NORTH KERN WATER STORAGE DISTRICT

October 2019

2020 NKWSD Return Capacity Improvements for Regional Drought Resiliency

Project Location–Southern San Joaquin Valley, California

Application for

WaterSMART Drought Response Program:
Drought Resiliency Projects for FY 2020
Funding Opportunity Announcement No. BOR-DO-20-F002

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Applicant: North Kern Water Storage District
33380 Cawelo Avenue
Bakersfield,CA93308

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1. Technical Proposal

1.1 Executive Summary

The North Kern Water Storage District (North Kern, NKWSD, District) proposes to utilize their resources in a cost-share agreement with the U.S. Bureau of Reclamation (Reclamation, USBR) to construct the *"NKWSD 2020 Return Capacity Improvements for Regional Drought Resiliency"* (Project). NKWSD has practiced conjunctive use of their highly variable Kern River water supply for over 60 years. Despite the success of North Kern's conjunctive use program, as well as regional water management programs conducted by other districts in the Poso Creek IRWM (Poso Region), concerns regarding future regional groundwater conditions persist. North Kern has identified a need to improve recovery and return capacity of their groundwater recharge facilities to allow surface water recharged and banked in North Kern's groundwater basin to be available to the Poso Creek IRWM Group of districts. The proposed Project helps meet this need to enhance the Poso Region drought resiliency by connecting six deep production wells to its existing network of recovery wells and return conveyance capacity. Of the four deep wells, two are currently operational with fully equipped pumps, motors, and electrical instrumentation. North Kern proposes to drill and equip two additional deep wells with the pump, motor, and electrical instrumentation to add recovery and conveyance return capacity for dry period return of stored water.

Table 1-1. Project and Applicant Information

Project Information	
Date	October 16, 2019
Project Name	NKWSD 2020 Return Capacity Improvements for Regional Drought Resiliency
Expected Completion	32 to 36 months (September 2023)
Near a Federal Facility?	Yes, adjacent to CVP's Friant-Kern Canal
Applicant Information	
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City, County, State	Bakersfield, Kern, California

In a coordinated effort with the Poso Creek IRWM Group to improve the Region and District's capabilities to absorb available surface supply; NKWSD has participated in improvements to their conjunctive use facilities and has entered into agreements with CVP contractors to recharge and bank wet period surface supply using their groundwater recharge facilities; namely Shafter-Wasco Irrigation District (SWID), Southern San Joaquin Municipal Utility District (SSJMUD), Delano-Earlimart Irrigation District (DEID) and Kern Tulare Water District (KTWD), who are in the Poso Creek IRWM Group, of which North Kern is a part. This Project will add capacity for the recovery and return of banked CVP supply from NKWSD to the Poso Creek IRWM districts via the Friant Kern Canal (FKC). The added recovery and return capacity will help alleviate constraints in the return to the CVP Contactors since North Kern must meet its in-district needs while at the same time return banked supply. These wells will serve as the conveyance mechanism for return of approximately **6,051 AF** of the previously banked water to the CVP Contractors within the Poso

Creek IRWM Group during critically dry years. The proposed Project and benefits are classified under Task A: *Increasing the Reliability of Water Supplies through Infrastructure Improvements.* Improving the District's infrastructure by constructing wells and manifold pipeline that connect four wells to its network of return capacity wells will enhance the District's physical capability to return water during irrigation season and satisfy the District's agreements with their water management partners in the Poso Creek Region. It is noted that North Kern is well-positioned to participate in exchanges that involve CVP supplies since the Friant-Kern Canal runs directly through the middle of North Kern from north to south. Therefore, the proposed Project removes the need to establish a direct pipeline connection between North Kern and each of the Poso Creek IRWM Group partners by strategically connecting a network of wells to the FKC and the District's conveyance system. This use of existing major conveyance system to return banked water increases operational flexibility and reliability throughout the region during times of drought. The proposed Project is to be completed within 32 to 36 months from the signing of the grant funding agreement. The Project would start in October 2020 and is identified as a key component in reducing the return conveyance constraints experienced in the recent drought by the District's efforts towards return of banked water for their neighboring districts; the proposed improvement adds drought resiliency to the Region and the District. The Project is estimated to provide the following annual and 10-year average benefits.

Table 1-2. Estimated Benefits

	Estimate Annual Benefits (AFY)	10-Year Benefits (AF)
Est. Additional Water to NKWSD	2,017	6,716
Est. Additional Water to CVP Contractors	4,034	13,432
Total Additional Water Available	**6,051**	**20,148**

1.2 Background Data

Established in 1935, NKWSD is a public agency that supplies surface water from the Kern River and groundwater to agricultural customers. The subsections which follow provide context for the proposed Project by briefly describing District water supplies and uses, as well as its water delivery system. In addition, past working relationships with Reclamation are summarized. All figures referenced in the Technical Proposal are included immediately following Section 1.6.6.

1.2.1 *Major Crops and Total Acres Served*

The cropping pattern within North Kern's 52,000-acre water service area has changed significantly from row crops to permanent plantings over the past 25 years. Currently, about 75 percent of the District's irrigated lands are planted to permanent crops, primarily almonds, grapes and pistachios. Additional detailed information may be found in North Kern's 2015 Agricultural Water Management Plan, at http://www.water.ca.gov.

1.2.2 *Primary Water Supplies and Sources*

The District's principal source of surface water is the Kern River, which has been diverted for the benefit of its landowners under a schedule of long-standing diversion rights since the 1950s. Historically, water supplies available to North Kern from the Kern River have ranged from less than 10,000 AF per year to nearly 400,000 AF per year. The average annual water consumption

for the District is approximately 160,900 AF per year. As a result of this highly variable water supply, North Kern has developed extensive groundwater recharge and recovery program utilizing available groundwater storage capacity to regulate significant wet-year water supplies to years of deficit surface water supplies. This is accomplished through recharge in 1,500 acres of spreading ponds and recovery through 101 District-owned deep wells. North Kern has operated this highly successful conjunctive management program for over 60 years.

While Kern River is the District's principal source of surface water, other sources include Poso Creek (which traverses the northern portion of the District and is a source of occasional recharge); recycled water; and CVP-Friant water diverted occasionally under temporary "Section 215" contracts with Reclamation. The District's lands have been essentially fully developed to irrigated agricultural uses for many years, with 50,000 to 55,000 acres irrigated in any given year out of about 60,000 gross acres. Over the past 25 years, the cropping pattern within North Kern has changed significantly from row crops to permanent plantings. Currently, about 90 percent of the District's irrigated lands are planted to permanent crops, primarily almonds, grapes and pistachios. Additional detailed information may be found in North Kern's 2015 Agricultural Water Management Plan, at http://www.water.ca.gov.

Water Delivery System: Surface water is delivered to lands within North Kern through approximately 130 miles of unlined canals heading at two diversion points on the Kern River, 20 miles of pipeline, and 20 miles of lined canal. The District's principal supply artery, and most important upstream point of diversion on the Kern River, is the Beardsley-Lerdo system. This system is entirely gravity flow and consists of the diversion structure or headworks on the Kern River, 9.5 miles of concrete-lined canal (the Beardsley Canal) between the headworks and the District's southern boundary, followed by an unlined canal section (the Lerdo Canal) that continue along North Kern's eastern or "high" side. As much as 850 cubic feet per second (cfs) has been conveyed and delivered to the District through the Beardsley Canal, which is its practical maximum delivery capacity.

The second point of diversion, 4.5 miles downstream, is the Calloway headworks, which services the relatively large cross section of the Calloway Canal, the location of which is shown on Figure 1. With a capacity of about 1,000 cfs at its headworks, this conveyance facility is also entirely gravity flow and extends for 10.4 miles before entering North Kern at 7th Standard Road. Historically unlined at lower elevation than the Beardsley-Lerdo canal system, large scale use of the Calloway Canal has been relegated to "wet" years.

Typically, District-owned wells are used only during "dry" years when surface water supplies are inadequate. Groundwater is delivered to customers during dry years via a network of small, lined canals running parallel to the larger, unlined canals used for conveyance of surface water. The District owns and operates about 101 wells. Approximately 200 privately owned wells in the Class 2 service area are used to meet irrigation demands in this part of the District.

1.2.3 *Water Use*

The 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 for purchase and distribution of water from the Kern River. However, when CVP surface water supplies that are surplus to immediate irrigation requirements for its Poso Creek IRWM partners are available, the District will dedicate

them for direct groundwater recharge through their spreading grounds. Figure 1 identifies the flow path conveyance of water from the Poso Creek IRWM contractors to North Kern via the Friant-Kern Canal. This figure also identifies the spreading grounds in North Kern. In addition, CVP's FKC runs directly through North Kern and has turnouts at various locations making it operationally viable for North Kern to receive delivery of water from the FKC on behalf of other CVP contractors during wet years for recharge in their highly accessible spreading ponds. In this regard, NKWSD makes use of approximately 300,000 AFY is spreading ground capacity for direct recharge of CVP water, of this banked supply, NKWSD is estimated to receive a portion between 25% to 50% of the net supply augmenting the basin in the form of a storage 'leave behind' (based on agreement between districts). The dedicated return wells will enable the successful return of the stored water to its CVP water banking partners.

Table 1-3. Recharge and Storage Capacity of NKWSD

District	Spreading Basins	Fill Rate (cfs)	Recharge Rate (AF/Day)	Spreading Ground Capacity (AFY)
North Kern	5 sites (existing)	363	720	300,000

Source: Final EA-09-121, Poso Creek IRWM plan

1.2.4 *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 Subbasin (Subbasin) 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.

1.2.5 *Prior Working Relationships with USBR*

Examples of North Kern's working relationships with the USBR include the following:

Various North Kern has entered into short-term (annual) contracts for the purchase of Section 215 water from the Friant Division of the CVP. All contracts were with Reclamation.

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

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

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

Various North Kern has participated in a number of short-term water banking and exchange arrangements that involved CVP contractors and CVP water, including SWID, DEID, Madera Irrigation District, and Westlands Water District. These arrangements were approved by Reclamation.

2008-2013 Semitropic Water Storage District, acting as lead agency for the Poso Creek Regional Water Management Group, was awarded a Reclamation grant in the fall of 2008 to prepare a System Optimization Review for the region. North Kern is a member of that group. 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 banking facilities that will help mitigate the projected loss of water reliability to the region. In this regard, the group has worked with Reclamation to complete an Environmental Assessment to cover long-term banking and exchange activities among neighboring districts in the Poso Creek IRWM Plan Area. This work was a collaboration with Reclamation on the preparation of the EA; the SOR grant was administered by Reclamation.

2012-2014 North Kern, collaborated with Cawelo WD, and received the 2012 CalFed Grant funding to concrete line Reach A-D of the Calloway Canal. The project was successfully constructed in 2015.

2016 - 2017 North Kern entered into a contract with the USBR for $2,300,000 to line 5,553 LF of unlined portion of the Calloway Canal, and equipping 50 District owned wells with state-of-the-art telemetry systems. This project is being implemented.

2018 North Kern Was awarded a grant amount of $750,000 from USBR for their project titled '*Return Capacity Improvements for Regional Drought Resiliency*' and signed an agreement in September 2019.

2018 North Kern was awarded a grant of $75,000 from USBR to implement SCADA

automation and ET improvements in the District. The grant award contract is currently being finalized.

2019 North Kern was awarded a grant of $1,500,000 from USBR for lining the Calloway Canal North of Snow Road for 2,200 LF and WDI. The grant award contract document is currently being finalized.

1.3 Project Location

North Kern WSD, shown in Figure 1, is located in Kern County along the eastern side of California's southern San Joaquin Valley. The District lies between the City of Bakersfield on the South and the City of Delano on the north, and between Highway 99 on the east and the cities of Wasco and Shafter on the west. Figure 2 provides overviews of the location of the 2020 Return Capacity Improvements Project within the North Kern service area. Technical Project Description and Milestones

1.3.1 *Proposed Project Description*

Proposed Project involved drilling and equipping two replacement wells and connection of two other deep wells to the District's existing recovery network to improve return capacity for District neighbors during dry years (total of four wells).

The location of the wells and pipeline are shown in Figure 2. The Project is anticipated to return previously stored water into the FKC and District's conveyance system at a rate of approximately 16.4 cfs. This equates to a total estimated average of 1,008 acre-feet per month, of which 336 is reserved for in-district use and 672 is for CVP Contractors, which equates to an annual capacity of 6,050 acre-feet per year for the seasonal use of the wells (six months in a year) to improve the return capacity for the Poso Creek IRWM CVP Contractors to meet irrigation demands during a critically dry year. One of the wells will discharge directly into the Friant-Kern Canal (FKC). Two of the wells will be connected via a manifold pipeline, which will then discharge to the FKC. The remaining one well will be connected to a manifold pipeline that is part of the recently rewarded R18AP00088 grant, which ultimately discharges into FKC. This approach reduces the construction costs and footprint by building off a previous grant project and optimizing connections to reduce discharge points.

As noted previously in Section 1.2.3, the District has substantial recharge and recovery assets/capabilities. The use of most of these assets was designed to manage the District's highly variable surface water supplies for the direct benefit of District landowners (primarily agricultural operators). However, with the development of the Poso Creek IRWM Plan, portions of these assets are being improved and made available for regional use to fulfill agreements for storing water in North Kern in wet periods and then returning the stored water to neighboring Poso Creek IRWM districts in dry periods.

Existing Water Management and Exchange Programs: North Kern has implemented water management and exchange programs to optimize water supplies, increase the total volume of water brought into the District, and develop facilities to improve regional water management. These programs include numerous "bucket-for-bucket" exchanges, one-time "low priority/mutually agreeable" banking programs, and several longer-term higher priority programs. These water management programs include provisions whereby 25% - 50% of the net water recharged and

augmenting the basin is "left behind" for District use, which supports groundwater levels and supply water needs in the District. Furthermore, development of the higher priority programs included construction of facilities (e.g., wells, turnouts, etc.) that benefit the partner and the District.

Expansion of Water Management and Exchange Programs: As discussed previously, through the Poso Creek IRWMP, North Kern identified several capital projects to improve the District's regional water management capabilities to partially compensate for losses in the Region's water supply reliability. More specifically, the District identified projects focused on significant regional conveyance improvements that allow North Kern to enhance the utilization of its existing water management assets, particularly its facilities to recharge water in wetter years, to the benefit of the District and its neighboring districts.

Recharge Capacity: In addition to substantial capacity to recharge water "in-lieu" of groundwater pumping by the District and District landowners, North Kern operates about 1,500 acres of recharge ponds with a capacity to recharge up to 25,000 AF of water per month and with a maximum annual recharge capacity of 300,000 AF (Refer Table 1-3). The District directly recharges significant quantities of water in about three of ten years, with an average of 150,000 AF recharged in its spreading ponds in these years. Although the District has an additional 150,000 AF of physical recharge capacity available in these wetter years for use by neighboring CVP Contractors, the lack of recovery and return capacity of the stored water pose constraints that prevent the CVP contractors from using North Kern's spreading grounds. Therefore, based on the typical timing for the availability of wet year supplies from the Friant systems, the District has identified a need to improve conveyance capacity to return the stored water to their partners during dry years. As evidenced in their Agricultural Water Management Plan, North Kern operates a system of 101 wells with an approximate instantaneous capacity of 350 cfs. This capacity is approximately equal to peak irrigation season demands for in-District needs on Class 1 lands. Unused District well capacity is available for use by Class 2 lands in the District and to return water to the Poso Creek IRWM district partners. The proposed project is to improve the shared recovery and return capacity to reduce the constraints for return in dry periods.

As noted above, the District's instantaneous well recovery capacity roughly matches its peak irrigation season obligation to Class 1 lands. Consequently, under very dry conditions when the District has limited surface water storage available in Lake Isabella, little well capacity is available to return water to neighboring districts during the peak irrigation months. To this extent, North Kern's partners require recovery of previously recharged and banked water during this period; therefore, additional wells are necessary. Importantly, these additional "peaking" wells will allow the timing of water recovery to match the neighboring district needs. Currently, the constraints on the return capacity conveyance restricts the neighboring districts from utilizing North Kern's spreading grounds to store surplus wet year water, which would otherwise be lost to the region. As an example, CVP Contractors anticipate that for each year with an excess of 100,000 AF of water supplies from the FKC (Class-1, Class-2 and Other Water combined), it would 'put' 10,000 AF of CVP Contractors supplies into storage within North Kern. A detailed review of the 83 years of historical water supply at the FKC from the San Joaquin River Index shows an excess of 100,000 AFY of available FKC supply occurred at a frequency of 42% over the 83-year hydrology or 4.2 out of 10 years. Because of the proposed Project, CVP Contractors can now expect dry year returns from North Kern and can "put" 10,000 AF of wet year water into storage in North Kern, which would otherwise be unavailable due to lack of absorptive capacity in neighboring districts.

Therefore, the entire groundwater basin boundary gains 10,000 AFY by CVP Contractors banking the FKC water in North Kern. As an example, given that 66.7 % of the banked water will be returned to the CVP Contractors, it results in an average annual return capacity of 6,667 AFY. Under this scenario, North Kern will potentially recharge its ground water basin by approximately 3,333 AFY; and the CVP Contractors will receive a new dry year, firm source of supply to the amount of 6,667 AFY with the help of this proposed Project.

1.3.2 *Tasks and Project Work*

Several tasks are defined below to accomplish the Project Work and are organized to track Budget and Schedule items The design of the well would be based on some of the previously drilled deep wells based on the hydrology of the drilling area under the guidance of a consultant. If grant funding is awarded for this Project, a grant agreement is expected to be signed by October 2020. Construction bidding would take place in 2021 with construction scheduled for completion prior to 2023. The anticipated tasks associated with the Project work are:

Task 1: Administration

Coordination of all Project activities, including budget, schedule, communication, and grant and cost-share administration. *Expected Deliverables: Preparation of invoices and other deliverables, as required.*

Task 2: Grant Reporting

Report on project financial status on a semi-annual basis and prepare significant development reports and a Final Project Report. In addition, the Project will comply with any other reporting requirements specified in the potential grant agreement between North Kern and Reclamation. *Expected Deliverables: Submission of semi-annual status reports, significant development reports, and a Final Project Report as specified in the potential grant agreement.*

Task 3: Design

The District has already completed the design for pumps, motors, and electrical panels for all six wells included as part of this Project. The exact path of the pipeline will be decided after performing the required land survey. It is anticipated that the pipeline will be designed to minimize the amount of land disturbed. Regarding the drilling of a well, appropriate subsurface studies will be conducted to identify and drill the deep well based on past well design reports. The well locations of the proposed Project have been strategically identified and are near the existing wells that are included as part of the District's return network. One of these wells (identified in Figure 2) will discharge into a manifold pipeline that part of the recently awarded USBR grant no. R18AP00088. Accordingly, the design work for this proposed Project will be optimal, since the manifold pipeline will be designed to meet the capacity of adjoining recovery and return wells. *Expected Deliverables: Design documents will be prepared and approved at the 100-percent design level.*

Task 4: Environmental Documentation

An environmental document that meets the requirements of CEQA and NEPA will be prepared for the proposed improvements. Proposed in this application is to replace two wells and to connect two other wells to the District's recovery network (total four), which will require an evaluation and concurrence with Reclamation. The FKC has federal and state historical significance and any alterations proposed to the FKC will require a separate permit and evaluation under NEPA (see Task 5). Details related to design and construction occurring in the Canal as well as details related

to restoration of the Canal after construction are necessary. Proposed structures within the FKC ROW would require the same level of detail. *Expected Deliverables: An Environmental Assessment, following Reclamation's NEPA guidelines; an appropriate level of analysis and documentation as required under CEQA; a biological assessment and report in compliance with federal and state species protection acts; and a cultural and historical resources report as required by federal and state historical resources protection laws.*

Task 5: Permits/Approval

The pipeline connections and the wells are located exclusively within maintained rights-of-way owned and operated by North Kern WSD. All four wells will be connected to manifold pipelines that will eventually discharge into the FKC. Accordingly, the District would consult with the Bureau of Reclamation regarding the requirement of SF-299 encroachment permit for FKC. Reclamation will require the NEPA process to be completed prior to reviewing the encroachment permit application. There may be additional fees to Reclamation and Reclamation can grant, deny or approve the permit with stipulations. Bids for construction will be solicited through a competitive bidding process based on final plans and specifications. The language in the standard specifications relating to permitting 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, any required NPDES permitting and the preparation of a Stormwater Pollution Prevention Plan.

A pre-activity survey will be ordered and conducted by a qualified biologist shortly before the start of construction. 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. Accordingly, no City- or County-issued permits will be required. *Expected Deliverables: Complete necessary permitting and approval activities prior to any construction activities.*

Task 6: Construction

Construction involves furnishing and installing of all Project works, primarily all works pertaining to the physical drilling of the proposed two replacement wells and pipeline construction connecting the new replacement and existing wells to the FKC. A contract for this task will be awarded to the successful bidder. *Expected Deliverables: (Reference Construction Management task below).*

Task 7: Construction Management

Construction Management involves everything from the advertisement for bids from qualified construction firms to filing a Notice of Completion for the Project works and preparation of "As-Builts" drawings. Construction management activities can generally be categorized as field observation and contract administration, where the latter includes items such as the Notice to Proceed, pre-construction conference, correspondence with the Contractor, submittal review, progress payments, periodic meetings with the Contractor, Contract Change Orders, etc. *Expected Deliverables: Multiple deliverables including a (1) abstract of bids received; (2) successful bid proposal; (3) construction progress pay estimates; (4) start-up and testing verification; (5) Notice of Completion; and (6) "As-Builts" drawings.*

The proposed Project will be implemented under the direction of North Kern WSD. A consultant will provide design, construction management, administrative, reporting assistance, and

coordination with local firms, as needed. Richard Diamond, North Kern's General Manager, will have responsibility for overall Project Management, while Ram Venkatesan, North Kern's Engineer (a California-licensed Civil Engineer), will provide the technical Project Management on behalf of North Kern and will work closely with the designated construction manager.

1.3.3 *Anticipated Schedule*

Based on the tasks listed in Section 1.3.2, the schedule for this Project is shown in Figure 3. This Project has a schedule to provide design documents by mid-year 2021 for construction purposes. Anticipated completion date would be early to mid- year of 2023. For the purposes of this proposal, the start date of the grant contract was assumed as October 1, 2020. All Project work is expected to be completed with a final report completed before September 2023. The Project is not expected to deviate from Reclamation's proposed schedule of a start date of October 1, 2020 and completion within the 36-month project duration.

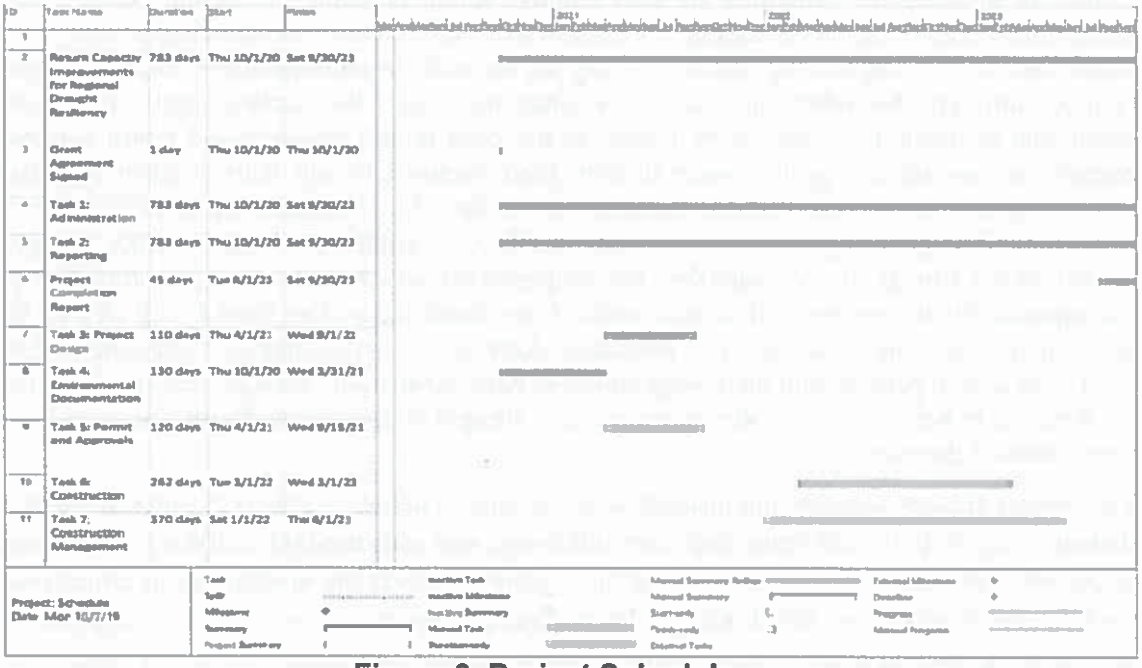


Figure 3. Project Schedule

1.4 Performance Measure

All deliveries of water pumped from the wells will be measured at output points using propeller flowmeters. These meters are equipped with totalizers, a flow accumulation measurement device, periodically checked for measurement accuracy as part of the District's routine maintenance program. When properly calibrated, the meters with totalizers provide an accurate method of measuring both the flow rate and the volume of water delivered from the well through the pipeline and into the canal. As part of an agreement with the water partner, North Kern will typically retain 25% to 50% of the water which augments the groundwater. By measuring the volume of water input to North Kern and the volume of return to banking partners, it will determine the total amount of water supply made available to the districts and can report the measured volume that is of benefit. The volume of water retained by North Kern and its banking partners will be reflected on

the reduced annual groundwater pumping rates.

1.5 Evaluation Criteria

1.5.1 *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? The water savings benefit of the Project stems from its ability to return banked water from the North Kern. North Kern operates water recharge ponds over part of the subbasin favorable for recharge. Because North Kern has a direct conveyance connection with CVP water supplies, it often recharges surface water on behalf of neighboring districts with CVP contract water supplies (as referenced in Section 1.2.3, North Kern has numerous turnouts leading from FKC to its spreading grounds) and typically retains a portion of the recharged supply (25% to 50%). The CVP contractors often have a right to surplus CVP flows in addition to their CVP Class 1 and Class 2 supplies, which in wet years need absorptive capacity outside of their own district to increase the reliability of their supply, which benefits the region. North Kern has experienced constraints on the existing in-District facilities to return the banked (previously stored) water back to the neighboring districts during the shoulder months (January through March and October through December) in a dry year when they need the banked supply the most. As elaborated in Section 1, North Kern identified the need to add recovery and return conveyance capacity to provide dry period water to both their landowners and their neighboring districts. Improving the recovery and return capacity will reduce the constraints on returning the stored water to their neighboring districts, which enables the CVP contractors' opportunities to capitalize on wet period storage of CVP supplies. The proposed Project provides an opportunity to improve the capacity for the retrieval of banked water from North Kern. The Poso Creek IRWM Group developed a Banking, Transfer, and Exchange Agreement Environmental Assessment (EA 09-121) to be able to partner with their neighbors who have substantial recharge facilities. This Project is identified to help solve a constraint to increase drought resiliency for North Kern and the Poso Creek IRWM districts.

The Project ensures neighboring districts will continue to deliver wet period water to North Kern that adds supply to the subbasin, increases reliability, and adds drought resiliency. Improvements to the recovery and return conveyance of the system improves the mechanism to return water to the CVP contractors from North Kern. CVP contractors can deliver surplus CVP supply to North Kern and be assured a conveyance mechanism to recover and return previously banked water, increasing its resiliency to drought. The diverted floodwater would have otherwise been destined outside of the region and possibly for the ocean. For the purposes of this application, the 'life' of the project is estimated as 30-years for pump, control mechanisms, and outlet pipe operational life. This timeframe for life cycle analysis has been used in prior grant applications.

Will the project make additional water supplies available? A major benefit of this Project is the return of the banked water to the neighboring districts during the critically dry years. North Kern's capability to recover banked water supplies is directly related to their neighboring district's resiliency during drought years. The addition of more wells to their recovery network facilitates the District to recharge more water on behalf of its neighbors. Table 1-4 lists the estimated capacity of the recovery wells that are to be connected to the District's conveyance canal and FKC by the return conveyance pipelines.

The daily flow of 16.4 cfs yields a volume of 32.5 AFD or approximately 1,008 AF/month, of

which, 336 AF/month would be reserved for in-district use to meet in-District demand during a critically dry year. This allocates the remaining 672 AF/month to CVP Contractors. When used over a six-month period in a critically dry year, this roughly translates to **4,034 AFY.** The 4,034 AFY is an additional supply available to North Kern's neighboring districts. Assuming a 'leave behind' of 33% on an average, which will be utilized by North Kern to replenish its underlying groundwater, the **additional water** available for North Kern, when calculated numerically, amounts to **2,017 AFY** (0.33/0.66 * 4,034 AFY). However, the additional water brought into the groundwater subbasin is equal to about **6,051 AFY** (4,034 AFY + 2,017 AFY). According to the San Joaquin River Index, dry years occur approximately 3.33 out of 10 years. At this rate, the 10-year benefit would be approximately **20,148 AF** with **6,716 AF** in additional water for North Kern and **13,432 AF** in returned water to CVP Contractors.

The benefit amount to NKWSD alone represents about **4.4 percent** of their groundwater pumping (2,017 AFY / 45,880 AFY of average groundwater pumping), not to forget the additional water brought into the groundwater basin through this Project (total of 6,051 AFY). Flood capture projects are instrumental to increasing regional flexibility and drought resiliency. By replacing two wells in the district, the recovery rate will significantly improve by 5.2 cfs, which is crucial for returning water during critically dry years as this optimizes the recovery network.

Table 1-4. Details of the Existing and New Wells

PROPOSED WELLS TO BE CONNECTED TO THE RECOVERY NETWORK							
WELL #	Type	Discharge Canal	Casing Size (Inches)	Depth (ft)	Blank Casing (ft)	Perforation (ft)	Average Flow (cfs)
88-00-098	Replacement	FKC	16.25	982	383	587	5.0
88-29-015	Replacement	FKC	16	800	336	464	5.0
88-05-003	Existing	FKC	18	1080	720	360	1.9
88-05-011	Existing	FKC	18	903	442	461	4.5
						Total	**16.4**

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, a number of undesirable results (as defined by recent legislation and the Department of Water Resources) may occur. These results include reduced groundwater storage, subsidence, and increased pumping lifts due to lower groundwater tables. Flood capture infrastructure such as the proposed Project work to mitigate each of these effects by direct recharge, or by delivering surface supplies in-lieu of pumping groundwater.

By providing flexibility to deliver supply to the District, the Project helps to offset reliance on other, environmentally sensitive supply sources. 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 the Project gives the District a tool to offset the effects of drought and increase drought resiliency, each time floodwater is available for capture.

Will the project improve the management of water supplies? Drilling two wells and including two existing wells to the recovery and return facilities is expected to increase the operational flexibility of the District to meet both in-District and neighboring district's critically dry year needs by providing more reliable return of 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 *Recovery* and *Return* elements of the program while still fulfilling in-District landowner needs. Increasing their delivery system's return capacity by 16.4 cfs will improve the District's ability to return banked water or add by **8.8%** (4,034 AFY/45,880AFY of average groundwater pumping). However, the addition of recovery wells to its network facilitates the District to bank a total of 6,051 AFY (4,034 AFY of return capacity + 2,017 AFY of leave behind) of water on behalf of its neighbors. Therefore, total water better managed by implementing this Project is equal to **13.2%** (6,051 AFY/45,880 AFY).

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 return capacity for the District and neighboring districts. Water managers affiliated with the Poso Creek IRWM Group will benefit from greater return water supply in times of drought or shortage. Increased return 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 neighboring districts. The Project will help neighboring water managers complete their agreements with North Kern within the Poso Creek IRWM Group due to the increased return capacity. Data collected pertaining to extraction volume will be made available to water managers. Letter of Support has been included as part of Appendix – A.

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 critically dry year.

Well Benefits: What is the estimated capacity of the new well(s), and how was the estimate calculated? How much water do you plan to extract through the well(s)? Will the well be used as a primary supply or supplemental supply when there is a lack of surface supplies? Please refer to Table 1-4 for estimated flow capacity, sizes, depth, diameter, and casing of the new replacement and existing wells. The flow capacity of these wells will be calculated accurately by the District's ongoing efforts to install flowmeters on each of the District owned wells. The wells will be used to provide the District and its neighboring districts with supplemental supply by returning banked supply when there is a lack of surface water during dry years and drought conditions. The water management Program utilizes excess and available surface water supplies for recharge during wet years, effectively recharging the aquifer underlying the District. Water supplies previously recharged by neighboring districts and the District are then pumped out of the ground

during dry years and drought conditions during a time where surface water deliveries are lower than normal allocations.

Please provide information documenting that proposed well(s) will not adversely impact the aquifer they are pumping from (overdraft or land subsidence). The proposed Project is designed to bring in additional water supply to North Kern's underlying groundwater basin during the wet years. As calculated earlier, the wells will be used to return 66% of the banked water, which was recharged during wet years. This Project will not impact the aquifer adversely, instead, it is water management program designed to replenish the groundwater supplies by augmenting the basin groundwater and retaining a minimum of 33% of the wet year water delivered to North Kern by its neighboring districts. The District anticipates that the environmental analysis is expected to be minimal as the District will confer with Reclamation for the required level of environmental analysis under NEPA. The environmental analyses and documentation will contain information regarding well impacts on the aquifer, and their potential frequent use. According to a third CAWSC study (Proceedings of the Eighth International Symposium on Land Subsidence, 2010), Kern County may experience an extreme amount of land subsidence due to the increased demand on groundwater.

The average depth to groundwater in the District has been around 200 feet at the end of a "wet" period and around 270 feet at the end of a "dry" period. Over the last 20 years, the annual (average) spring water levels have fluctuated within a band of about 50 feet. Seasonal fluctuations can be significant and are a function of the amount of groundwater pumping in a given year and the location within the District. In general, seasonal fluctuations are greatest in the northern portion of the District and are less pronounced in the south. Please refer to Section 1.2.3 for capacity of existing recharge sites and Figure 2 for the location of the recharge sites. Figure 2 provides the locations of the proposed well and the existing wells that are proposed to be a part of this Project. Table 1-4 provides the depth, diameter, casing, and screen intervals of all the four wells. Table 1-5 provides the sizes, capacities and other pertinent details of the wells that are in close proximity to the location of the proposed well. Subsidence Monitoring Points provides adequate details of subsidence at various points across the District. The detailed subsidence report is provided as Appendix - B.

Table 1-5. Details of Nearby Wells

NEARBY WELLS					
WELL #	Casing Size (Inches)	Depth (ft)	Blank Casing (ft)	Perforation (ft)	Average Flow (cfs)
88-25-005	16	800	340	460	1.6
88-29-035	16	800	336	464	1.4
88-00-055	18	1082	421	661	5.0
88-00-051	18	1080	400	680	5.1

Describe the groundwater monitoring plan that will be undertaken and the associated monitoring triggers for mitigation actions. Long-term water-level data in selected wells representing the unconfined to semi-confined aquifers are used to evaluate groundwater movement, storage conditions, and pumping costs. Historically, water levels in 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 the KCWA and the DWR for the District-owned wells.

However, due to the recent contracts awarded to North Kern by the State and Federal agencies (refer Section 1.2.5), measurement of water levels will be monitored real-time due to the ongoing implementation of well telemetry and SCADA systems at each District well (including the wells part of this Project). This data will enable the District to monitor triggers instantaneously. Additionally, the District has determined a 'safe yield' number for the Kern County Groundwater Subbasin ((DWR basin number 5-22-14) using guidelines from the Sustainable Groundwater Management Act (2014) and will use the District's state of the art monitoring system to mitigate adverse impacts instantaneously.

1.5.2 *Evaluation Criterion B: Drought Planning and Preparedness*

While North Kern and other members of the Poso Creek IRWM Group (Group) fall under the purview of the Central Valley Project and State Water Project 2016 Drought Contingency Plan, they have decided to collaborate to develop a drought plan specific to the Poso Creek Region. The Group is in the process of developing a Drought Contingency Plan (DCP) to prepare for and manage during drought or dry periods. In support of this effort, each member district has been tasked to develop a memo to highlight the critical drought vulnerabilities in their district as well as proposed projects and response actions for long-term drought planning, which will ultimately be included in the DCP. North Kern has identified potential vulnerabilities including climate change and hydrologic variability as well as allocation shortages of Kern River due to hydrologic variability or institutional constraints. To mitigate these impacts, North Kern proposes various projects and response actions, of which, includes the proposed Project. A copy of North Kern's memo has been provided for reference in Appendix C.

As part of this planning effort, the Group has developed a task force, which North Kern is an active participant, consisting of the member districts and various stakeholders to gather input and assess the needs of the region. Together, members of the task force will reflect the environmental, agricultural, and municipal stakeholders affected by local and statewide water management.

In addition to stakeholder input, the Group will build off previous drought planning work that was included in the Poso Creek IRWM 2019 Plan Update that was recently submitted to the Department of Water Resources and their draft management area plan developed under SGMA. Each of these plans include a climate change assessment based on the best available science that evaluates vulnerabilities including drought, lack of supply reliability, and groundwater conditions. Like the DCP, these plans also include projects and actions to respond to critical conditions in the region to maintain and enhance supply reliability as well as improve operational efficiency and flexibility. The proposed project is prioritized in both the 2019 Plan Update and North Kern's plan developed under SGMA and will be included in the DCP for the Poso Creek Region.

Implementation of this project will assist in North Kern's goals of both SGMA and IRWM as well as support the long-term drought planning effort to be included in the Group's DCP. This is achieved by providing North Kern and its neighboring districts recovery and return capacity for delivery of banked supply in a dry year. In turn, this improves drought resiliency to meet existing

irrigation demand by adding to the recovery and return capacity to be used in dry years for returning surplus CVP water recharged and banked during wet years.

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

The National Drought mitigation center recognized this 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 exceptional drought (category 4) 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 NKWSD, including:

- Up to approximately 8.3 inches of subsidence along the section of FKC in NKWSD between 2012 and 2017 (NKWSD-SWID Management Area Plan- SGMA, land subsidence).
- Decrease in groundwater elevation ranging from an average of 60 to 100 feet throughout the District between 2006 and 2016 (NKWSD-SWID Management Area Plan- SGMA, groundwater elevations).
- Loss of labor, income, profits, taxes, and output (Economic Analysis of the 2015 Drought for California Agriculture, UC Davis, 2016).

These affects are not only experienced by North Kern, but in neighboring districts in the Poso Creek Region as well. 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. To mitigate drought impacts, implementation of this project will allow stored wet year water to be delivered in dry years, so that any groundwater level decrease and subsidence will be offset in North Kern. Benefits of this project will also be experienced throughout the region as the ability to return banked wet year supplies during dry years will be able to meet irrigation demand, which not only increases supply reliability, but protects the economic viability of the region.

Describe existing or potential drought conditions in the project area. This has been assessed using a 40-year drought projection under SGMA planning efforts to evaluate groundwater conditions and supply vulnerabilities to achieve groundwater sustainability by 2040. Further, this project has also been prioritized in the Poso Creek 2019 IRWM Plan Update to mitigate the effects of drought. These two planning efforts will be evaluated and included in the Poso Creek IRWM DCP as referenced in Section 1.5.2. For further information on how North Kern will contribute to this DCP, refer to Appendix C.

1.5.4 *Evaluation Criterion D: Project Implementation*

NKWSD is the sole constructor and financier of the Project. NKWSD will engage engineering consultants to assist in design and construction management efforts throughout the project.

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. The overall project and task schedule are presented in Figure 3 and gives a task-wise schedule. The Project has a schedule to provide construction contract documents by late 2021 for bidding purposes. Anticipated completion date would be during mid-year 2023. For the purposes of this proposal, the start date of the grant contract was assumed as October 1, 2020. All Project work is expected to be completed with a final report completed by September 2023.

Describe any permits that will be required, along with the process for obtaining such permits. The manifold pipeline and the wells are located exclusively within maintained rights-of-way owned and operated by NKWSD. Three of the wells will be connected to manifold pipelines that will eventually discharge into the FKC. Accordingly, the District would consult with the Bureau of Reclamation regarding the requirement of SF 299 encroachment permit for FKC. Form: SF299- Application for Transportation and Utility Systems and Facilities on Federal Lands, prior to connecting the return pipeline to the FKC. In addition to and accordance with the permitting and approval concerns stated in Task 5 of the Project Work (Section 1.3.2), the following paragraphs detail specific points of the District's commitment to obtaining all relevant permits and approvals.

a) "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, any required NPDES permitting and the preparation of a Stormwater Pollution Prevention Plan.
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 regarding 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 to estimate the cost required and since one of the wells as part of this proposed Project will connect to manifold pipelines designed as part of the recently awarded R18AP00088 grant, the District anticipates minimal design work as part of the proposed project since a preliminary design was completed for this cost estimate. Additionally, the District anticipates the proposed replacement wells to be of similar design to existing wells.

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.

Describe how the environmental compliance was developed. Have the compliance costs been discussed with the local Reclamation office? Environmental compliance and costs were developed based off recently awarded R18AP00088 grant application as the project is very similar

1.5.5 *Evaluation Criterion E: Nexus to Reclamation*

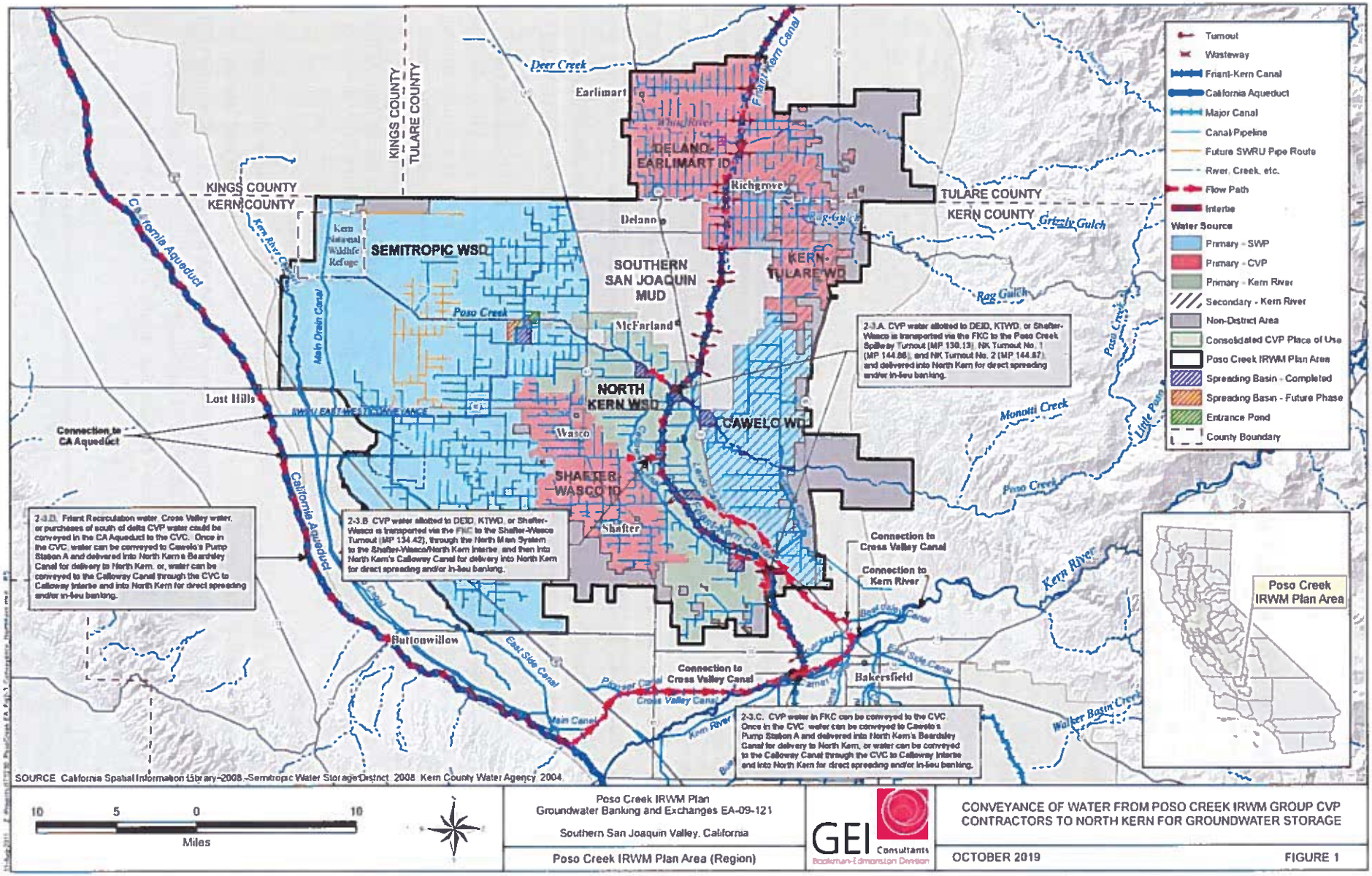
Describe the nexus between the proposed project and a Reclamation project or activity. The proposed Project is located in the Tulare Lake Basin, which also includes Reclamation's Friant-Kern Canal (FKC). The Project lands do not meet trust responsibilities to Tribes. Although North Kern is not a registered CVP contractor, it has a direct conveyance connection with CVP water supplies, it often receives delivery of surface water on behalf of neighboring districts with CVP contract water supplies, through turnouts located along the FKC, and typically retains a portion of the stored supply (25% to 50%). The CVP contractors often have a right to surplus CVP flows in addition to their CVP Class 1 and Class 2 supplies, which in wet years need to utilize banking faculties for groundwater recharge and storage to increase the reliability of their supply. The proposed project will add recovery and return capacity to return banked supply to the District and neighboring districts by establishing a connection to the Friant-Kern Canal. The proposed wells to be drilled and manifold pipelines to connect the wells are not on Reclamation project lands, but three of the wells are proposed to ultimately discharge into the FKC, which is a Reclamation facility. However, the District will consult the Reclamation to complete the required NEPA and SF-299 encroachment permit before starting any construction activity.

North Kern will effectively utilize its absorptive capacity to recharge excess water during wet years on behalf of its Poso Creek IRWM group partners, bank the supply, and deliver back to them during the dry years when the demand for water is at its peak. This Project increases operational flexibility, improves effective utilization of their surface water sources, and promotes regional co-operation in conjunctive water use, which is a crucial nexus to mitigate drought.

1.5.6 *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: North Kern continues to foster relationships with other water districts and disadvantaged communities in the region through the Poso Creek IRWM Group. Along with the other active members, North Kern 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 and implementation activities, which are focused on drought preparedness and supply reliability as well as improving operational flexibility to maintain economic viability for the communities and industries in the region. North Kern'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 and disadvantaged communities.

The proposed Project is a continuation of North Kern's efforts to improve recovery and return capacity of their groundwater recharge facilities to allow surface water recharged and banked in North Kern's groundwater basin to be available to the Poso IRWM Group districts. Not only will North Kern benefit from this project, but water districts affiliated with the Poso Creek IRWM Group will also be able to benefit from greater return water supply in times of drought or shortage.



Poso Creek IRWM Plan
Groundwater Banking and Exchanges EA-09-121
Southern San Joaquin Valley, California

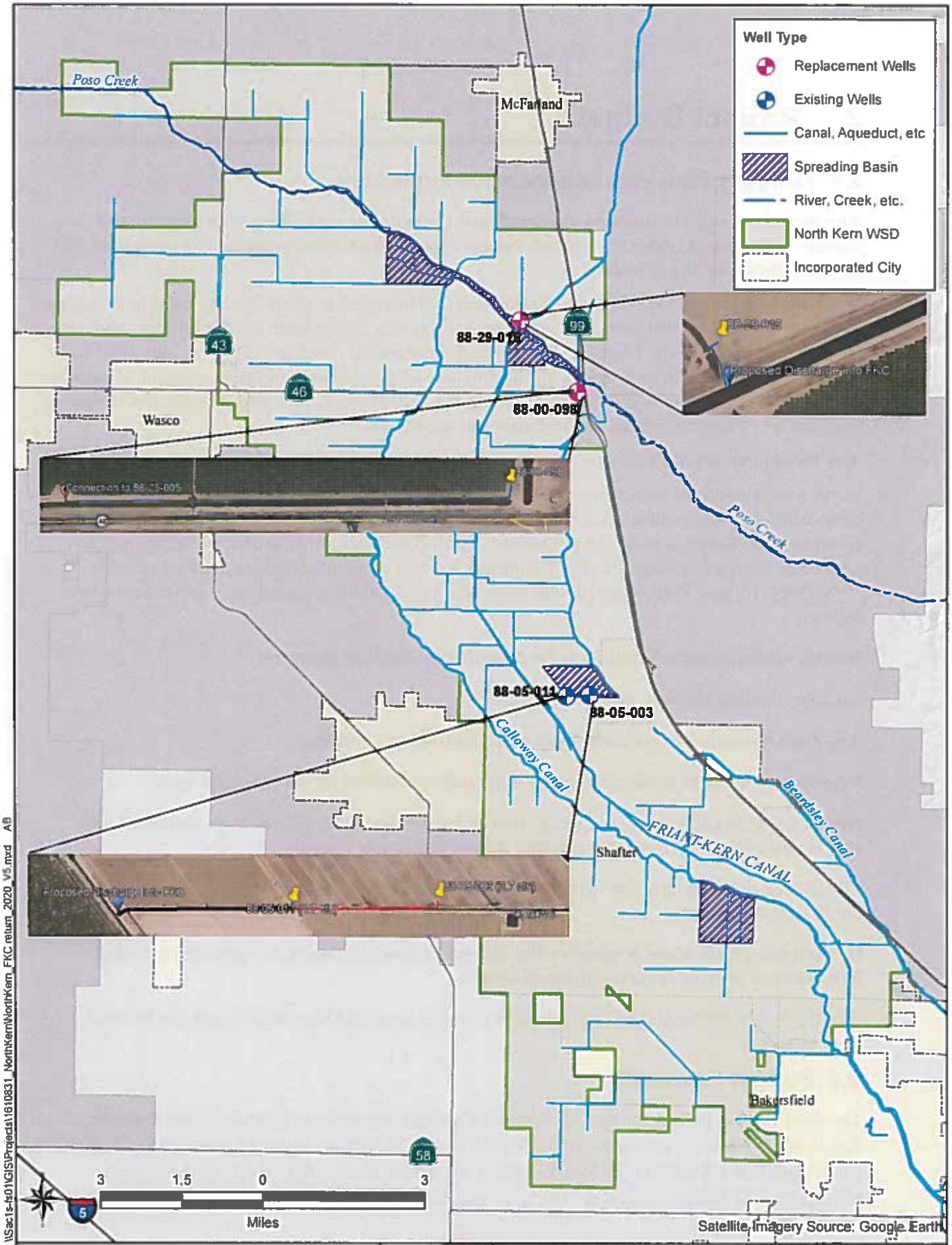
Poso Creek IRWM Plan Area (Region)

GEI Consultants
Bookman-Edmonston Division

CONVEYANCE OF WATER FROM POSO CREEK IRWM GROUP CVP CONTRACTORS TO NORTH KERN FOR GROUNDWATER STORAGE

OCTOBER 2019

FIGURE 1



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21-Mar-2019

Expanded Recharge Recovery Program North Kern Water Storage District Kern County, California	GEI Consultants	Friant-Kern Canal Proposed Wells to be part of the Recovery Program OCTOBER 2019 FIGURE 2

2. Project Budget

2.1 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.

North Kern Water Storage District (North Kern or District) has identified the need to designate monetary funds from their construction capital account to be available for the Project, which is a District revenue account. The District identified the Reserve Fund for 2019 and into 2020 to be utilized to meet the cost obligations for the purchase and installation of the equipment, if needed. The District adopts an annual budget during the fall of each year and revisits the budget at mid-year to evaluate the need for any mid-year adjustments.

Any third part in-kind costs (i.e., goods and services provided by a third party).

North Kern authorized consultant costs for preliminary design to allow Project definition in preparation for this application. Further authorizations will be made for consultant costs that will continue to be incurred as design progresses. North Kern does not anticipate including any in-kind costs incurred as Project costs. The design is being completed under a contract cost for consulting services. Preliminary design work has supported the preparation of construction cost estimates.

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.

2.2 Budget Proposal

The total Project budget for the *2020 Return Capacity Improvements for Regional Drought Resiliency* (Project) is estimated at $1,708,531 with $750,000 in requested grant funds (Federal Cost Share) and $958,531 in Non-Federal Cost Share funds. The approach has been reflected in the budget estimates. The total requested grant funds amount to about 44 percent

of total project costs, with the remainder (56 percent) funded by the Applicant. Refer to Table 2-1, which provides a summary of the estimated budget, by task, including Reclamation and Applicant contributions.

Table 2-0. Summary of Non-Federal and Federal Funding Sources

Funding Sources	Funding Amount
Non-Federal Entities	
North Kern WSD	$ 958,531
State Funding	$ -
Non-Federal Subtotal:	$ 958,531
Other Federal entities	
None	
Other Federal Subtotal:	$ -
Requested Reclamation Funding:	$ 750,000
Total Project Funding:	***$ 1,708,531***

The Project budget was prepared based on the level of effort required to implement the project as discussed in Section 1.3.2 – Tasks and Project Work. The Work Plan identifies and describes eight tasks used to define the overall Project Scope, Schedule, and Budgets:

Task 1: Grant Administration
Task 2: Project Reporting
Task 3: Project Design
Task 4: Environmental Documentation and Regulatory Compliance
Task 5: Permits & Approvals
Task 6: Construction
Task 7: Construction Administration

Budget Table Format:

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

a. Table 2-1a provides a one-page, task-by-task summary of the estimated budget, including Reclamation and Applicant contributions shown in Table 2-1b.
b. Tables 2-2 through 2-8 provide a summary of project costs by task and follow the "sample budget proposal format" from the FOA.
c. Table 2-9 provides a summary of the aggregated costs for implementation of the Project.
d. Appendix D and E are detailed estimate of construction components, which support the estimate presented in Task 6-Construction.
e. Tables 2-10a and 2-10b provide hourly rates of District staff and Consultant respectively.

2.3 Budget Narrative

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

Salaries and Wages – Ram Venkatesan, Deputy General Manager for North Kern WSD, and a licensed Civil Engineer in the state of California is the representative for the Applicant and will provide overall Project Management, technical design, and construction of the project components. The District will have an Administrative Assistant responsible for providing project-related administrative support and providing grant reporting assistance. 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.

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. Accordingly, expenses under "Salaries and Wages" have been included. A Groundwater Specialist and a Utility Worker will be working on this Project on behalf of the District apart from the deputy general manager and the Administrative Accountant. The number of hours for each District representative was calculated based on the recently completed Calloway Canal Lining project (NK-611 - Calloway Canal Lining project) and experience of the District and the Consulting Engineer. The hourly rate of the District staff can be found on Table 2-10a.

Fringe Benefits – The District staff's hourly rate including the Fringe Benefits and split up can be found in Table 2-10a below. The detailed split -up of Fringe benefits has not been included here due to page restrictions. This can be provided upon request.

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. However, travel costs have been included in the "Contractual" category in Tables 2-2 through 2-8, under the subcategory "Travel/Mileage". These costs represent travel expenses for local travel by the engineering consultant and sub consultants. Travel expenses have been included as part of Task 6–Construction and Task 3–Design. Travel expenses for the above-mentioned tasks were determined by the number of miles driven for a roundtrip at the mileage rate of compensation determined by the 2019 Internal Revenue Service (currently $0.58). Below is a summary of how the travel expenses that were estimated by task.

For Task 6–Construction, travel expenses were included for the geotechnical engineering consultant and the surveyor, under "Travel/Mileage". As part of the construction work, the geotechnical engineering consultant will be required to travel to the project site to conduct hydrogeological tests and earthwork testing during construction. Similarly, the surveyor will be required to travel to the project site to survey the project prior to construction commencing. The mileage for each sub consultant was calculated as follows:

Surveyor (in support of Design) =25 miles/roundtrip x 2 roundtrips =50 miles

Surveyor (in support of Construction) =25 miles/roundtrip x 2 roundtrips =50 miles

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 2-7 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 with GEI Consultants, one of the District's engineering consultants, to assist the District with implementing the Project including providing administrative and reporting assistance, design, bid-phase support, and construction management 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 2-2 through 2-8 under the category "Contractual" for a summary of the contractual costs. A copy of the fee schedules for the engineering consultant and sub consultants are included in Tables 2-10a and 2-10b. The fee schedules list the billing rates by job classification. The contractual costs were determined by multiplying the total number of hours by the applicable labor rate identified in the fee schedules. 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.

Under contractual costs, costs for other consultants are also presented including the District's legal counsel. The estimate presented is based on recent experience and recent work done by the consultant for implementation of various projects funded by Reclamation and similar well and pipeline design projects (including R18AP00088). The total was determined by multiplying the number of hours by job classification by the applicable hourly rate.

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

Task – 7 Construction administration (Table 2-8) includes District staff and the Engineering Consultant hours towards site inspection, periodic walk-through and As-built preparation and review for this Project. An estimate of 4% of the construction cost has been allotted for this task based on the consulting engineer's experience from similar well design and pipeline projects built in the area.

Other contractual costs, including costs for local travel, equipment, and supplies incurred by the consultant or sub consultants as part of the contractual work are discussed in the applicable sections above.

Well Drilling and Equipping -

The proposed Project will be advertised for bid and the District will be soliciting sealed bids for construction of the project work. The District will contract with a local contractor who will provide costs to "furnish and install" the necessary project components. The estimated costs for the construction work, presented in Appendix D is based on cost incurred by the District on recent bids received to drill and equip wells in the District. Appendix D includes a sample bid detail from for installing the shafts, bowls and pump head, among other things. Also included is an example consisting of the costs to electrically equip the well.

Manifold Piping – The District performed preliminary estimates to calculate the length and size of the pipeline required to connect each well to the recovery and return network. The 'furnish and install' costs for the pipeline was obtained from a local vendor. The costs for pipeline appurtenances were obtained from recently completed projects in the area. The detailed budget backup has been included as part of Appendix E. These preliminary costs may change once the District along with its Engineering design consultant completes the final design. The District will contract with a local contractor who will provide costs to "furnish and install" the necessary components under this task.

Environmental and Regulatory Compliance Costs – In the budget table it shows various permitting and environmental fees that are estimated and identified as to be part of the District's expenses. Once the Project moves into construction, only the invoiced expenses paid by the District will be part of the incurred expense, invoiced reimbursement requests. The costs are now shown in one table to identify the overall cost of this Project. How each individual fee gets paid is up to the District and how much they include in the contract documents for construction.

According to the Funding Opportunity Announcement (FOA) guidelines, "...a minimum amount budgeted for environmental compliance should be equal to 1-2 percent of the total project costs." In this regard, the District 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. 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.

Reporting - Any work related to "Grant Reporting" will be completed by the Engineering Consultant and the work is covered under the "Contractual" work under Task 2- Grant Reporting.

Other Costs – Costs under this category were included in Task 4 'Environmental Documentation', which includes a cultural resources Records Search Fee that was estimated using a North Kern contract signed between the consultant and the District to implement the previous R18AP00088 grant.

Task – 5 Permitting, "Environmental Compliance and Other Costs" were estimated and include costs associated with filing three permits prior to construction commencing of the pipeline. The permits include an NPDES SWPPP permit, a PM-10 Dust Control permit, and an SF-299 Application for Transportation and Utility Systems and Facilities on Federal Lands (encroachment

permit) for work within FKC ROW (if deemed necessary by USBR). The costs provided are estimates based on recent experience by the District in filing similar permits for the recent USBR funded Calloway Canal Lining project. The NPDES SWPPP and PM-10 permit will be filed by the contractor, therefore has been included as part of the construction task.

Please note: The costs under Task – 5 are only for conducting due diligence with regards to the obtaining the required permits and approval. The permits cost for the well drilling and pipeline has already been included under Task – 6 Construction, as evidenced in the attached sample bid documents.

A fee of $3,250 has been estimated for this Project as part of the pre-construction biological survey. This cost has been estimated using a North Kern contract signed between the consultant and the District to implement the previous R18AP00088 grant.

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

Table 2-1a Budget Summary by Task[1]

Task Number - Name	Total Cost
Task 1 - Administration	$23,715
Task 2 - Reporting	$26,722
Task 3 - Design	$54,071
Task 4 - Environmental Documentation	$74,687
Task 5 - Permits and Approvals	$8,666
Task 6 - Construction	$1,460,997
Task 7 - Construction Administration	$59,673
TOTALS	**$1,708,531**

Table 2-1b Program Funding Sources[1]

Funding Sources	Percent of Total Project Costs	Total Cost by Source
Costs to be paid by the applicant	56%	$ 958,531
Cost to be reimbursed with the requested Federal funding	44%	$ 750,000
Value of third party contributions	0%	$ -
TOTAL PROGRAM COSTS	**100%**	**$1,708,531**

Cost Estimating Notes:

(1) This table is supported by detailed tables which are included immediately following the Budget Narrative.

(2) Salaries and Wages with Fringe Benefits for District office, field staff, and consultants are shown in Tables 2-10a and 2-10b.

(3) Reference the Work Plan in Section 1 for task descriptions.

(5) Refer to Table 2-9 for a Budget Summary of all Projects costs.

(5) The amount of personnel hours was estimated from District and Consultant engineer experience based on the previously completed well drilling and reclamation projects.

Table 2-2, Task 1 - Administration

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
Deputy General Manger	114.00	13	Hours	$1,482.00
Administrative Staff	45.09	30	Hours	$1,352.70
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	286.00	0	Hours	$0.00
Senior Professional - Grade 7	255.00	24	Hours	$6,120.00
Senior Professional - Grade 6	214.00	0	Hours	$0.00
Senior Professional - Grade 5	188.00	0	Hours	$0.00
Project Professional - Grade 4	160.00	45	Hours	$7,200.00
Project Professional - Grade 3	142.00	20	Hours	$2,840.00
Staff Professional - Grade 2	130.00	0	Hours	$0.00
Staff Professional - Grade 1	118.00	0	Hours	$0.00
Senior CADD Drafter	142.00	0	Hours	$0.00
Technician	106.00	40	Hours	$4,240.00
Legal Counsel				
Junior Associate Attorney	240.00	2	Hours	$480.00
TRAVEL				
				$0.00
SUPPLIES/MATERIALS				
				$0.00
ENVIRONMENTAL/REG.				
				$0.00
OTHER				
				$0.00
TOTAL DIRECT COSTS				$23,714.70
INDIRECT COSTS - __%				$0.00
TOTAL PROJECT COSTS				$23,715.00

Notes:

(1) Estimated to be 1.5% of overall project costs, based on recently completed reclamation projects

Table 2-3, Task 2 - Reporting [1]

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
Deputy General Manger	114.00	0	Hours	**$0.00**
Administrative Staff	45.09	24	Hours	**$1,082.16**
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	286.00	0	Hours	**$0.00**
Senior Professional - Grade 7	255.00	24	Hours	**$6,120.00**
Senior Professional - Grade 6	214.00	0	Hours	**$0.00**
Senior Professional - Grade 5	188.00	0	Hours	**$0.00**
Project Professional - Grade 4	160.00	60	Hours	**$9,600.00**
Project Professional - Grade 3	142.00	40	Hours	**$5,680.00**
Staff Professional - Grade 2	130.00	0	Hours	**$0.00**
Staff Professional - Grade 1	118.00	0	Hours	**$0.00**
Senior CADD Drafter	142.00	0	Hours	**$0.00**
Technician	106.00	40	Hours	**$4,240.00**
TRAVEL				
				$0.00
SUPPLIES/MATERIALS				
				$0.00
ENVIRONMENTAL/REG.				
				$0.00
OTHER				
				$0.00
TOTAL DIRECT COSTS				**$26,722.16**
INDIRECT COSTS - __%				**$0.00**
TOTAL PROJECT COSTS				**$26,722.00**

[1] Based on Consultant experience from previously completed reclamation projects

Table 2-4, Task 3 - Design [1]

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
Deputy General Manger	114.00	60	Hours	$6,840.00
Administrative Staff	45.09	0	Hours	$0.00
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	286.00	48	Hours	$13,728.00
Senior Professional - Grade 7	255.00	50	Hours	$12,750.00
Senior Professional - Grade 6	214.00	0	Hours	$0.00
Senior Professional - Grade 5	188.00	48	Hours	$9,024.00
Project Professional - Grade 4	160.00	0	Hours	$0.00
Project Professional - Grade 3	142.00	0	Hours	$0.00
Staff Professional - Grade 2	130.00	0	Hours	$0.00
Staff Professional - Grade 1	118.00	0	Hours	$0.00
Senior CADD Drafter	142.00	36	Hours	$5,112.00
Technician	106.00	0	Hours	$0.00
Surveying				
2-Man Survey Crew	266.00	16	Hours	$4,256.00
Senior Licensed Land Surveyor	252.00	8	Hours	$2,016.00
Office Engineer	158.00	2	Hours	$316.00
TRAVEL				
Survey Crew - 2 roundtrips @ 25 mi/trip	0.58	50	Miles	$29
SUPPLIES/MATERIALS				
				$0.00
ENVIRONMENTAL/REG.				
				$0.00
TOTAL DIRECT COSTS				$54,071.00
INDIRECT COSTS - ___%				$0.00
TOTAL PROJECT COSTS				$54,071.00

Notes:

(1) Estimate based on 3% of overall Construction Costs from previously completed well design and preliminary pipeline design estimate; minimal costs have been allocated for well design since the District will use existing District standard designs

Table 2-5, Task 4 Environmental Documentation

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
Deputy General Manger	114.00	5	Hours	$570.00
Administrative Staff	45.09	5	Hours	$225.45
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	286.00	44	Hours	$12,584.00
Senior Professional - Grade 7	255.00	0	Hours	$0.00
Senior Professional - Grade 6	214.00	140	Hours	$29,960.00
Senior Professional - Grade 5	188.00	24	Hours	$4,512.00
Project Professional - Grade 4	160.00	30	Hours	$4,800.00
Project Professional - Grade 3	142.00	30	Hours	$4,260.00
Staff Professional - Grade 2	130.00	68	Hours	$8,840.00
Staff Professional - Grade 1	118.00	0	Hours	$0.00
Senior GIS	142.00	32	Hours	$4,544.00
Word Processor	106.00	32	Hours	$3,392.00
TRAVEL				$0.00
				$0.00
SUPPLIES/MATERIALS				
				$0.00
CONTRACTUAL				
				$0.00
ENVIRONMENTAL/REG. COMPLIANCE				
				$0.00
Other [1]				$0.00
Cultural resources Records Search Fee	1000.00	1		$1,000.00
TOTAL DIRECT COSTS				$74,687.00
INDIRECT COSTS - __%				$0.00
TOTAL PROJECT COSTS				$74,687.00

Notes:

Unit fee based on total acres of land disturbed, Area of Disturbance was calulated when the preliminary cost estimate was prepared. [1]

Estimated based of a North Kern Contract with consultant as part of the previously awarded R18AP00088 grant.

Final cost will be determined upon consultation with Reclamation

Table 2-6, Task 5 - Permits and Approvals

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
Deputy General Manager	114.00	0	Hours	$0.00
Administrative Staff	45.09	0	Hours	$0.00
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	286.00	0	Hours	$0.00
Senior Professional - Grade 7	255.00	0	Hours	$0.00
Senior Professional - Grade 6	214.00	0	Hours	$0.00
Senior Professional - Grade 5	188.00	0	Hours	$0.00
Project Professional - Grade 4	160.00	25	Hours	$4,000.00
Project Professional - Grade 3	142.00	0	Hours	$0.00
Staff Professional - Grade 2	130.00	25	Hours	$3,250.00
Staff Professional - Grade 1	118.00	12	Hours	$1,416.00
Senior CADD Drafter	142.00	0	Hours	$0.00
Technician	106.00	0	Hours	$0.00
TRAVEL				
				$0.00
SUPPLIES/MATERIALS				
				$0.00
CONTRACTUAL				
				$0.00
ENVIRONMENTAL/REG. COMPLIANCE [1]				
SF-299 encroachment permit*				$0.00
OTHER				
TOTAL DIRECT COSTS				$8,666.00
INDIRECT COSTS - __%				$0.00
TOTAL PROJECT COSTS				$8,666.00

Notes:

[1] Unit fee based on total acres of land disturbed, Area of Disturbance was calulated when the preliminary cost estimate was prepared. The two other permits (NPDES SWPPP and PM-10) are included as part of the construction costs.

Table 2-7, Task 6 - Construction

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
Deputy General Manger	114.00	0	Hours	$0
Administrative Staff	45.09	0	Hours	$0
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	286.00	0	Hours	$0
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
Surveying				
2-man Survey Crew	266.00	40	Hours	$10,640
Senior Licensed Land Surveyor	252.00	16	Hours	$4,032
Well and Pipeline Construction				
Well Drilling and Equipping	**Appendix - D**			**$454,530**
Well Testing	**Appendix - D**			**$29,714**
Well Motors and Electrical Panelling	**Appendix - D**			**$337,920**
Manifold Piping	**Appendix - E**			**$624,132**
TRAVEL				
Survey Crew - 2 roundtrips @ 25 mi/trip	0.58	50	Miles	$29
ENVIRONMENTAL/REG.				
				$0
OTHER-EQUIPMENT RENTAL				
				$0
TOTAL DIRECT COSTS				$1,460,997
INDIRECT COSTS - __%				$0
TOTAL PROJECT COSTS				$1,460,997

Table 2-8, Task 7 - Construction Administration[1]

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
Deputy General Manger	114.00	48	Hours	$5,472.00
Administrative Staff	45.09	8	Hours	$360.72
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	286.00	40	Hours	$11,440.00
Senior Professional - Grade 7	255.00	40	Hours	$10,200.00
Senior Professional - Grade 6	214.00	0	Hours	$0.00
Senior Professional - Grade 5	188.00	10	Hours	$1,880.00
Project Professional - Grade 4	160.00	160	Hours	$25,600.00
Project Professional - Grade 3	142.00	0	Hours	$0.00
Staff Professional - Grade 2	130.00	0	Hours	$0.00
Staff Professional - Grade 1	118.00	40	Hours	$4,720.00
Senior CADD Drafter	142.00	0	Hours	$0.00
Technician	106.00	0	Hours	$0.00
TRAVEL				
				$0.00
SUPPLIES/MATERIALS				
				$0.00
CONTRACTUAL				
				$0.00
ENVIRONMENTAL/REG.				
				$0.00
OTHER				
				$0.00
TOTAL DIRECT COSTS				$59,673.00
INDIRECT COSTS - __%				$0.00
TOTAL PROJECT COSTS				$59,673.00

Notes:

(1) Construction Administration activities include field inspection and oversight.

(2) Estimate based on cost incurred in the previously completed well drilling and pipeline installation costs (approx 4% of Construction cost)

(3) Salaries and Wages and Fringe Benefits for District staff will be charged to a general accounting number as part of their daily operations.

Table 2-9, Overall Budget Summary

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
Deputy General Manager	114.00	126	Hours	$14,364
Administrative Staff	45.09	67	Hours	$3,021
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	286.00	132	Hours	$37,752
Senior Professional - Grade 7	255.00	138	Hours	$35,190
Senior Professional - Grade 6	214.00	140	Hours	$29,960
Senior Professional - Grade 5	188.00	82	Hours	$15,416
Project Professional - Grade 4	160.00	320	Hours	$51,200
Project Professional - Grade 3	142.00	90	Hours	$12,780
Staff Professional - Grade 2	130.00	93	Hours	$12,090
Staff Professional - Grade 1	118.00	52	Hours	$6,136
Senior CADD Drafter	142.00	68	Hours	$9,656
Technician	106.00	112	Hours	$11,872
Legal Counsel				
Junior Associate Attorney	240.00	2	Hours	$480
Surveying				
2-Man Survey Crew	266.00	56	Hours	$14,896
Senior Licensed Land Surveyor	252.00	24	Hours	$6,048
Office Engineer	158.00	2	Hours	$316
Well and Pipeline Construction				
Well Drilling and Equipping	Appendix - D			$454,530
Well Testing	Appendix - D			$29,714
Well Motors and Electrical Panelling	Appendix - D			$337,920
Manifold Piping	Appendix - E			$624,132
SUPPLIES/MATERIALS				
EQUIPMENT PROCUREMENT				
				$0
TRAVEL				
Survey Crew - 4 roundtrips @ 25 mi/trip	0.58	100	Miles	$58
ENVIRONMENTAL/REG.				
SF-299 encroachment permit			Filing	$0
OTHER				
Cultural resources Records Search Fee	1,000.00	1	Each	$1,000
Equipment Rental				
				$0
TOTAL DIRECT COSTS				$1,708,531
INDIRECT COSTS - __%				$0
TOTAL PROJECT COSTS				$1,708,531

Table 2-10a

Job Classification	Hourly Rate[1]	Fringe Benefits[2]	Total Burdened Hourly Rate
District Engineer	$85.87	$28.13	$114.00
Administrative Staff	$31.20	$13.89	$45.09
Utility Worker	$22.95	$14.20	$37.15
Well Maintenance Tech.	$27.55	$17.54	$45.09

Notes:

[1] Fixed annual base salary divided by 2080 hours.

[2] Fixed total yearly benefits divided by 2080 hours.

Table 2-10b

FEE SCHEDULE

Personnel Category	Hourly Billing Rate $ per hour
Staff Professional – Grade 1	$ 118
Staff Professional – Grade 2	$ 130
Project Professional – Grade 3	$ 142
Project Professional – Grade 4	$ 160
Senior Professional – Grade 5	$ 188
Senior Professional – Grade 6	$ 214
Senior Professional – Grade 7	$ 255
Senior Consultant – Grade 8	$ 286
Senior Consultant – Grade 9	$ 348
Senior Principal – Grade 10	$ 348
Senior CADD Drafter and Designer	$ 142
CADD Drafter / Designer and Senior Technician	$ 130
Field Professional	$ 107
Technician, Word Processor, Administrative Staff	$ 108
Office Aide	$ 83

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

OTHER PROJECT COSTS

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

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

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

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

PAYMENT TERMS

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

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

3. Environmental and Cultural Resources Compliance

The following section summarizes NKWSD's approach to avoid, minimize, and mitigate any potential environmental impacts related to connecting the four existing wells and the two new wells to the FKC with a manifold pipeline. The following paragraphs address the specific questions posted in the Environmental and Cultural Resources Compliance section of the FOA.

Will the 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 located within property owned and operated by North Kern Water Storage District and the Friant-Kern Canal (An SF-299 permit will be obtained in this regard). The Project's area of potential affect is located within a canal easement or is on agriculturally disturbed soil. At this time, the District is not aware of any part of this project that will have a significant impact on soil, air, water, or animal habitat quality. 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.

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?

NKWSD is aware that threatened and endangered species exist in the Southern San Joaquin Valley. The FWS Endangered Species Database listed several threatened and endangered species within Kern County. However, based on experience, the Kern Council of Governments Habitat Conservation map, and federally-listed species mapping, no endangered species habitats have been identified within the pipeline rights-of-way.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?"

No.

When was the water delivery system constructed?

As discussed in NKWSD's AWMP (2015), North Kern's canal and pipeline distribution system and related works were originally completed in the 1950s, with additional features and enlargements (e.g., pumping stations, discharge pipelines, and reservoir systems) constructed with the expansion of the District's service area (i.e., increased water demand). Kern County Land and Water Company, who subsequently lengthened it to its current 30-mile length, originally constructed the Calloway Canal between 1875 by O.P. Calloway and 1877. Over time, the canal's prism (i.e., trapezoidal shape), head gates, weirs and other features have been replaced, repaired, or improved to allow for greater capacity and flow delivery to water users (Districts). As of late, modifications have been made to accommodate commercial, housing, and

road development as the City of Bakersfield has slowly been expanding to the north. It is worth noting that the Project will not result in any modifications or effects to individual irrigation system features (e.g., headgates, canals, or flumes).

Will the 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 modifications to the existing irrigation distribution system.

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.

No. NKWSD will contract with a private cultural resources management consultant and arrange for Reclamation staff to coordinate to determine what, if any previous cultural resources surveys have been conducted in the project area. The District currently does not expect to encounter any obstacles in receiving clearance.

Are there any known archeological sites in the proposed project area?

No. Since the Project area has been disturbed previously for the construction of farm roads and fields, 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.

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 or tribal lands?

No.

Will the project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

No.

4. Required Permits or Approvals

As summarized in Section 1.3.2:

- The pipeline connections and the wells are located exclusively within maintained rights-of-way owned and operated by North Kern WSD. Three of the wells will be connected to manifold pipelines that will eventually discharge into the FKC. Accordingly, the District would consult with the Bureau of Reclamation regarding the requirement of SF 299 encroachment permit for FKC. Reclamation will require the NEPA process to be completed prior to reviewing the encroachment permit application. There may be additional fees to Reclamation and Reclamation can grant, deny or approve the permit with stipulations. Bids for construction will be solicited through a competitive bidding process based on final plans and specifications. The language in the standard specifications relating to permitting 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, any required NPDES permitting and the preparation of a Stormwater Pollution Prevention Plan.

- A pre-activity survey will be ordered and conducted by a qualified biologist shortly before the start of construction.

- It is noted that the District is not subject to the County's or City's jurisdiction with regard to building and grading permits relative to water resource projects. Accordingly, no City- or County-issued permits will be required

5. Existing Drought Contingency Plan

As discussed in Section 1.5.2, North Kern and other members of the Poso Creek IRWM Group (Group) are in the process of developing a Drought Contingency Plan (DCP) for the Poso Creek Region. This plan will be developed with stakeholder input through the Poso Creek IRWM Drought Planning Task Force and through past drought planning efforts through the Poso Creek IRWM 2019 Plan Update and groundwater sustainability plans that were developed under California's 2014 Groundwater Sustainability Plan. These plans have evaluated drought and climate change vulnerabilities and will be used to drive the development of the DCP.

Additionally, North Kern has developed a drought planning memo to support the overall DCP. This memo focuses on drought response actions and projects in North Kern and will be integrated into the development of the DCP. For reference, this memo has been included as Appendix – C.

6. Official Board Resolution