses regional vulnerability to drought and its impacts. A Drought Contingency Plan (DCP) outline is included in the 2019 Plan Update. The IRWM Plan recognizes that drought year preparedness begins in wet years by meeting the regional goals and measurable objectives set forth in the Plan. The drought relevant goals in the Plan include: 1) maintain and enhance water supply reliability, 2) improve operational efficiency and flexibility, and 3) improve flood management. Nearly all the measurable objectives outlined in the Plan work to mitigate the effects of drought.

SSJMUD, as a member of the Poso Creek IRWM Group, is participating in the development of the Poso Region DCP. SSJMUD, NKWS D, and the other governing members of the Poso Creek IRWM Group comprise the Poso Region DCP Interim Task Force. This task force is responsible for the development of the Work Plan drafting the Poso Region DCP, which also includes the establishment of a long-term Task Force with regional stakeholders and interested parties. A district specific DCP will be prepared as a part of the Poso Region DCP. The details of the SSJMUD district-specific components of the DCP are included in Appendix B.

The development of the Poso Region DCP and the district-specific portions of the will also consider drought monitoring and response actions identified in the Groundwater Sustainability Plans (GSPs) prepared for compliance with California's Sustainable Groundwater Management Act (SGMA). The elements of the DCP will include:

1. **Drought monitoring** for predicting the probability of future droughts or confirming an existing drought and implementing appropriate response actions.
2. **Vulnerability assessment** to evaluate risks and impacts of drought to critical resources and the factors contributing to those risks.

3. **Mitigation actions** (drought resiliency actions) that will build long-term resiliency to drought and mitigate risks posed by drought.
4. **Response actions** that can be quickly implemented during specific stages of a drought, manage the limited supply, and decrease the severity of immediate impacts.
5. **Operational and administrative framework** to identify who is responsible for actions necessary to implement each element of the DCP.
6. **Plan update process** to monitor, evaluate, and update the DCP.

The Project provides SSJMUD recharge continuity and particularly return capacity by way of capturing surplus CVP water to allow for piped delivery of surface water to in-district irrigation distribution systems during dry and critical year types to meet later irrigation demand. This sort of opportunistic capture, or conjunctive use, is part of the Primary Goals of the Drought Management component of the AWMP. In particular, the project addresses the critical operational consideration of “...improving water supply through ... facilitating water transfers for municipal and industrial, refuge, and agriculture to ensure the most critical supply needs are met throughout the service areas of the CVP and ensuring flow standards are as flexible as possible in order to capture runoff from multiple storm events under the otherwise dry conditions”.

3.6.3 *Evaluation Criterion C: Severity of Actual or Potential Drought Impacts to be addressed by the Project.*

The National Drought Mitigation Center recognized the Project area as undergoing some intensity of drought for nearly the entirety of the previous decade. The near constant state of drought has recently been punctuated by an exceptional drought (category D4) or extreme drought (category D3) over the previous few years. In times of drought, irrigation and municipal agencies often meet shortfalls in surface supplies by pumping groundwater. The sustained need to pump has contributed to many drought indicators within the Kern Subbasin, including:

- Nearly two inches of subsidence in the nearby City of Delano between 2008 and 2010 (<https://www.usgs.gov/centers/ca-water-ls>).
- A 160-foot decrease in groundwater elevation within neighboring Cawelo between 1970 and 2015 (<https://www.usgs.gov/centers/ca-water-ls>; Well 27S26E21F001M)

Without further improvements in water management infrastructure, these trends are likely to continue. Overall, the District noted its vulnerability to drought and climate change as ‘high’, since each year the groundwater elevation lowers, the existing groundwater supply decreases, along with its resiliency. The Project helps to mitigate the impact of drought by storing wet period water for delivery in dry and critical year types, so that any groundwater level decrease is offset.

3.6.4 *Evaluation Criterion D: Project Implementation*

SSJMUD is the sole constructor and financier of the Project. SSJMUD has enough in-house staff and equipment to be the sole manager for components of the Project but will engage engineering consultants to assist in design and construction management efforts throughout the project and will hire contractors for delivery pipeline and pump station construction.

Describe the implementation plan of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. Milestones may include, but are not limited to, the following: design, environmental and cultural resources compliance, permitting, construction/installation.

The overall project and task schedule, as presented in Figure 3, gives a task-wise schedule. If the requested grant funding is awarded to the Project, a grant agreement is expected to be signed by September 2020; design work is expected to begin in October 2020 with an estimated end date in May 2021, environmental and cultural compliance work is already underway and is expected to be completed prior to construction. Construction bidding is to take place in mid-2021 with construction started after July 1, 2021 and completed by early-2022 or mid-2022. Given that construction costs alone provide enough cost match and reimbursement for the project, tasks such as administration, reporting, environmental documentation, final design, permitting, and construction administration were removed from the Project Work. However, all required Project work will be done and is expected to be completed within 27 months with a final report completed by December 2022.

	Task Name	Duration	Start	Finish
1	Anticipated Grant Award	567 days	Wed 9/30/20	Thu 12/1/22
2	Task 4: Environmental Documentation	109 days	Wed 7/1/20	Mon 11/30/20
3	Task 5: Design	153 days	Thu 10/1/20	Sat 5/1/21
4	Task 7: Construction	283 days	Thu 7/1/21	Mon 8/1/22

Figure – 3 Project Schedule

Describe any permits that will be required, along with the process for obtaining such permits.

The Project is located within the rights-of-way of NKWSD and SSJMUD, and the land of growers within the Districts. All the required modifications to the land are within the experience of the District and its consultants. As design plans and specifications are further developed, the District will engage Reclamation and local agencies to ensure all required permits, reviews, and special approvals are met so that the integrity of the canals and lands intercepted by the pipeline are not compromised.

In addition to and accordance with the permitting and approval concerns stated in Task 6 of the Project Work (Section 3.3.2), the following paragraphs detail specific points of the District’s commitment to obtaining all relevant permits and approvals.

- a) “The District, at its sole cost and expense, comply with all laws, rules, ordinances and regulations of all governing bodies having jurisdiction over the work, obtain all necessary permits and licenses therefore...” This would include, but is not limited to, such things as any required

NPDES permitting and the preparation of a Storm Water Pollution Prevention Plan for construction of the Project.

b) A pre-activity survey will be ordered and conducted by a qualified biologist shortly before the start of construction; this would include, but is not limited to, protocol-level surveys for the San Joaquin Kit Fox and the Western Burrowing Owl (or other local endangered species).

c) Note that the District is not subject to the County's or City's jurisdiction about building and grading permits relative to water resource projects. Accordingly, no city or County-issued permits will be required.

Describe any engineering or design work performed specifically in support of the proposed project. The District completed a preliminary design through meeting with a local consulting engineer and completed a cost estimate based on the components of the Project.

Describe any new policies or administrative actions required to implement the project. The District does not anticipate any policies or administrative actions required as part of implementing the Project.

3.6.5 Evaluation Criterion E: Nexus to Reclamation

Describe the nexus between the proposed project and a Reclamation project or activity. The proposed Project is in the Tulare Lake Basin, which also includes Reclamation's Friant-Kern Canal. The Project lands do not meet trust responsibilities to Tribes.

SSJMUD is a registered Central Valley Project (CVP) contractor and receives both Class-1 and Class-2 allocations through the Friant-Kern Canal (FKC). The proposed project will conserve groundwater by guaranteeing the return of previously banked surplus surface water through a dedicated pump station and delivery pipeline to in-district irrigation distribution systems. The proposed surface water that would be delivered to the District is CVP water from the FKC that is available during wet periods and otherwise lost to the District during times of water surplus.

The Project is within a CVP Contractor district. NKWS D will effectively utilize its absorptive capacity to bank excess water during wet years on behalf of SSJMUD and deliver back to the District during the dry years when the demand for water is at its peak. This enables operational flexibility which improves effective utilization of its surface water sources, besides promoting regional co-operation towards making this basin self-sufficient, which is a crucial nexus to mitigate drought.

3.6.6 Evaluation Criterion F: Department of Interior Priorities

Restoring trust with local communities- be a better neighbor with those closest to our resources by improving dialogue and relationships with persons and entities bordering our lands:

- Creating a conservation stewardship legacy second only to Teddy Roosevelt
- Utilizing our natural resources
- Restoring trust with local communities
- Striking a regulatory balance
- Modernizing our infrastructure

The Project serves to meet these priorities in several ways. For the conservation stewardship, the Project will provide SSJMUD the opportunity to better manage the available water resources from the CVP FKC. The Project will allow the District to convey water supplies that would otherwise be lost from the Region. Ultimately, this conveyance of recovered previously stored water supplies serves to remove the potential for conflict over CVP FKC water during periods of low supplies because there is additional water stored and available for return.

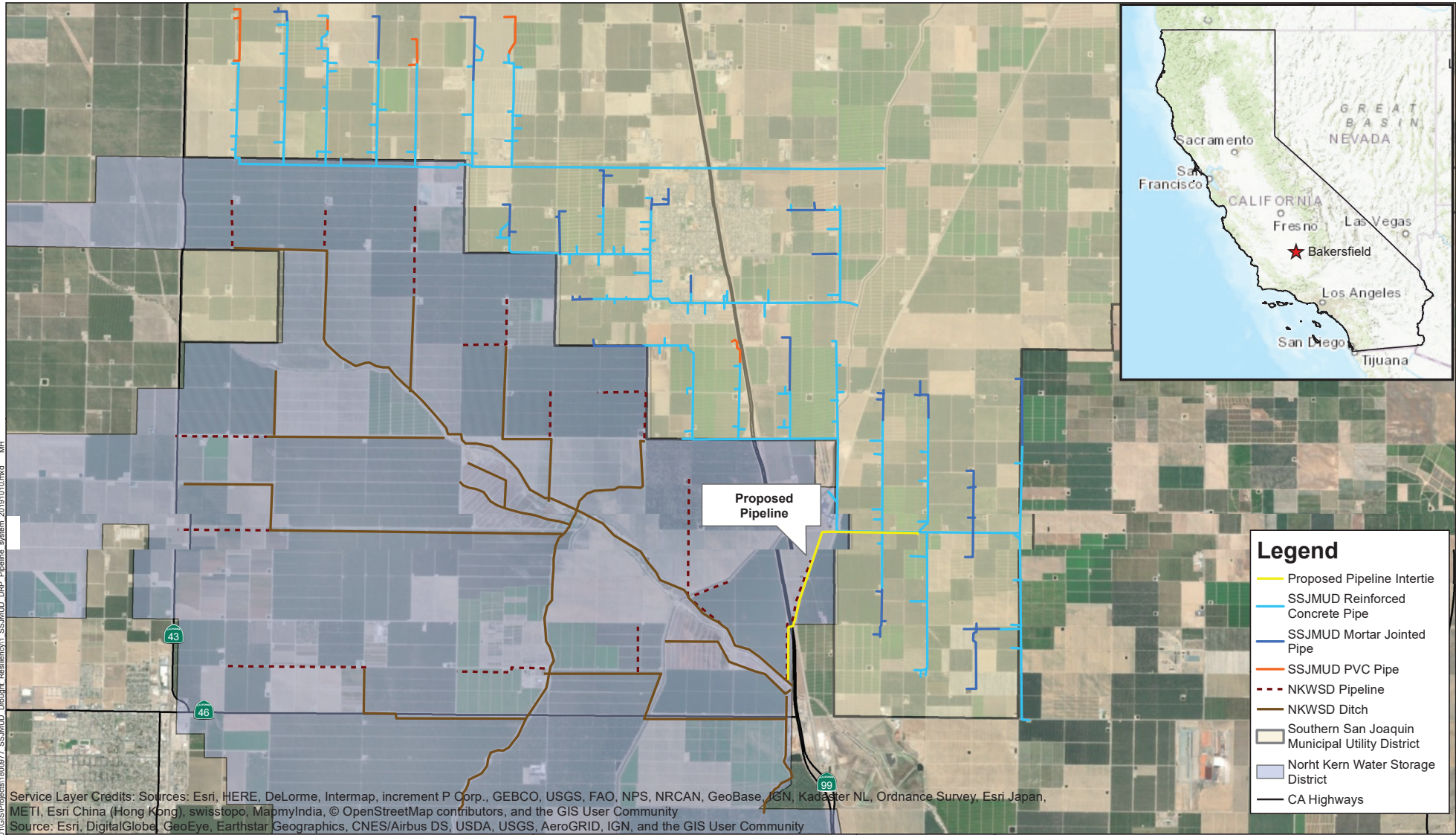
Trust between communities, neighbors and agencies is fostered through projects that serve to share the groundwater and energy resources. The Project provides the opportunity for SSJMUD and local communities to share resources to the benefit of both. In addition, by absorbing the additional water supplies during these wet periods of surplus, they contribute to the reliability of future supplies to the benefit of the region.

The redistribution of the supplies will serve to strike a balance between the needs of the agricultural industry of the Southern San Joaquin Valley and those of the wildlife species in the Delta. During periods of excess there is water already going to the Delta. During periods of drought, the Delta needs more water. Having access to stored water through improved and efficient conveyance of supplies, SSJMUD will place less demand on the surface water supplies during the periods with short water supply.

SSJMUD's Project is implementing a modern water delivery system by adopting new technologies in the design and operation of a pressurized pipeline that allows more flexible delivery through the recovery of previously stored water.

The District continues to foster relationships with other water districts in the region through the Poso Creek IRWM Group. Along with the other active members, SSJMUD has worked to improve drought resiliency and act in the best interest of the districts within the region. As previously stated, the Poso Creek IRWM Group is a collaborative group that works toward regional water management planning and implementation activities. The District's participation in this group has helped to improve water management and supply issues in the region as well as build greater relationships with the participating water districts.

The proposed Project is a continuation of the District's efforts to improve recharge, recovery, and return capacity of their groundwater recharge facilities to allow surface water recharged and banked in North Kern WSD's groundwater basin to be available to be returned to SSJMUD. SSJMUD will benefit from this Project, and water managers affiliated with the Poso Creek IRWM Group will continue to also benefit from water recharge in times of water surplus during wet years. Figures are included after the Technical Section.



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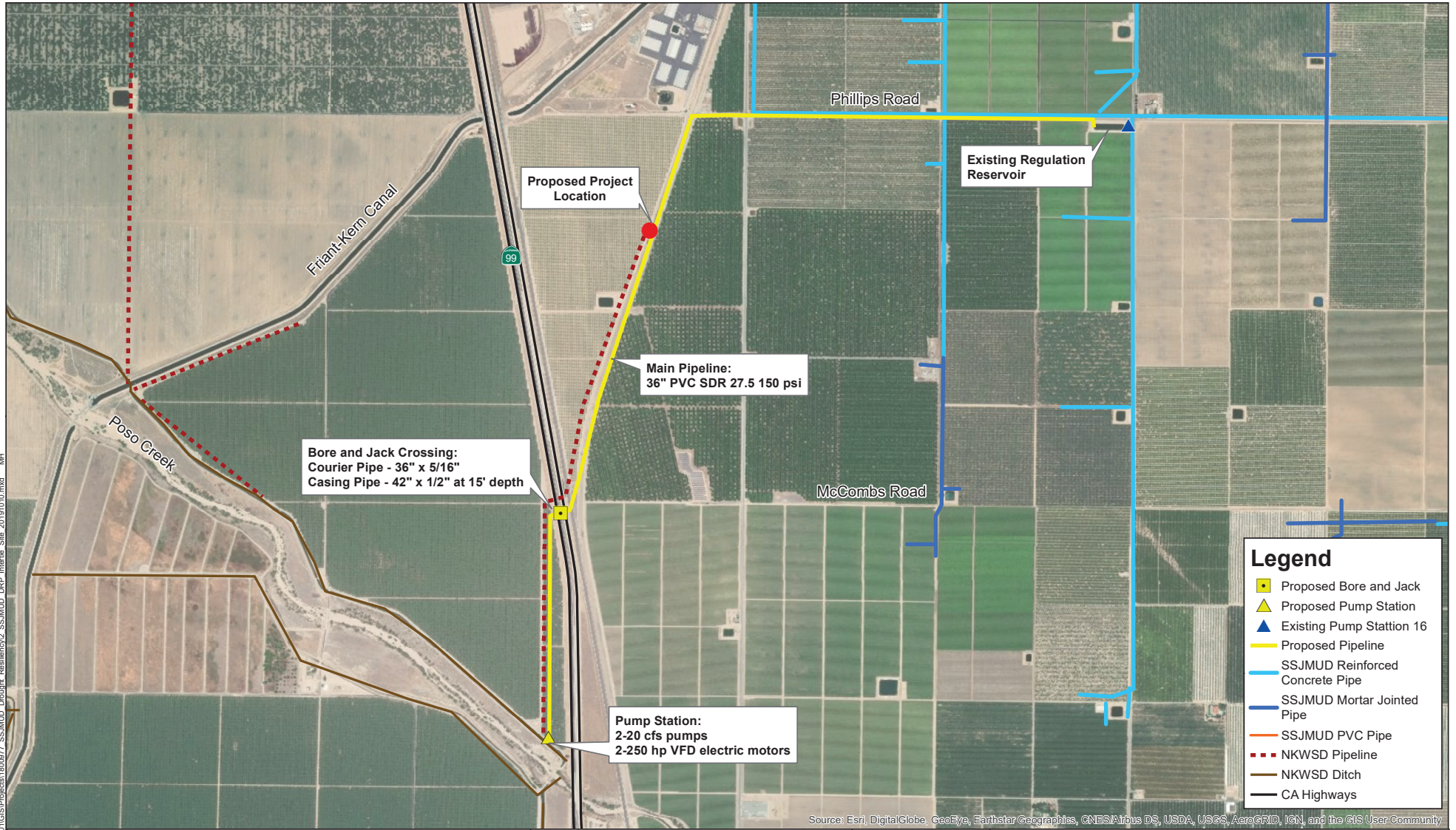
Southern San Joaquin Municipal Utility District



SSJMUD
 PROPOSED NKWSD-SSJMUD INTERTIE
 PIPELINE PROJECT

August 2020

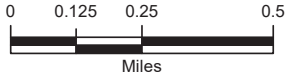
FIGURE 1



Legend

- Proposed Bore and Jack
- ▲ Proposed Pump Station
- ▲ Existing Pump Station 16
- Proposed Pipeline
- SSJMUD Reinforced Concrete Pipe
- SSJMUD Mortar Jointed Pipe
- SSJMUD PVC Pipe
- - - NKWSD Pipeline
- NKWSD Ditch
- CA Highways

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Delano, CA

Southern San Joaquin Municipal Utility District



August 2020

**SSJMUD
PROPOSED NKWSD-SSJMUD
INTERTIE PIPELINE DETAILS**

FIGURE 2

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4.0 Project Budget

4.1 Funding Plan and Letters of Commitment

Any monetary contributions by the applicant towards the cost-share requirement and source of funds (e.g., reserve account, tax revenue, and/or assessments). Any costs that will be contributed by the applicant.

In addition to District's requested reclamation funding of \$1,500,000, funds for the implementation of the proposed Project will be obtained from the District's financial reserve for capital improvement projects. The District employs an experienced crew of operations and maintenance people that routinely install irrigation pipe. However, for the construction of spreading ponds and wells, contractors will be hired. To construct the Project in the most cost-effective manner possible, the District intends on obtaining bids for the Project work. The following table provides an overview of the funding sources.

Any third part in-kind costs (i.e., goods and services provided by a third party). None.

Identity and amount of funding to be provided by funding partners. No other funding partners need to be identified.

Any cash requested or received from other non-federal entities. No other non-Federal funding has been requested or received for the proposed work.

Any pending funding requests (i.e., grants or loans) that have not yet been approved and explain how the project will be affected if such funding is denied. The District does not have any pending funding requests that have not yet been approved for the Project components.

In addition, please identify whether the budget proposal includes any project costs that have been or may be incurred prior to award. No, the budget proposal does not include any project costs that have been or may be incurred prior to award.

4.2 Budget Proposal

The total Project budget for the SSJMUD-NKWSD Intertie Pipeline for Regional Drought Resiliency (Project) is estimated at \$4,823,103 with \$1,500,000 in requested grant funds (Federal Cost Share) and \$3,323,103 in Non-Federal Cost Share funds. The approach has been reflected in the budget estimates. The total requested grant funds amount to about 31 percent of total project costs, with the remainder (69 percent) funded by the Applicant. Refer to Table 4-1, which provides a summary of the estimated budget, by task, including Reclamation and Applicant contributions.

Table 4-1
Summary of Non-Federal and Federal Funding Sources

Funding Sources	Funding Amount
Non-Federal Entities	
SSJMUD	\$ 3,323,103
State Funding	\$ -
<i>Non-Federal Subtotal:</i>	\$ 3,323,103
Other Federal entities	
None	
<i>Other Federal Subtotal:</i>	\$ -
Requested Reclamation Funding:	\$ 1,500,000
Total Project Funding:	\$ 4,823,103

The Project budget was prepared based on the level of effort required to implement the project as discussed in Section 3.4.1 – Tasks and Project Work. The Work Plan identifies and describes one task used to define the overall Project Scope, Schedule, and Budgets:

Task 7: Project Construction

Several tables have been prepared in support of these budget estimates, which immediately follow this section in the order shown below.

- a. Table 4-1a provides a one-page, task-by-task summary of the estimated budget, including Reclamation and Applicant contributions shown in Table 4-1b.
- b. Table 4-2 provides a summary of project costs by task and follow the “sample budget proposal format” from the FOA.
- c. Appendix C and D include detailed estimates of construction components, which support the estimate presented in Task 7-Construction.

Table 4-1a
Budget Summary by Task⁽¹⁾

Task Number - Name	Total Cost
Task 1 - Administration	-
Task 2 - Reporting	-
Task 3 - Land Purchase and Easements	-
Task 4 - Environmental Compliance	-
Task 5 - Design	-
Task 6 - Permitting	-
Task 7 - Project Construction	\$ 4,823,103
Task 8 - Construction Administration	-
TOTAL	\$ 4,823,103

Note:

(1) Given that construction costs provide enough funds for cost match and reimbursement, the budget was simplified to only display costs for construction activities. Although details for required tasks such as administration, reporting, land purchasing/easements, environmental compliance, final design, permitting, and construction administration are not shown in the budget narrative, all project work for these tasks will be completed for the project.

Table 4-1b
Program Funding Sources⁽¹⁾

Funding Sources	Percent of Total Project Costs	Total Cost by Source
Costs to be paid by the applicant	69%	\$ 3,323,103
Cost to be reimbursed with the requested Federal funding	31%	\$ 1,500,000
Value of third party contributions	0%	\$ -
TOTAL PROJECT COSTS	100%	\$4,823,103

Notes:

- (1) This table is supported by detailed tables which are included immediately following the Budget
- (2) Reference the Work Plan in Section 3.4.1 for task descriptions.
- (3) Refer to Table 4-1a for a Budget Summary of all Projects costs.
- (4) The amount of personnel hours was estimated from District and Consultant engineer experience based on the previously completed pipeline and reclamation projects.

4.3 Budget Narrative

In addition to the following discussion, it is noted that the above-listed tables include cost-estimating notes.

Given that projected construction costs alone provide enough cost match and reimbursement for the project, tasks such as administration, reporting, environmental documentation, final design, permitting, and construction administration were removed from the Project Work.

However, all required Project work for the removed tasks will be completed within the Project Schedule period.

Salaries and Wages – Roland Gross, General Manager for SSJMUD, is the representative for the Applicant and will provide construction of the project components. Additionally, the District will have accounting staff responsible for tracking costs and maintaining financial records to administer Project finances, including making all payments for contracted services and collecting monies from funding partners as required for meeting Project cash-flow requirements.

SSJMUD will enlist the professional services of consultants, such as, GEI Consultants, Inc.; (GEI), a consulting engineering firm under a professional services contract to the district.

Concerning District staff, the work under the Project will be completed as part of the Districts' daily operations. In this regard, the District will be asking for reimbursement for any Salaries and Wages cost as part of this Project. The District is proposing to track these costs separately from daily operations for employees who will be providing services necessary for implementation of the grant-funded Project.

Travel - The District will not be charging any travel expenses to the Project, nor will they be asking for reimbursement of any incidental travel costs.

Equipment - The proposed Project will be advertised for bid and the District will be soliciting sealed bids for construction of the Project work. In this regard, the District will contract with a local contractor who will provide costs to “furnish and install” the necessary project components. Equipment expenses have not been included inasmuch as the District will not be purchasing or leasing any equipment to construct the project works, but rather the successful contractor will be providing such equipment as part of the work. Refer to Table 4-2 Construction Estimate. Accordingly, no “Equipment” expenses have been included.

Materials and Supplies - Acquisition of materials and supplies for office use is not anticipated; rather, the District will provide any incidental supplies. Accordingly, no “Materials and Supplies” expenses have been included.

General Contractual/Construction - With regards to contractual costs, the District will use an existing professional services contract, an example is one in place with GEI Consultants, one of the District's engineering consultants, to assist the District with implementing the Project including providing bid-phase support, and construction assistance as needed. In this regard, the District operates with minimal professional staff and have maintained a long-standing relationship with the consultant, who is familiar with District facilities and operations. Additionally, sub consultants will be retained to supplement the engineering consultant's technical expertise. It is noted that work described in the work plan other than construction will be completed primarily by the engineering consultants, with assistance from the District. In this regard, costs for the engineering consultant and sub consultants to complete the work have been estimated under the category “Contractual” for all tasks. Refer to Tables 4-2 under the category “Contractual” for a summary of the contractual costs. The construction contractual costs were determined through prior project actuals and estimates prepared by licensed engineers. The budgets under the “Contractual” category for each task are estimates at this time. However, they have been prepared based on the

level of effort to complete past projects by the consultants and sub consultants, whom over the years, have provided similar services to the District for projects that have been similar in scope and complexity.

The contractual cost also includes costs associated with bid advertisement in a local newspaper and online platforms per state and federal laws, and printing of plans and specs. The estimate presented is based on recent experience and recent work done for implementation of various projects funded by Reclamation and similar pumping plant and pipeline design projects.

Third-Party In-Kind Contributions – No work will be accomplished by third-party in-kind contributors.

Environmental and Regulatory Compliance Costs – As previously stated, construction costs provide enough cost match and reimbursement for the Project, so Environmental and Regulatory Compliance costs are not included for the Project. However, the District still intends to work with Reclamation to determine the potential environmental effects the proposed Project may have in relation to NEPA, NHPA, ESA, and the Clean Water Act to ensure compliance with all applicable environmental laws. All major work is located on District-owned and maintained rights of way, with the exception of pipeline connection FKC. Accordingly, it is anticipated that it will not be difficult to obtain permits or approvals necessary for the work that is the subject of this Proposal.

Other Costs – Costs under this category were included for project tasks. A description of the costs by task follows.

Indirect Costs - No indirect costs are included in the budget. Accordingly, this category does not apply.

Please refer to Appendices C and D for detailed estimates.

**Table 4-2
Task 7 - Construction⁽¹⁾**

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES				
General Manager		0	Hours	\$0
Accounting Manager		0	Hours	\$0
CONTRACTUAL				
Engineering Consultant				
Senior Professional - Grade 7	255.00	0	Hours	\$0
Senior Professional - Grade 6	214.00	0	Hours	\$0
Senior Professional - Grade 5	188.00	0	Hours	\$0
Project Professional - Grade 4	160.00	0	Hours	\$0
Project Professional - Grade 3	142.00	0	Hours	\$0
Staff Professional - Grade 2	130.00	0	Hours	\$0
Staff Professional - Grade 1	118.00	0	Hours	\$0
Senior CADD Drafter	142.00	0	Hours	\$0
Technician	106.00	0	Hours	\$0
Intertie and Pipeline Construction				
Project Wide Items	See Table 4-2a⁽²⁾			\$855,952
Pipeline and Pump Station	See Table 4-2a⁽³⁾			\$3,958,440
ENVIRONMENTAL/REG.				
				\$0
OTHER⁽⁴⁾				
Bid Advertisement	\$ 8,179.80	1	LS	\$8,180
Plans and Specs	\$ 531.25	1	LS	\$531
				\$0
TOTAL DIRECT COSTS				\$4,823,103
INDIRECT COSTS - ___%				\$0
TOTAL PROJECT COSTS				\$4,823,103

Notes:

(1) Costs were estimated by a local General Contractor

(2) Project wide items found in Table 4-2a are based on W.M Lyles Bid, the winning bidder, for Diltz Intertie. The Diltz Intertie was 3.0 miles of pipeline. This pipeline is approximately 2.75 miles long.

(3) Pipeline and Pump Station items found in Table 4-2a are based on previous pipeline and reclamation projects such as the Diltz Intertie, the Leonard Avenue Pipeline, the Wheeler ridge capital replacement study, and SWID's XYZ Project

(4) Costs based on quotes for the North Kern Canal Improvements and WDI project

**Table 4-2a
Construction Components**

Project Wide Items					
Item No.	Description	Quantity	Unit	Unit Price	Cost
1	Mobilization	1	LS	480,300.00	\$ 480,300.00
2	Demobilization	1	LS	241,700.00	\$ 241,700.00
3	Develop and Provide Water Supply	1	LS	29,050.00	\$ 29,050.00
4	Environmental Compliance	1	LS	27,000.00	\$ 27,000.00
5	Prepare/Maintain/Restore Access Roads	1	LS	19,602.00	\$ 19,602.00
6	Finish Grading of Project - Roads, Pipeline Alignment, Around Structures	1	LS	10,300.00	\$ 10,300.00
7	Compaction and Lab Testing	1	LS	48,000.00	\$ 48,000.00
Total:					\$ 855,952.00

Cost Estimate for SSJMU-D-NKWSD Intertie Pipeline					
Item No.	Description	Quantity	Unit	Unit Price	Cost
1	Furnish and install 36" PVC SDR 27.5 150 psi Pipe	14,520	LF	139.00	\$ 2,018,280.00
2	36" Swing check valve	1	EA	16,290.00	\$ 16,290.00
3	36" Mace Insertion flowmeter	1	EA	20,000.00	\$ 20,000.00
4	36"x45° PVC Elbows	4	EA	8,880.00	\$ 35,520.00
5	36"x90° PVC Elbows	3	EA	5,600.00	\$ 16,800.00
6	Hwy 99&Railroad Xing - Bore&Jack (300'-40"x1/2"x36"x5/16" SP)	1	LS	525,000.00	\$ 525,000.00
7	Pumping Plant, Electric System	500	HP	2,653.10	\$ 1,326,550.00
Total:					\$ 3,958,440.00

Estimated Project Total:	\$ 4,814,392.00
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5.0 Environmental and Cultural Resources Compliance

The following section summarizes the District’s approach to avoid, minimize, and mitigate any potential environmental impacts related to construction of the proposed Project. The following paragraphs address the specific questions posted in the Environmental and Cultural Resources Considerations section of the FOA.

Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? The extent of construction activities (footprint) for the Project is relatively small and will be located within easements acquired by SSJMUD. The site location has been chosen in consideration of State, or Federal Animal and Plant status. The proposed pipeline alignment is on previously disturbed soils, located on land that is currently under cultivation or is used for existing roadways and water conveyance infrastructure. Regardless, all applicable environmental compliance measures will be followed, at a minimum, to ensure no improper disturbances are made to the environment and animal life. Such environmental measures include executing the PM-10 Dust Control Plan, Storm Water Pollution Prevention Plan, and all necessary biological site surveys.

Best Management Practices (BMPs) will be implemented during construction to mitigate any construction related impacts. Dust-control measures will be implemented during earth-disturbing activities, including the application of water to prevent excessive dust during all clearing, grading and earthmoving. During grading and construction activities, all equipment will be powered down when not in use to reduce unnecessary emissions, all equipment will be maintained and tuned, and to the extent possible, all equipment will be equipped with exhaust systems to minimize emissions.

Additionally, the District will engage a qualified biologist to conduct a pre-activity survey prior to the start of construction to ensure that the construction area remains unoccupied by sensitive (endangered) species. In addition, standard avoidance and minimization protocols will be included in the project specifications and will be followed during construction. Moreover, the duration of the construction activity is expected be relatively short (i.e., construction to occur over a period of six months within the two-year window for utilizing the grant funds).

Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project? SSJMUD is aware that threatened and endangered species exist in the Southern San Joaquin Valley. The Fish and Wildlife Service (FWS) Endangered Species Database listed several threatened and endangered species within Kern County. However, based on experience of the District, the Kern Council of Governments Habitat Conservation map, and federally listed species mapping, as mentioned above no known endangered species inhabit the area of the conveyance pipeline.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as “Waters of the United States?” If so, please describe and estimate

any impacts the proposed project may have. No. Wetlands and other surface water locations have been eliminated from potential sites.

When was the water delivery system constructed? The District formally organized in 1935. In 1945, the Board of Directors of the SSJMUD executed a contract with the United States providing for Class I and Class II water service contract via the Central Valley Project (CVP). The SSJMUD delivery system is a gravity system and some pressurized pipe system which delivers water using nine turnouts from the Friant-Kern Canal. The original 158 miles of pipelines (of the current 175 miles) within the district were completed in the early 1950's. The nine turnouts are metered using propeller meters with totalizers into the District.

Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously. There will be no extensive modifications to the existing irrigation distribution system, the system is expected to tie in with the existing system and to work with the existing conveyance capabilities allowing for more operational flexibility.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question. None have been identified along the proposed pipeline alignment.

Are there any known archeological sites in the proposed project area? No. Because this project is located on previously disturbed land, it is expected that there will be no obstacles to receipt of clearance with respect to archeological sites. In addition, the District is prepared to implement any necessary mitigation measures should cultural resources be identified by the private cultural resource's management consultant.

Will the project have a disproportionately high and adverse effect on low income or minority populations? No. Construction of the project will support the important agricultural-based economy in the Southern San Joaquin Valley and should have only positive impacts on low income or minority persons living in the region.

Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands? No.

Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area? No.

6.0 Required Permits or Approvals

The Project will be located exclusively within existing easements acquired by SSJMUD and NKWSD. All the required permitting, construction management, and construction administration tasks are within the experience of the District and its consultants. As design plans and specifications are further developed, the District will engage Reclamation and local agencies to ensure all required permits, reviews, and special approvals are met. The following paragraphs detail the main points of the District's commitment to obtaining all relevant permits and approvals.

(1) Bids for construction will be solicited through the competitive bidding process based on final plans and specifications. The standard specifications will include language relating to obtaining permits and approvals prior to construction. The standard language in the specifications state "The Contractor is an independent contractor and shall, at his sole cost and expense, comply with all laws, rules, ordinances and regulations of all governing bodies having jurisdiction over the work, obtain all necessary permits and licenses therefore..." This would include, but is not limited to, such things as any required NPDES permitting and the preparation of a Stormwater Pollution Prevention Plan.

(2) A pre-activity survey will be ordered and conducted by a qualified biologist shortly before the start of construction; this would include, but is not limited to, protocol-level surveys for the San Joaquin Kit Fox and the Western Burrowing Owl (or other local endangered species).

(3) It is noted that the District is not subject to the County's or City's jurisdiction regarding building and grading permits relative to water resource projects. However, it is anticipated that County encroachment permits for construction within the County road right-of-way will be obtained as needed. The District will comply with CEQA and NEPA before commencing any ground disturbing activities.

7.0 Existing Drought Contingency Plan

SSJMUD resides in the Tulare Basin of the Central Valley. As such, SSJMUD and the Group are within the purview of the Central Valley Project and State Water Project 2016 Drought Contingency Plan (DCP). The DCP was produced with input from multiple stakeholders including Reclamation, the California Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, the California Department of Water Resources, the State Water Resource Control Board, and many others. Taken together these agencies are a reflection of the environmental, agricultural, and municipal stakeholders affected by local and statewide water management. The DCP accounts for climate change impacts inasmuch as the operational forecasts account for different anticipated future precipitation and runoff.

The Project provides SSJMUD with conveyance capacity by way of an intertie between the existing conveyance systems of both NKWSO and SSJMUD for the purpose of returning water banked by SSJMUD in NKWSO during dry years and applied to meet later irrigation demand. This sort of opportunistic capture, or conjunctive use, is part of the Primary Goals of the Drought Management component of the AWMP. In particular, the project addresses the critical operational consideration of "...improving water supply through ... facilitating water transfers for municipal and industrial, refuge, and agriculture to ensure the most critical supply needs are met throughout the service areas of the CVP and ensuring flow standards are as flexible as possible in order to capture runoff from multiple storm events under the otherwise dry conditions".

SSJMUD is also a long-standing stakeholder and member of the Poso Creek Integrated Regional Water Management Group (Group). The Group published an Integrated Regional Water Management Plan (Plan) updated in 2014 that discusses regional vulnerability to drought and its impacts, though no drought specific section was adopted in the 2014 Plan Update, a Drought Contingency Plan outline is intended to be included in the 2019 Plan Update with the plan completed in 2021 using a Reclamation funding award. Instead, the 2014 Plan recognizes that drought year preparedness begins in wet years by meeting the regional goals and measurable objectives set forth in the Plan. The drought relevant goals in the Plan include: 1) maintain and enhance water supply reliability, 2) improve operational efficiency and flexibility, and 7) improve flood management. Nearly all of the measurable objectives outlined in the Plan work to mitigate the effects of drought. The Poso Creek Plan describes the measurable objectives of the Group and is included previously for convenience.

8.0 Official Resolution

**RESOLUTION OF THE BOARD OF DIRECTORS OF THE
SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT**

**WATERSMART DROUGHT RESPONSE PROGRAM: DROUGHT RESILIENCY
PROJECT GRANT APPLICATION**

WHEREAS, Southern San Joaquin Municipal Utility District (SSJMUD) recently partnered with several neighboring water districts in the Poso Creek Integrated Regional Water Management Plan (Plan), adopted in July 2007 and updated in 2014 by each of the districts for their collective area; and

WHEREAS, District staff, in conjunction with surrounding water districts, communities, and stakeholders, has formulated a plan of improvements; and

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

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

WHEREAS, District staff has formulated a project improvement, referred to as the *SSJMUD/NKWSD Intertie for Regional Drought Resiliency (Project)*, which has the support of surrounding water districts and communities; and would be funded by SSJMUD funds, in-kind services, and grant funds; and

WHEREAS, will be able to provide greater operational flexibility by returning banked groundwater to SSJMUD from North Kern Water Storage District (NKWSD); and

WHEREAS, the United States Bureau of Reclamation is currently soliciting proposals for grant funding assistance under their *WaterSMART Drought Response Program: Drought Resiliency Projects for Fiscal Year 2021* (Funding Opportunity No BOR-DO-20-F002); and

WHEREAS, District staff has formulated a grant proposal to construct an intertie between SSJMUD and NKWSD.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Southern San Joaquin Municipal Utility District as follows:

- a. . The District's Board of Directors has reviewed and supports the submission of a grant application to Reclamation entitled *SSJMUD/NKWSD Intertie for Regional Drought Resiliency*
- b. The District's Manager, Roland Gross, is hereby authorized and directed to submit the grant application and is authorized to enter into an agreement with Reclamation on behalf of SSJMUD for grant funding under Reclamation's *WaterSMART Drought Response Program*.
- c. The Applicant is capable of providing the amount of funding and in-kind contributions specified in the application; and

- d. The Applicant will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

THEREFORE, BE IT RESOLVED, the Southern San Joaquin Municipal Utility District Board of Directors have reviewed the application and support its submittal for Reclamation assisted funding. The Board of Directors approve Roland Gross, General Manager, as the official with legal authority to enter into a cooperative agreement with Reclamation and confirm that Southern San Joaquin Municipal Utility District is capable of providing the amount of funding specified in the application. Southern San Joaquin Municipal Utility District will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

PASSED APPROVED AND ADOPTED on this 10 day of June, 2020 by the following vote:

AYES:	Fisher, Morris, Regan.
NOES:	None.
ABSENT:	Dulcich, Zaninovich.
ABSTAINED:	None

SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT




Roland Gross, Secretary

9.0 System of Award Management (SAM) and ASAP Registration

All applicants must maintain an active SAM registration with current information at all times while they have an active federal award or an application under consideration.

The District is providing this screen shot (below) of their account as sufficient verification of an open and active System of Award Management (SAM) account.

In addition, the District maintains an open and active Automated System Application for Payment (ASAP) account.

Use the SAM Status Tracker Now

Check registration status by typing in a DUNS Number.

DUNS Number Plus 4 (Optional)








Or, check registration status by typing in a CAGE Code.

CAGE Code

SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT

Status: Active

Your registration was activated on Dec 19, 2019. It expires on Dec 18, 2020 which is one year after you submitted it for processing.

						
Core Data	Assertions	Reps & Certs	POCs	Submit	Processing	Active
Completed	Not Required	Not Required	Completed	Completed	Completed	Completed

Appendix A – Letter of Support



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

August 5, 2020

Mr. Roland Gross
General Manager
Southern San Joaquin Municipal Utility District (SSJMUD)
11281 Garzoli Ave.
Delano, CA 93215

Subject: Proposed Project – *SSJMUD-NKWSD Intertie Pipeline for Regional Drought Resiliency*

Dear Mr. Gross:

The Poso Creek IRWM Group would like to acknowledge support of Southern San Joaquin Municipal Utility District's (SSJMUD) effort to construct the *SSJMUD-NKWSD Intertie Pipeline for Regional Drought Resiliency* project. The group is clearly interested and supportive of the project, as the proposed intertie between SSJMUD and North Kern Water Storage District (NKWSD) is a significant step in achieving drought resiliency by adding return capacity to the District's facilities. This project will improve operational flexibility and efficiency within the region. The *SSJMUD-NKWSD Intertie Pipeline for Regional Drought Resiliency* Project is a vital improvement that will be of great benefit to the entire Poso Creek IRWM Group.

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

Sincerely,

Dana Munn
Chairman, Poso Creek IRWM Group
[dmunn@swid.org](mailto:dmunm@swid.org)
(661) 758-5153

Appendix B – Drought Contingency Plan

**Southern San Joaquin Municipal Utility District
Drought Contingency Planning and Mitigation Actions**

Introduction

This memorandum provides district-specific drought planning details for the Southern San Joaquin Municipal Utility District (SSJMUD) as an appendix to the Drought Contingency Plan (Poso Region, DCP, or Plan) for the Poso Creek Integrated Regional Water Management (IRWM) Group Task Force that Semitropic is a member of along with several Water Districts listed below. Most notably, this memorandum presents the local mitigation actions to build long-term resiliency to drought in Semitropic and response actions for short-term needs related to drought. The mitigation actions presented herein are also consistent with Semitropic's Groundwater Sustainability Plan (GSP), completed in January 2020. The Poso Region DCP grant agreement has been signed the United States Department of the Interior Bureau of Reclamation (USBR). The IRWM Group will now begin developing the DCP for the Region.

As background to the drought planning process for the region for which SSJMUD is a member, the IRWM Group has entered into an agreement with the United States Department of the Interior Bureau of Reclamation (USBR) to receive funding to develop the Poso Region DCP through the USBR WaterSMART Drought Response Program (USBR, 2016). The Plan is a collaborative effort that includes a task force made up of regional stakeholders, interested parties, and the governing members of the IRWM Group. The governing members of the IRWM Group are: Semitropic Water Storage District (SWSD), North Kern Water Storage District (NKWSD), Cawelo Water District (CWD), Shafter-Wasco Irrigation District (SWID), Kern-Tulare Water District (KTWD), Delano-Earlimart Irrigation District (DEID), North West Kern Resource Conservation District (NWKRC), and SSJMUD. The Poso Region DCP Task Force (Task Force) made up of the governing members of the IRWM Group as well as regional stakeholders and interested parties has been established.

Droughts are common throughout the Western U.S, and California experiences a drought every 7 years on average. The last drought, within the region and most of California was from 2012-2016 and was one of the driest on record. As identified in the 2019 Poso Creek IRWM Plan Update (IRWM Plan), droughts are expected to become more frequent and intense, interspersed with severe wet periods as a result of climate change. The Poso Region DCP and this memorandum are intended to assist local governments and agencies by: (1) developing and updating comprehensive drought plans, (2) developing and refining projects that will build long-term resiliency to drought, and (3) establishing emergency response actions. This will be accomplished by identifying and implementing strategies that monitor short and long-term water availability, assess risks to critical resources in the case of drought, promote mitigation efforts, prioritize drought response actions, ensure administrative framework and associated responsibilities are clear and transparent, and provide for periodic evaluation and updating of the Plan.

SSJMUD Planning Area

Agency's Name:	Southern San Joaquin Municipal Utility District
Agency's Address:	1281 Garzoli Avenue, Delano, CA 93215
Agency's Phone Number:	(661) 725-0610
Agency's Website:	http://www.ssjmud.org/
Contact Person:	Roland Gross
Contact Person's Title:	General Manager, SSJMUD

SSJMUD was formed in 1935, under the Municipal Utility District Act of the Public Utility Code of California, with the purpose to obtain and provide a supply of water for lands located within the boundaries of the District. Although the District includes the cities of Delano and McFarland, the District only provides agriculture water services. SSJMUD first entered into a 9e Water Services Contract with United States Bureau of Reclamation (USBR) in 1945. This contract was renewed in 2001 and currently expires in 2026, although further extensions are anticipated. In 2011, the District negotiated a 9d Repayment Contract with the USBR, which has the benefit of being a perpetual contract for the existing amounts of contracted water supply, thus securing the District's water supply from the Central Valley Project (CVP).

SSJMUD supplies imported water to landowners through contracts with the CVP Friant Division for both Class 1 and Class 2 water. The Friant-Kern Canal (FKC, CVP), a part of the CVP, flows through SSJMUD, from Millerton Dam on the San Joaquin River, running south and terminating at the Kern River, east of Highway 99. In addition to Class 1 and Class 2 water, SSJMUD has purchased Section 215 water when it has been available, and the District has the ability to either bring it in-district with available capacity in the FKC or the ability to bank the water through agreements with entities in the Kern County Subbasin (e.g. NKWSD) or outside of the subbasin (e.g. Kaweah Delta Water Storage District).

The total service area of SSJMUD is approximately 66,000 acres, with an irrigated acreage of approximately 51,000 acres. While the total irrigated acreage remains consistent, the actual parcels receiving water from each of the districts varies from year to year, based on decisions made by the landowners for which properties are to be irrigated and which crops are being grown. Land use mainly consists of vineyards, deciduous fruits and nut crops, and citrus. Field crops, pasture, and grain and hay crops are located mainly in the western portion of the district, west of Highway 99. The majority of land within the limits of the cities of Delano and McFarland is classified as urban, with some land in deciduous crops or idle.

The service area covered by SSJMUD has access to both groundwater and surface water supplies, while the municipal supplies of the Cities of Delano and McFarland are groundwater dependent. The District provides a small amount of recharge to the groundwater reservoir supply through on-farm, in-lieu recharge efforts and recharge efforts through District reservoirs.

Participation in the Poso Region DCP Interim Task Force

SSJMUD is a member of the Poso Region DCP Task Force. The Task Force developed a workplan for the Poso Region DCP and will communicate and provide outreach to stakeholders and the public through the planning process.

SSJMUD's experience with the Task Force is represented by its active membership of the IRWM Group since 2016. SSJMUD contributes to the IRWM Group with its CVP experience and capabilities; access to the Friant-Kern Canal; and innovation in establishing a CASGEM monitoring network and plans to further develop direct, on-farm and in-lieu recharge efforts.

District Communication and Outreach

SSJMUD involves its stakeholders and the public in drought contingency planning through the following approaches:

- Public notices and postings of meetings and agendas on the District website,
- Public Board of Director's meetings (held monthly),
- Publicly-noticed landowner meetings (when necessary),
- Landowner Advisory Group meetings (when necessary), and
- Email and Postal Service mailers to landowners.

SSJMUD will continue to use these outlets throughout the drought planning process to solicit input and feedback from the public.

Communication and Outreach Schedule

Communication and outreach are ongoing for drought contingency planning. Many elements of the Poso Region DCP are concurrent and collaborative with sustainable groundwater management planning (KGA, 2019) and the IRWM Plan (RWMG, 2019). The Task Force for the Poso Region DCP submitted a workplan to USBR in April 2020 and, after approval of the workplan and a signed agreement with USBR, expect to begin development of the Poso Region DCP by Fall 2020.

Drought Response Program Framework

The District has developed this memorandum using the drought response program framework (USBR, 2016). The framework includes monitoring for drought, evaluating risks and impacts of drought on vulnerabilities, identifying and planning for long-term mitigating actions and activities, and identifying and prioritizing short-term response actions to drought.

The following are the six elements of the drought response framework.

1. **Drought monitoring** for predicting the probability of future droughts or confirming an existing drought, and implementing appropriate response actions.

2. **Vulnerability assessment** to evaluate risks and impacts of drought to critical resources and the factors contributing to those risks.
3. **Mitigation actions** (drought resiliency actions) that will build long-term resiliency to drought and mitigate risks posed by drought.
4. **Response actions** that can be quickly implemented during specific stages of a drought, manage the limited supply, and decrease the severity of immediate impacts.
5. **Operational and administrative framework** to identify who is responsible for actions necessary to implement each element of the DCP.
6. **Plan update process** to monitor, evaluate, and update the DCP.

The Task Force is developing the evaluations and actions to address regional monitoring, vulnerability assessments, response actions, the operational and administrative framework, and the plan to monitor, evaluate, and update the DCP. This memorandum focuses on specific local mitigation actions planned by SSJMUD.

Drought Monitoring

Drought monitoring is discussed in the context of the regional group, in the Poso Region DCP area.

The objective is to provide timely information in advance of, or during, the early onset of drought to prompt action (via action levels or threshold triggers) within a drought contingency plan.

The following parameters are monitored as a part of drought planning:

- Local precipitation and temperature,
- Stream Flows,
- Snowpack,
- Reservoir levels,
- Groundwater levels (groundwater elevation or depths),
- Projected allocations for imported water, and
- Local evapotranspiration (ET)

Monitoring Systems

There are various local and state entities that monitor several hydrologic and meteorologic conditions. These parameters may be linked to a local regional monitoring dashboard in the future. In the interim, the National Integrated Drought Information System (NIDIS) and the National Drought Mitigation Center (NDMS) provide national-level dashboards with drought indices to inform stakeholders on drought monitoring conditions at a high-level.

At a national level, the NIDIS is a first step in monitoring multistate to state-level conditions. NIDIS was created by Congress to work toward a comprehensive, interagency approach for drought monitoring, forecasting, and early warning planning and preparedness. NIDIS works closely with the NDMS to provide drought-related web resources for monitoring, mitigation, and planning.

The following resources, which include multi-state dashboards, cover the parameters in this plan for adequate drought monitoring:

- Multi State dashboards with monitoring, maps, current conditions, and outlooks:
 - NIDIS. <https://www.drought.gov/drought/states/california>, and
 - NDMS. <https://droughtmonitor.unl.edu>
- Drought early warning systems: <https://www.drought.gov/drought/dews/california-nevada> (NIDIS)
- California Irrigation Management Information System (CIMIS) weather stations:
 - <https://cimis.water.ca.gov/Stations.aspx>
 - <http://cdec.water.ca.gov/cdecstation2/>
- Snow pack and water conditions surveys:
 - California Department of Water Resources (DWR) Bulletin 120. Water Conditions in California. <http://cdec.water.ca.gov/snow/bulletin120/>
 - USDA-NRCS https://www.wcc.nrcs.usda.gov/snow/snow_map.html
 - California Data Exchange Center:
 - <http://cdec.water.ca.gov/snow/current/snow/>
 - <http://cdec.water.ca.gov/snow/current/snow/pillowplots/Kern.html>
 - NOAA California Nevada River Forecast Center (CNRFC)
 - <https://www.cnrfc.noaa.gov/snowmelt.php>
- Isabella Reservoir Storage and Kern River Stream Flows:
 - <http://www.spk-wc.usace.army.mil/fcgi-bin/hourly.py?report=isb>
 - Kern River Flow Data. <http://cdec.water.ca.gov/cdecstation2/>
- SWP Allocations. <https://water.ca.gov/Programs/State-Water-Project/Management/SWP-Water-Contractors>
- CVP Allocations. <https://www.usbr.gov/mp/cvp-water/allocations.html>
- Groundwater Levels:
 - Groundwater level monitoring within the District at representative monitoring wells.
 - CASGEM. <https://water.ca.gov/Programs/Groundwater-Management/Groundwater-Elevation-Monitoring--CASGEM>
 - DWR Water Data Library. <http://wdl.water.ca.gov/waterdatalibrary/>
 - USGS NWIS. <https://nwis.waterdata.usgs.gov/usa/nwis/gwlevels>
- District Evapotranspiration Calibrated Remote Sensing Analysis (future planned).

Metrics and Action Levels

Based on drought monitoring, metrics and action levels can be established to define a specific drought stage, response, or a mitigation action. Poso Creek IRWM uses action levels to define agency-specific or regional response actions. A brief description is described in the following subsection.

Metrics for Local Response Actions

The metrics that are critical for local and regional water management and drought response actions are:

1. decreases in imported surface water allocations, and
2. decreases in groundwater levels.

Drought response actions may be triggered as the sustainable yield of the District is exceeded. The sustainable yield is primarily governed by and varies with imported surface water allocations. It is described in the Groundwater Sustainability Plan (GSP) (KGA, 2019), as the sum of all surface water into the District plus native yield of groundwater available for pumping, and precipitation, that equal water demand and loss. The parameters that are monitored or estimated for sustainable yield are:

- surface water supplies (natural and imported),
- local precipitation,
- groundwater pumping and underflow (if estimated), and
- local evapotranspiration

Groundwater management response actions are required as groundwater elevations drop below measurable objectives (MO) and minimum thresholds (MT) for groundwater. These action levels (MOs and MTs) were adopted by the District in the GSP (KGA, 2019).

Indices Used to Inform Stages of Drought and Hydrologic Year Type

Directly related to metrics that define response actions, are indices that now only characterize the current state of hydrologic conditions and potential drought, but also inform the decision at a state and regional level for surface water allocations of the CVP, SWP, and Kern River.

The Water Year Hydrologic Classification Index (Water Year Index) is used throughout much of California and the Poso Region DCP area to characterize hydrologic conditions that immediately affect water supplies of stakeholders and the public. This index includes the qualitative labeling of a drought as dry or critically dry. While these qualitative labels are used in communicating with the general public, they are determined by quantitative ranges. The Water Year Index is based on the unimpaired runoff predictions in DWR's Bulletin 120 which is published in February to May of each year and compares runoff forecasts in major watersheds (including the Kern River

watershed) to historical averages. DWR incorporates precipitation and snow water content to forecast runoff, which is a key index in how allocations of imported water from the CVP, SWP, and the Kern River are estimated. These forecasts and allocations determine what actions must be taken by water entities to manage a deficit in years of drought (or, conversely, a surplus in “wet” years).

SSJMUD considers Water Year Index, Bulletin 120 forecasted runoff, and allocation values of CVP to manage entitled surface water deliveries and purchasing of Section 215 water for the district.

In addition to the state and regional indices described above, NDMC’s United States Drought Monitor includes the following indices which are used in the state and national dashboards characterizing drought conditions (these are also described in the Handbook of Drought Indicators and Indices, [Svoboda and Fuchs, 2016]):

- Drought Severity Classification Index (DSCI)
- Standardized precipitation index (SPI),
- Palmer Hydrological Drought Severity Index (PHDI),
- Standardized Water-level Index (SWI),
- Surface Water Supply Index (SWSI).

Vulnerability Assessment

Vulnerabilities are features of the water system that are susceptible to droughts, climate change, and other uncontrollable factors, resulting in the district not being able to meet water supply demands. Vulnerabilities identified through this process form the basis for developing mitigation and response actions. The vulnerability assessment is also based on a range of potential future conditions, including consideration of the effects of climate change.

This assessment of vulnerabilities applicable to SSJMUD and adjacent neighbors supplements the assessment developed in the GSP (KGA, 2019) and IRWM Plan Update (Poso Creek RWMG, 2019).

The Assessment was performed by:

1. Reviewing vulnerability information from the following plans: GSP, IRWM Plan Update, Urban Water Management Plans (UWMPs), and water budget from the UWMP and GSP;
2. Listing vulnerabilities;
3. Evaluating vulnerabilities in terms of sensitivity to drought and consequences of potential effects (*PENDING*); and
4. Categorizing vulnerabilities based on local or external factors and institutional, operational, or physical factors (*PENDING*).

This assessment identifies the major vulnerabilities as defined in regional water plans and evaluates which vulnerabilities are most sensitive with the highest consequences, while considering whether local or external factors are the primary drivers. In addition, the assessment identifies if the factors are institutional, operational, or physical.

The evaluation of sensitivities, consequences, local and external factors and factor type is in development and will be completed along with the Poso Region DCP.

Vulnerability Results

The following vulnerabilities have been identified in the IRWM Plan (RWMG, 2019) and the GSP (KGA, 2019) as a part of climate change impact assessments:

- Potential reduction in imported surface water supplies (SWP and CVP) and surplus deliveries,
- Potential reduction in Kern River water supplies,
- Low storage in Lake Isabella Reservoir and increase in variability,
- Decrease in groundwater elevations leading to increased pumping costs and well impacts,
- Municipalities that rely solely on groundwater,
- Permanent crops which may be climate-sensitive and that limit water use curtailment measures, and
- Wildlife such as San Joaquin Kit Fox, Tipton Kangaroo Rat, and San Joaquin Woolly Threads.

Sensitivity and Consequence Analysis

An analysis of the sensitivity and consequence of vulnerabilities is in development and will be completed with the Poso IRWM DCP.

External and Local Factors

An analysis of the external and local factors of vulnerabilities is in development and will be completed with the Poso IRWM DCP.

These factors will further inform the plan for mitigation and response actions. Even though some factors may be external, either institutional, operational, or physical, there are mitigation actions as a local level that can be implemented to partially address external factors. For example, reduction in imported surface water supplies from the CVP are external to the District; however, enhanced effectiveness in conveyance and expansion of recharge and recovery capabilities could allow SSJMUD to store more surplus water, when available, to enhance the conjunctive use when surface water supplies are deficient.

Mitigation Actions

Mitigation actions developed by SSJMUD are intended to build long-term resiliency to drought, and mitigate risks posed by drought. The actions will address risk associated with the following local and regional vulnerabilities to drought identified as part of the vulnerability assessment process.

Vulnerabilities to be addressed by mitigation actions:

- Variable CVP supplies due to hydrologic variability or institutional constraints;
- Variable storage in Millerton Reservoir;
- Groundwater pumping costs and well impacts; and
- Municipalities (Delano and McFarland) that rely solely on groundwater.

Development and Benefits of Mitigation Actions

Mitigation actions are intended to decrease sector vulnerabilities and reduce the need for response actions to help water managers build resiliency and avoid crisis during drought.

The actions are benefits developed to support the following drought plan objectives:

- Enhance reliability effectiveness of surface water supplies delivered to the Region
- Improve regional water conveyance, direct recharge, and in-lieu service actions
- Improve water delivery effectiveness
- Improve direct recharge areas
- Increase absorptive capacity within the Region
- Implement region-wide management actions
- Enhance regional conjunctive water-use
- Maintain and enhance quality of water supply
- Facilitate implementation of regional opportunities, projects, and programs
- Facilitate implementation of region-wide water management actions
- Adapt to changes in the amount, intensity, timing, and in-lieu service areas

Plans and ideas for mitigation actions are developed by the District and shared with the Task Force for consideration and coordination with the regional group.

The following table provides the actions developed by the District, with a brief description and summary of benefits that address drought planning objectives.

Table on Following Page

Mitigation Actions	Type	Purpose and Brief Description	Benefits to Drought Planning Objectives
City of Delano Spreading Grounds	Project	Improvements to existing 16-acre stormwater retention basin for use as a spreading basin. Improvement to adjacent 32-acre site for expansion of spreading grounds.	<ul style="list-style-type: none"> • Improve regional water conveyance, direct recharge, and in-lieu service areas • Increase absorptive capacity within the Region • Enhance regional conjunctive water-use • Facilitate implementation of regional opportunities, projects, and programs • Adapt to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.
In-District Spreading and Recovery Facility	Project	80-acre spreading ponds and 2 recovery wells.	<ul style="list-style-type: none"> • Improve regional water conveyance, direct recharge, and in-lieu service areas • Increase absorptive capacity within the Region • Enhance regional conjunctive water-use • Facilitate implementation of regional opportunities, projects, and programs • Adapt to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.
Schuster Intertie	Project	Construction of pipeline between Semitropic and SSJMUD to provide operational flexibility and allow SSJMUD to import water supplies to the Subbasin.	<ul style="list-style-type: none"> • Enhance reliability and effectiveness of surface water supplies delivered to Region • Improve regional water conveyance, direct recharge, and in-lieu service areas • Enhance regional conjunctive water-use • Facilitate implementation of regional opportunities, projects, and programs • Implement region-wide management actions • Adapt to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.
SSJMUD & Cawelo WD Intertie	Project	Construction of a pipeline between Cawelo and SSJMUD to provide operational flexibility and allow SSJMUD to import supplies to the Subbasin.	<ul style="list-style-type: none"> • Enhance reliability and effectiveness of surface water supplies delivered to Region • Improve regional water conveyance, direct recharge, and in-lieu service areas • Enhance regional conjunctive water-use • Facilitate implementation of regional opportunities, projects, and programs • Implementation of region-wide water management actions • Adapt to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.
SSJMUD & NKWSD Intertie	Project	Construction of a pipeline between Cawelo and SSJMUD to provide operational flexibility and allow SSJMUD to import supplies to the Subbasin.	<ul style="list-style-type: none"> • Enhance reliability and effectiveness of surface water supplies delivered to Region • Improve regional water conveyance, direct recharge, and in-lieu service areas • Enhance regional conjunctive water-use

Mitigation Actions	Type	Purpose and Brief Description	Benefits to Drought Planning Objectives
			<ul style="list-style-type: none"> Facilitate implementation of regional opportunities, projects, and programs Implementation of region-wide water management actions Adapt to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.
Southeast Delano Spreading Grounds	Project	Conversion of land to permanent spreading grounds, up to 320 acres, to facilitate groundwater recharge in proximity to the City of Delano to the benefit of both the District and the City.	<ul style="list-style-type: none"> Improve regional water conveyance, direct recharge, and in-lieu service areas Increase absorptive capacity within the Region Enhance regional conjunctive water-use Facilitate implementation of regional opportunities, projects, and programs Implement region-wide water management actions Adapt to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.
Pond Road Spreading Grounds	Project	Conversion of land to permanent spreading grounds, up to 220 acres in proximity to the FKC, to capture and utilize excess surface water deliveries.	<ul style="list-style-type: none"> Improve regional water conveyance, direct recharge, and in-lieu service areas Increase absorptive capacity within the Region Enhance regional conjunctive water-use Facilitate implementation of regional opportunities, projects, and programs Implement region-wide water management actions Adapt to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.
In-District Spreading Grounds	Project	Conversion of land to permanent spreading grounds, up to 800 acres, to facilitate groundwater recharge. This project would consist of multiple locations throughout SSJMUD identified as potential recharge sites.	<ul style="list-style-type: none"> Improve regional water conveyance, direct recharge, and in-lieu service areas Increase absorptive capacity within the Region Enhance regional conjunctive water-use Facilitate implementation of regional opportunities, projects, and programs Implement region-wide water management actions Adapt to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.
Conversion of Dairy to Recharge Facility	Project	Conversion of land previously used for dairy operations into permanent recharge facilities.	<ul style="list-style-type: none"> Improve regional water conveyance, direct recharge, and in-lieu service areas Increase absorptive capacity within the Region Enhance regional conjunctive water-use Facilitate implementation of regional opportunities, projects, and programs Implement region-wide water management actions Adapt to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.

Mitigation Actions	Type	Purpose and Brief Description	Benefits to Drought Planning Objectives
“Surface Water First” Incentive Program	Program	Implementation of fees for groundwater use when surface water is available.	<ul style="list-style-type: none"> • Improve regional water conveyance, direct recharge, and in-lieu service areas • Increase absorptive capacity within the Region • Enhance regional conjunctive water-use • Facilitate implementation of regional opportunities, projects, and programs • Implement region-wide water management actions • Adapt to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.
On-Farm Efficiency/Deficit Irrigation Practices Incentive Program	Program	Improvements to individual farming operations that address water use efficiency and/or groundwater protection through incentive programs.	<ul style="list-style-type: none"> • Facilitate implementation of regional opportunities, projects, and programs • Implement region-wide water management actions • Adapt to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.
Conversion of Agricultural Land to Urban Use	Project	Conversion of agricultural land to urban use within the limits of each city to reduce groundwater use due to decreased demand.	<ul style="list-style-type: none"> • Implement region-wide water management actions • Adapt to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.

Response Actions

Regional response actions are discussed in the Poso Region DCP. Response actions include those that can be quickly implemented during specific stages of a drought; manage the limited supply of water; and decrease the severity of immediate impacts.

SSJMUD may implement the following response actions if drought conditions lead to below normal surface water supplies and groundwater elevations:

- Public education and outreach through website, public meetings, and email and postal service mailing for voluntary conservation and water use reduction;
- Prorating of water deliveries until they become available;
- Recovery of banked water from banking partners;
- Development of an in-district water conservation incentive program; and
- Request disaster relief.

Additional actions applicable to SSJMUD will be included with this memorandum as further development occurs.

Operational and Administrative Framework

The regional framework for operational and administrative actions, planning, and procedures of drought planning are discussed in the Poso Region DCP. This framework facilitates a quick and efficient response to drought conditions by clarifying the roles and responsibilities of the Task Force members and stakeholders in the Poso Region DCP area.

SSJMUD will, at a minimum, report on local actions or local data that are necessary for monitoring and reporting, mitigation, and drought response. The following are roles of SSJMUD within the drought planning Task Force:

- Disseminate information from the Task Force and drought planning team to the stakeholders within the District, including monitoring stage information, progress of mitigation projects, response actions, and status of drought planning and updates;
- Evaluate progress of mitigation projects within SSJMUD and provide periodic reviews to the Task Force; and
- When necessary, initiate response actions within SSJMUD.

Plan Update Process

The Task Force will initiate the update process for the DCP. As data are collected and evaluated, changes in conditions or improvements to the DCP that require updates may be identified. Updates

will also incorporate new regulations, stakeholder information, data, and technologies. These changes will be made every five years or as determined by the Task Force.

Details on updates to drought planning are included in the Poso Region DCP.

References

Kern Groundwater Authority (KGA). 2019. Groundwater Sustainability Plan. Public Draft. August.

Poso Creek Regional Water Management Group (RWMG). 2019. 2019 Poso Creek Integrated Regional Water Management (IRWM) Plan Update. August.

Svoboda, Mark; Fuchs, Brian; and Integrated Drought Management Programme (IDMP), Handbook of Drought Indicators and Indices (2016). Drought Mitigation Center Faculty Publications. 117.

U.S. Department of the Interior Bureau of Reclamation (USBR). 2016. Drought Response Program Framework: WaterSMART Program. April.

Appendix C – Construction Cost Estimates

Project Wide Items						
Item No.	Description	Quantity	Unit	Unit Price	Cost	Source
1	Mobilization	1	LS	480,300.00	\$ 480,300.00	10% of the total construction cost
2	Demobilization	1	LS	241,700.00	\$ 241,700.00	5% of the total construction cost
3	Develop and Provide Water Supply	1	LS	29,050.00	\$ 29,050.00	Source: WM Lyles Bid SWID 19-02 (See Appendix D-1, Item 3 p. 1)
4	Environmental Compliance	1	LS	27,000.00	\$ 27,000.00	Source: WM Lyles Bid SWID 19-02 (See Appendix D-1, Item 4 p. 1)
5	Prepare/Maintain/Restore Access Roads	1	LS	19,602.00	\$ 19,602.00	
	Cost per LF Pipeline	14,520	LF	1.35	\$ 19,602.00	Source: Scaled down WM Lyles Bid SWID 19-02 (See Appendix D-1, Item 5, p. 1)
6	Finish Grading of Project - Roads, Pipeline Alignment, Around Structu	1	LS	10,300.00	\$ 10,300.00	Source: WM Lyles Bid SWID 19-02 (See Appendix D-1, Item 6, p. 1)
7	Compaction and Lab Testing	1	LS	48,000.00	\$ 48,000.00	
	Cost per construction time in Months	8	Mo	6,000.00	\$ 48,000.00	Source: Krazan testing for RRBWSD Central Intake Pipeline Project (See Appendix D-2, p. 2)
				Sub-Total:	\$ 855,952.00	

Cost Estimate for SSJMUD-NKWSD Intertie Pipeline						
Item No.	Description	Quantity	Unit	Unit Price	Cost	Source
1	Furnish and install 36" PVC SDR 27.5 150 psi Pipe	14,520	LF	139.00	\$ 2,018,280.00	Source: SWID 19-02 adjusted for class (See D-1, Item 7, p. 2)
2	36" Swing check valve	1	EA	16,290.00	\$ 16,290.00	Source: Scaled based on Wheeler ridge capital replacement study (See Appendix D-3, p. 9)
3	36" Mace Insertion flowmeter	1	EA	20,000.00	\$ 20,000.00	Source: Scaled based on Leonard Ave Pipeline 25% cost estimate (See Appendix D-4, p. 1)
4	36"x45° PVC Elbows	4	EA	8,880.00	\$ 35,520.00	Source: WM Lyles Bid SWID 19-02 (See Appendix D-1, Item 28, p. 3)
5	36"x90° PVC Elbows	3	EA	5,600.00	\$ 16,800.00	Source: Estimate (See Appendix D-1, Items 29 and 47, pp.3-4)
6	Hwy 99&Railroad Xing - Bore&Jack (300'-40"x1/2"x36"x5/16" SP)	1	LS	525,000.00	\$ 525,000.00	Source: NKWSD BNSF crossing project
7	Pumping Plant, Electric System	500	HP	2,653.10	\$ 1,326,550.00	Source: Estimate. Scaled based on USBR memo identifying \$/HP
				Sub-Total:	\$ 3,958,440.00	

Appendix D – Cost Estimate Sources

SUBTOTAL (ITEMS 1-6): \$ 232,750.00 ✓

INTERTIE MAINLINE

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
7*	Furnish and Install 36" C900 DR 32.5 CL125 PVC	7,875	LF	\$ 173.00	\$ 1,047,375.00 ✓
8*	Furnish and Install 18" DR 32.5 CL 125 PIP	40	LF	\$ 203.00	\$ 8,120.00 ✓
9*	Furnish and Install 12" DR 32.5 CL 125 PIP	400	LF	\$ 69.00	\$ 27,600.00 ✓
10*	Open Cut Road Crossings	6	EA	\$ 13,020.00	\$ 78,120.00 ✓
11*	Furnish and Install 36" C900 PVC to 36" CML&C Connection	1	LS	\$ LS	\$ 7,930.00 ✓
12*	Furnish and Install Lateral 134.4 Tie-In	1	LS	\$ LS	\$ 57,500.00 ✓
13*	Furnish and Install Connection to Existing 8" and 10" PVC	1	LS	\$ LS	\$ 5,000.00 ✓
14*	Connection to Existing Type 1 Farm Turnout	4	EA	\$ 1,930.00	\$ 7,720.00 ✓
15*	Connection to Existing Type 2 Farm Turnout	1	EA	\$ 3,490.00	\$ 3,490.00 ✓
16*	Connection to Existing Type 3 Farm Turnout	1	EA	\$ 3,480.00	\$ 3,480.00 ✓
17*	Furnish and Install 36" Underground Service Butterfly Valve	1	EA	\$ 16,040.00	\$ 16,040.00 ✓
18*	Furnish and Install 18" Underground Service Gate Valve	1	EA	\$ 18,260.00	\$ 18,260.00 ✓
19*	Furnish and Install 12" Underground Service Gate Valve	5	EA	\$ 3,710.00	\$ 18,550.00 ✓

Shafter-Wasco Irrigation District

20*	Furnish and Install 10" Underground Service Gate Valve	1	EA	\$ 3,290.00	\$ 3,290.00 ✓
21*	Furnish and Install 8" Underground Service Gate Valve	1	EA	\$ 2,430.00	\$ 2,430.00
22*	Furnish and Install 18" Weld On Tapping Sleeve	1	EA	\$ 7,500.00	\$ 7,500.00
23*	Furnish and Install 12" Weld On Tapping Sleeve	1	EA	\$ 5,530.00	\$ 5,530.00
24*	Furnish and Install 18" x 18" x 10" x 8" Steel Special	1	EA	\$ 5,260.00	\$ 5,260.00
25*	Furnish and Install 36" x 36" x 14" x 18" Cross	1	EA	\$ 21,890.00	\$ 21,890.00
26*	Furnish and Install 36" x 36" x 14" Tee	1	EA	\$ 14,100.00	\$ 14,100.00
27*	Furnish and Install 36" x 36" x 12" Tee	4	EA	\$ 10,210.00	\$ 40,840.00 ✓
28*	Furnish and Install 36" 45 deg. Bend	2	EA	\$ 8,880.00	\$ 17,760.00 ✓
29*	Furnish and Install 18" 90 deg. Bend	1	EA	\$ 3,180.00	\$ 3,180.00
30*	Furnish and Install 18" x 12" Reducer	1	EA	\$ 2,340.00	\$ 2,340.00
31*	Furnish and Install 3" Air Valves	7	EA	\$ 8,550.00	\$ 59,850.00 ✓
32*	Furnish and Install District Marker Posts	16	EA	\$ 630.00	\$ 10,080.00 ✓
33*	Removal, Disposal, and Abandonment of Existing Pipe	1	LS	\$ 62,160.00	\$ 62,160.00
SUBTOTAL (ITEMS 7-33):					\$ 1,555,395.00 ✓

DISTRIBUTION LATERALS

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
34*	Furnish and Install 18" DR 32.5 CL 125 PIP	1,330	LF	\$ 59.00	\$ 78,470.00
35*	Furnish and Install 15" DR 32.5 CL 125 PIP	5,960	LF	\$ 48.00	\$ 286,080.00
36*	Furnish and Install 12" DR 32.5 CL 125 PIP	50	LF	\$ 86.00	\$ 4,300.00
37*	Open Cut Road Crossings	4	EA	\$ 10,300.00	\$ 41,200.00
38*	Connection to Existing Type 1 Farm Turnout	7	EA	\$ 2,150.00	\$ 15,050.00
39*	Connection to Existing Type 3 Farm Turnout	1	EA	\$ 2,600.00	\$ 2,600.00
40*	Furnish and Install 18" Underground Service Gate Valve	1	EA	\$ 18,260.00	\$ 18,260.00
41*	Furnish and Install 14" Underground Service Gate Valve	2	EA	\$ 16,490.00	\$ 32,980.00
42*	Furnish and Install 14" Weld-On Tapping Sleeve	2	EA	\$ 9,480.00	\$ 18,960.00
43*	Furnish and Install 18" x 18" x 12" Tee	1	EA	\$ 2,160.00	\$ 2,160.00
44*	Furnish and Install 15" x 15" x 12" Tee	2	EA	\$ 1,590.00	\$ 3,180.00
45*	Furnish and Install 18" x 15" Reducer	1	EA	\$ 1,680.00	\$ 1,680.00
46*	Furnish and Install 15" 45 deg. Bend	1	EA	\$ 1,930.00	\$ 1,930.00
47*	Furnish and Install 15" 90 deg. Bend	5	EA	\$ 1,890.00	\$ 9,450.00
48*	Furnish and Install 2" Air Valves	7	EA	\$ 6,540.00	\$ 45,780.00

Shafter-Wasco Irrigation District

49*	Furnish and Install District Marker Posts	11	EA	\$ 630.00	\$ 6,930.00 ✓
50*	Removal, Disposal, and Abandonment of Existing Pipe	1	LS	\$ LS	\$ 37,500.00
					\$ 606,510.00 ✓
SUBTOTAL (ITEMS 34-50):					
					\$ 2,394,655.00
TOTAL BID ITEMS (1-50): (Base Bid)					

* Final Pay Quantity

Bid Submitted by (Contractor Name): W. M. Lyles Co.

Date: July 9, 2019

****END OF SECTION****

Please remit to:

 Krazan & Associates, Inc.
 215 West Dakota Avenue
 Clovis, California 93612

 Phone: (661) 837-9200
 Fax: (661) 837-9201

KA Tax I.D. No: 77-0039491

 Client: Rosedale-Rio Bravo Water Storage District
Attn: Dan Bartel
 P.O. Box 20820
 Bakersfield, CA 93390

 Project: **Central Intake Pipeline Project**
 Location: **Cross Valley Canal to Goose Lake Slough**
Bakersfield, CA

 KA Proj. No: 02616523
 KA Client Nos: 19352: 16995

 Client Job No:
 P.O. No:
 Permit No:

 Invoice Date: **February 28, 2017**

KA Proj. Mgr: Burns, Larry

Date	Detailed Description of Services	Units	Rate	Amount
Construction Testing & Inspection Services				
01-Feb-17	Compaction Testing: Trench Backfill	6.00	89.00	\$534.00
02-Feb-17	Compaction Testing: Trench Backfill	4.00	89.00	\$356.00
06-Feb-17	Compaction Testing: Trench Backfill	6.00	89.00	\$534.00
07-Feb-17	Compaction Testing: Trench Backfill	7.00	89.00	\$623.00
08-Feb-17	Compaction Testing: Trench Backfill	6.00	89.00	\$534.00
15-Feb-17	Compaction Testing: Trench Backfill	8.00	89.00	\$712.00
15-Feb-17	Compaction Testing: Trench Backfill (OT)	3.00	133.50	\$400.50
	Engineering Review	0.50	85.00	\$42.50
	Report Preparation / Clerical	2.00	45.00	\$90.00
			Subtotal:	\$3,826.00

Laboratory Testing Services

26-Jan-17	Tube Density Testing (Docket #95641)	2.00	45.00	\$90.00
30-Jan-17	Sieve Analysis (Docket #95642)	2.00	145.00	\$290.00
30-Jan-17	Tube Density Testing (Docket #95643)	2.00	45.00	\$90.00
31-Jan-17	Tube Density Testing (Docket #95645)	3.00	45.00	\$135.00
01-Feb-17	Sieve Analysis (Docket #95648)	2.00	145.00	\$290.00
01-Feb-17	Tube Density Testing (Docket #95647)	2.00	45.00	\$90.00
02-Feb-17	Sieve Analysis (Docket #95649)	1.00	145.00	\$145.00

Please Pay This Amount: \$5,921.00

Task 8

Payable upon receipt of invoice. Overdue accounts charged 1.5% per month (18% annually)
Remit copy of invoice with payment and include our invoice number on your check.

P-PAS

Please remit to:

Krazan & Associates, Inc.
215 West Dakota Avenue
Clovis, California 93612

Phone: (661) 837-9200
Fax: (661) 837-9201

KA Tax I.D. No: 77-0039491

Client: Rosedale-Rio Bravo Water Storage District
Attn: Dan Bartel
P.O. Box 20820
Bakersfield, CA 93390

Project: **Central Intake Pipeline Project**
Location: **Cross Valley Canal to Goose Lake Slough**
Bakersfield, CA

KA Proj. No: 02616523
KA Client Nos: 19352: 16995

Client Job No:
P.O. No:
Permit No:

Invoice Date: **February 28, 2017**

KA Proj. Mgr: Burns, Larry

Date	Detailed Description of Services	Units	Rate	Amount
06-Feb-17	Maximum Density Curve (D698) (Docket #95650)	1.00	160.00	\$160.00
06-Feb-17	Tube Density Testing (Docket #95651)	2.00	45.00	\$90.00
06-Feb-17	Tube Density Testing (Docket #95652)	2.00	45.00	\$90.00
08-Feb-17	Maximum Density Curve (D698) (Docket #95653)	1.00	160.00	\$160.00
08-Feb-17	Sieve Analysis (Docket #95653)	1.00	145.00	\$145.00
15-Feb-17	Maximum Density Curve (D698) (Docket #95657)	1.00	160.00	\$160.00
15-Feb-17	Maximum Density Curve (D698) (Docket #95658)	1.00	160.00	\$160.00
			Subtotal:	<u>\$2,095.00</u>

Total of \$5921 (rounded to \$6,000) was costs incurred for **1 Month** of testing.

Construction of the B369 Extension has estimated construction time of **8 months**.

\$6,000/month x 8 months = \$48,000 for Compaction and Lab Testing for the full duration of Project Construction

Total Amount Due: \$5,921.00

Please Pay This Amount: \$5,921.00

Task 8

Payable upon receipt of invoice. Overdue accounts charged 1.5% per month (18% annually)
Remit copy of invoice with payment and include our invoice number on your check.

P-PAS

Existing District Maintenance check valve actuator operation, repair/replace if in conjunction with a pipe repair, etc.
District Annual Maintenance Cost \$ 145,214.10

Isolation Valve Inventory	
Diameter (in)	No. of valves
6	119
8	58
10	231
12	35
14	1
14 (w/ext)	12
16	28
18	1
20	4
20 (w/ext)	6
24	7

SCENARIOS
 1.) Continue with existing isolation valve maintenance
 2.) Replace all isolation valves

Scenario 1
 Assumptions Continue with current isolation valve repair which occurs as they fail
Existing cost \$ 145,214.10

Scenario 2
 Assumptions: Repairs on valves listed below will be performed each year
 Interest rate used to calculate PV Cost is 6%
 20-year life cycle costs
 Maintenance is required every x hours on all isolation valves
 12" check valves are operated 2,000 to 6,000 hours per year, we used an average of 4,000 hours per year therefore require maintenance every 5 yrs
 16" and 20" valves are assumed to be operated approximately 8 hrs/day, 5 days/wk the entire year therefore require maintenance every 10 yrs
 Spec WRM-861

Quote from: xyz company
 contact

Diameter (in)	Replacement cost		Isolation Valve Repair Cost (manhours + parts)		Ongoing Maintenance Repair Costs								Annual Maintenance		
	Price/Valve		Price/Valve	No. of valves	Total Cost	Engr. Factor	PV Cost of 5th year	Engr. Factor	PV Cost of 10th year	Engr. Factor	PV Cost of 15th year	Engr. Factor		PV Cost of 20th year	
6	\$248.00			119	\$0	0.7473	\$0.00	0.5584	\$0.00	0.4173	\$0.00	0.3118	\$0.00	\$0.00	
8	\$384.00			58	\$0	0.7473	\$0.00	0.5584	\$0.00	0.4173	\$0.00	0.3118	\$0.00	\$0.00	
10	\$538.00			231	\$0	0.7473	\$0.00	0.5584	\$0.00	0.4173	\$0.00	0.3118	\$0.00	\$0.00	
12	\$962.00			35	\$0	0.7473	\$0.00	1.5584	\$0.00	0.4173	\$0.00	0.3118	\$0.00	\$0.00	
14	\$1,610.00			1	\$0	0.7473	\$0.00	2.5584	\$0.00	0.4173	\$0.00	0.3118	\$0.00	\$0.00	
14 (w/ext)	\$1,610.00			12	\$0	0.7473	\$0.00	3.5584	\$0.00	0.4173	\$0.00	0.3118	\$0.00	\$0.00	
16	\$2,230.00			28	\$0	0.7473	\$0.00	4.5584	\$0.00	0.4173	\$0.00	0.3118	\$0.00	\$0.00	
18	\$3,120.00			1	\$0	0.7473	\$0.00	5.5584	\$0.00	0.4173	\$0.00	0.3118	\$0.00	\$0.00	
20	\$3,804.00			4	\$0	0.7473	\$0.00	6.5584	\$0.00	0.4173	\$0.00	0.3118	\$0.00	\$0.00	
20 (w/ext)	\$3,804.00			6	\$0	0.7473	\$0.00	7.5584	\$0.00	0.4173	\$0.00	0.3118	\$0.00	\$0.00	
24	\$5,665.00			7	\$0	0.7473	\$0.00	0.5584	\$0.00	0.4173	\$0.00	0.3118	\$0.00	\$0.00	
	\$23,975.00			Total valve replacement costs									Total valve maintenance cost over 20-year life cycle		\$0.00

Existing District M: check for operation, leaks, backflow, etc.

District Annual Ma \$ 20,318.61

SCENARIOS 1.) Continue with existing check valve replacement program

Scenario 1

Assumptions Rubber flapper would be replaced every 10 years due to damage from high flows
 No other maintenance is required for the valve
 Interest rate used to calculate PV Cost is 6%
 Using Single Payment Present Worth (P/F) from NCEES Table
 20-year life cycle for the valves
 Assume 7 valve replacements per year
 Used 2011 APCO 100SR Costs from GEI Check Valve Study

Cost Analysis (P/F)

Diameter (in)	Check Valve		Rubber Flapper Replacement Costs						Total Cost
	Price and Installation Cost/valve	No. of valves	Cost	Installation Cost	Engr. Factor	PV Cost of 10th year	Engr. Factor	PV Cost of 20th year	
12	\$3,797	3	\$703	\$400	0.5584	\$1,847.75	0.3118	\$1,031.75	\$14,270.49
16	\$6,618	3	\$1,220	\$400	0.5584	\$2,713.82	0.3118	\$1,515.35	\$24,083.17
20	\$9,050	1	\$1,704	\$400	0.5584	\$1,174.87	0.3118	\$656.03	\$10,880.90
Total valve replacement and maintenance cost over 20-year life cycle									\$49,234.56

Valve	Summary of Present Value Cost Over 20-Year Life Cycle			
	<u>12-inch</u>	<u>16-inch</u>	<u>20-inch</u>	<u>Total</u>
APCO 100SR	\$14,270	\$24,083	\$10,881	\$49,235

Unit Price Cost for 36" Swing check value based on scaled up cost of this 20" swing check valve study

36"/20" = 1.8 for scaling

1.8 x \$9,050 = **\$16,290** for a 36" swing check valve

OPTION 2 - 27" RCP PIPELINE		PROJECT TITLE: LEONARD AVE. PIPELINE			
		CLIENT: SHAFTER-WASCO IRRIGATION DISTRICT			
		GEI JOB #: 1901325		6/12/2020	
LINE ITEM	ITEM DESCRIPTION:	NUMBER	UNIT	UNIT COST	TOTAL
	PROJECT WIDE				
1	Mobilization and Demobilization	1	LS	\$ 32,400.00	\$ 32,400.00
2	Traffic Control	1	LS	\$ 95,900.00	\$ 95,900.00
	PIPELINE - PVC CLASS 125 PIP				
4	27" Class 125 PIP (Shoring near Power Poles required)	7920	LF	\$ 190.00	\$ 1,504,800.00
5	27" 90 deg. bend	3	EA	\$ 10,100.00	\$ 30,300.00
6	27" x 27" x 12" Flanged Outlet for SWID Turnout Connections	4	EA	\$ 4,100.00	\$ 16,400.00
7	24" Mag Meter in Vault (Meter Option 1)	1	EA	\$ 44,300.00	\$ 44,300.00
8	Mace Meter in Manhole (Meter Option 2)	1	EA	\$ 18,500.00	\$ 18,500.00
9	3" ARV Assembly	7	EA	\$ 6,300.00	\$ 44,100.00
10	24" Dual Disc Check Valve (Wafer Style) w/ Vault	1	EA	\$ 38,300.00	\$ 38,300.00
11	24" Flanged Butterfly Valve	1	EA	\$ 10,100.00	\$ 10,100.00
12	24" Tee (FE x FE x FE)	1	EA	\$ 7,300.00	\$ 7,300.00
13	27" Bumped Head	1	EA	\$ 5,500.00	\$ 5,500.00
14	Road Crossing w/ Traffic Control & Paving (Magnolia Ave, Leonard Ave, Merced Ave)	3	LS	\$ 26,400.00	\$ 79,200.00
	SHAFTER-WASCO CONNECTION				
15	Connection to Existing 27" RCP	1	EA	\$ 16,100.00	\$ 16,100.00
16	Tee	1	EA	\$ 7,200.00	\$ 7,200.00
17	Reducer and 18" Gate Valve	1	EA	\$ 25,000.00	\$ 25,000.00
18	Removal of 18" ACP	75	LF	\$ 166.00	\$ 12,450.00
19	Road Crossing w/ Traffic Control & Paving (Merced Ave.)	1	LS	\$ 25,400.00	\$ 25,400.00
	SEMITROPIC WSD CONNECTION				
20	39" x 24" Reducer at Bumped Head	1	EA	\$ 20,100.00	\$ 20,100.00
21	24" Butterfly Valve Assembly	1	EA	\$ 10,100.00	\$ 10,100.00
	SWID TURNOUT CONNECTIONS				
22	12" C900	100	LF	\$ 251.00	\$ 25,100.00
23	12" x 8" Connection at SWID Turnout	4	EA	\$ 2,100.00	\$ 8,400.00
24	Road Crossing w/ Traffic Control & Paving (Merced Ave.)	2	LS	\$ 25,400.00	\$ 50,800.00
	SUBTOTAL Magmeter				\$ 2,058,450.00
	SUBTOTAL Mace Meter				\$ 2,032,650.00

Total cost for 24" Mace Flowmeter = \$18,500

36"/24" = 1.5 for scaling

1.5 x \$18,500 = \$27,750 for a 36" swing check valve

Estimate scaled down to \$20,000 for Bell Recharge Pipeline Calfed application