Calloway Canal Lining:

Fruitvale Avenue to Case Street

Applicant

Norther Kern Water Storage District
33380 Cawelo Avenue
Bakersfield, California, 93308

Project Manager

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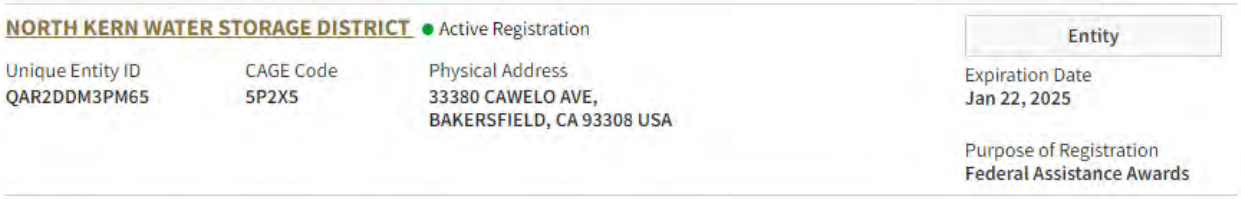
1 Federal Forms, UEI, SAM Registration

The mandatory Federal forms, including the SF-424 Application for Federal Assistance, SF-424C Budget Information – Construction Programs, and SF-424D Assurances – Construction Programs, are submitted in Grants.gov. The applicant's (North Kern Water Storage District) Unique Entity Identifier (UEI) is provided below as well as on the SF-424. Proof of active System of Award Management (SAM) registration is included below.



NORTH KERN WATER STORAGE DISTRICT ● Active Registration

Entity

Unique Entity ID	CAGE Code	Physical Address	Expiration Date	Purpose of Registration
QAR2DDM3PM65	5P2X5	33380 CAWELO AVE, BAKERSFIELD, CA 93308 USA	Jan 22, 2025	Federal Assistance Awards

2 Technical Proposal

2.1 Executive Summary

Date: February 22, 2024

Applicant Name: North Kern Water Storage District

City, County, State: Bakersfield, Kern County, California

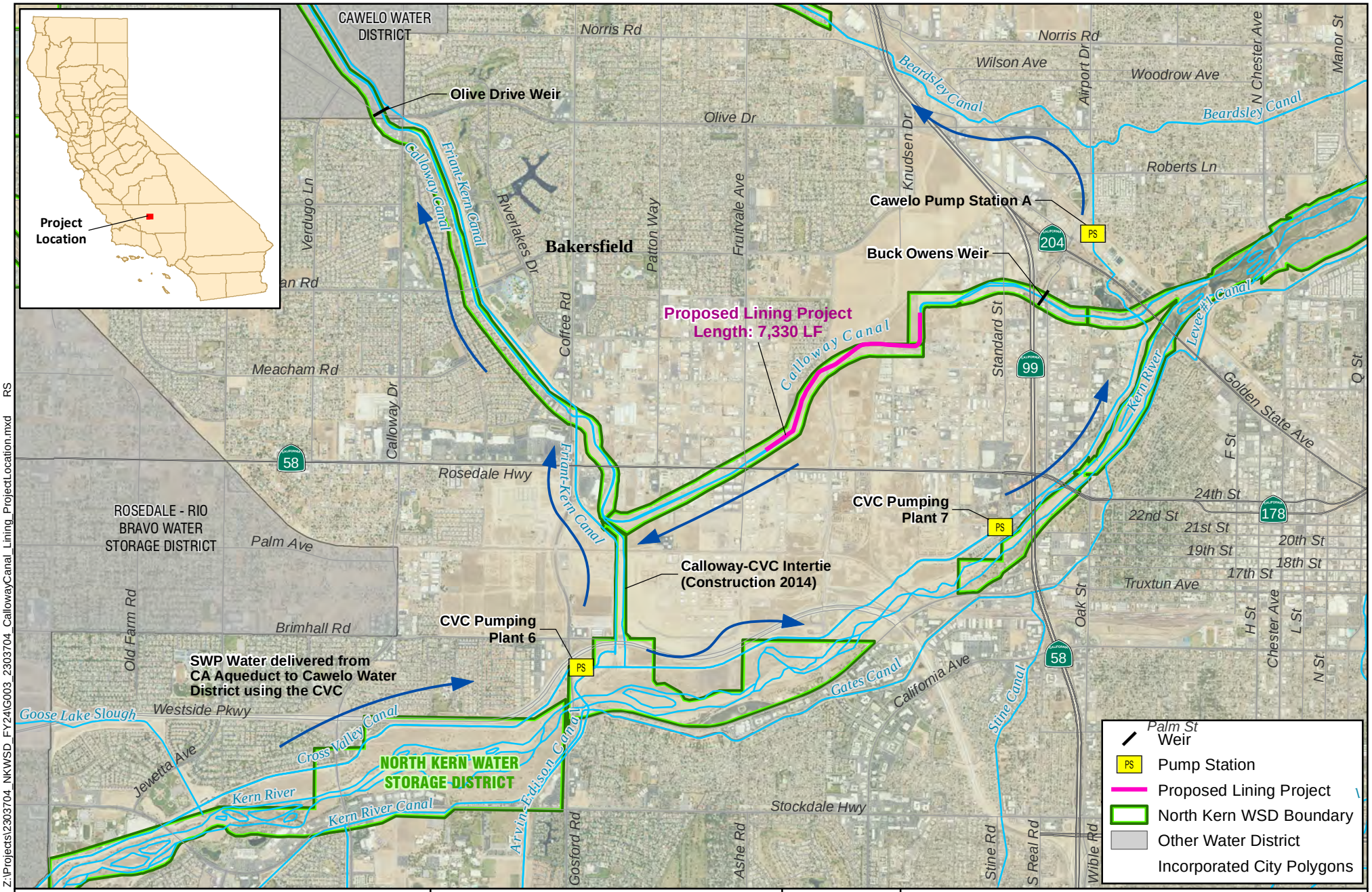
Applicant Category: A

North Kern Water Storage District (North Kern, District, Applicant) proposes to construct the *Calloway Canal Lining: Fruitvale Avenue to Case Street* project (Project), consisting of concrete lining approximately 1.4 miles of the Calloway Canal to mitigate seepage loss on the currently unlined portion. For over a decade, North Kern has been implementing a water delivery efficiency improvements plan, which identifies the concrete lining of their major canal, the Calloway Canal, as a top priority to optimize conjunctive use management. Optimizing conveyance allows for more water to be delivered for direct beneficial use or for groundwater recharge that can be later used during dry or drought periods when surface water is scarce. Accordingly, North Kern proposes to leverage its resources in a cost-shared project with the United States Bureau of Reclamation (Reclamation) to concrete line 7,330 linear feet (LF) of a currently unlined portion of the Calloway Canal in Bakersfield, California. The proposed Project is expected to save 2,788 acre-feet (AF) of water annually by reducing seepage and 3,564,601 kilowatt hours per year (kWh/yr) in energy by reducing groundwater pumping.

Project completion is expected within 36 months of the award date. Assuming funding is awarded, and an agreement is signed by December 2024, it is anticipated that the Project will be completed by December 2027. The Project is not located on a Federal Facility.

2.2 Project Location

The Project is located in Bakersfield, a city in Kern County, California. Kern County is in the southernmost portion of California's San Joaquin Valley. The District is in northern Bakersfield, with Highway 43 to the west, Highway 99 to the east, the City of Delano to the north, and the City of Bakersfield to the south. The project starts at 35°23'5.49"N, 119° 4'19.69"W and commences at 35°23'48.04"N, 119° 3'22.87"W. Figure 1 shows the location of the proposed Project and where the District resides in California.


Project Location
CAWELO WATER DISTRICT
Olive Drive Weir
Norris Rd
Olive Dr
Wilson Ave
Woodrow Ave
Roberts Ln
Beardsley Canal
Calloway Canal
Friant-Kern Canal
Riverlakes Dr
Bakersfield
Verdugo Ln
Patton Way
Fruitvale Ave
Knudsen Dr
Airport Dr
N Chester Ave
Manor St
Cawelo Pump Station A
Buck Owens Weir
Proposed Lining Project
Length: 7,330 LF
Coffee Rd
Standard St
Levee #1 Canal
Kern River
Golden State Ave
Meacham Rd
Calloway Dr
Rosedale Hwy
ROSEDALE - RIO BRAVO WATER STORAGE DISTRICT
Palm Ave
CVC Pumping Plant 7
Calloway-CVC Intertie (Construction 2014)
24th St
22nd St
21st St
20th St
19th St
18th St
17th St
Truxtun Ave
F St
H St
L St
N St
Q St
Chester Ave
Oak St
Brimhall Rd
Old Farm Rd
CVC Pumping Plant 6
SWP Water delivered from CA Aqueduct to Cawelo Water District using the CVC
Goose Lake Slough
Westside Pkwy
Jewetta Ave
Cross Valley Canal
Kern River
Kern River Canal
NORTH KERN WATER STORAGE DISTRICT
Arvin-Edison Canal
Gosford Rd
Ashe Rd
Stockdale Hwy
Gates Canal
California Ave
Stine Canal
Stine Rd
S Real Rd
Wible Rd
Palm St
Weir
Pump Station
Proposed Lining Project
North Kern WSD Boundary
Other Water District
Incorporated City Polygons
0
2,000
4,000
8,000
Feet
N
Water and Energy Efficiency Grant
Kern County, California
North Kern Water Storage District
GEI Consultants
PROJECT LOCATION
FEBRUARY 2024
FIGURE 1
31-Jan-2024
Z:\Projects\2303704_NKWSD_FY24\G003_2303704_CallowayCanal_Lining_ProjectLocation.mxd RS

2.3 Project Description

The Project will be implemented under the District's direction with the assistance of consultants and contractors. The work to be accomplished includes concrete lining of 7,330 LF of a currently unlined portion of the Calloway Canal between approximately Fruitvale Avenue and Case Street, and associated planning, engineering, design, environmental documentation, and project management and administration.

Project construction will be performed by a contractor, and its subcontractors, as applicable, selected through a public competitive bidding process. The construction contract will include furnishing and installing all components necessary for Project implementation. Construction will include trimming the canal to a trapezoidal prism with an approximately 50-foot-wide bottom, 3-to-1 side slopes, and a nominal depth of 8.5 feet and lining the canal with 4-inch-thick unreinforced concrete. The construction contract will consist of preparing, modifying, re-shaping, and lining approximately 7,330 LF of existing canal including subgrade preparation; relocation of fill dirt; placement, compaction, and grading of fill; interfacing with existing structures, including weirs, and neighboring utilities and railways; and other necessary components as defined in the specifications that will be developed during the design phase. Equipment expected to be used during construction includes, but is not limited to, an excavator, concrete trucks, water trucks, a compactor, a scraper, and a roller. The contractor will be responsible for means and methods of construction, for securing necessary construction related permits and equipment, and for complying with all applicable provisions of the Project specifications.

2.4 Evaluation Criteria

2.4.1 Evaluation Criterion A – Quantifiable Water Savings

Describe the amount of water savings. Describe current losses. Describe the support/ documentation of estimated water savings.

The amount of conserved water by the Project is estimated to be an average of **2,788 acre feet per year (AFY)**. The estimated water savings are calculated based on reduction of "irrecoverable" canal seepage, based on recent use of the Calloway Canal, and increased utilization of the Calloway Canal after it is concrete lined to convey water by the district and on behalf of Cawelo Water District, who also utilizes the Calloway Canal for water deliveries and therefore benefits from project implementation. Current losses and support for the estimated water savings are described in the following sections.

Canal Lining/Piping

How has the estimated average annual water savings that will result from the project been determined? How have average annual canal seepage losses been determined? Have ponding

and/or inflow/outflow tests been conducted to determine seepage rates under varying conditions?

Monthly flow data were compiled at various locations along the Calloway Canal as reported in the *North Kern Water Storage District Canal Diversion Summary* available in the annual *Kern River Reports* prepared by the City of Bakersfield. Data have been summarized in Tables 1 and 2 on the following page for the period extending from 2015 through 2021.This period follows completion of lining of 3.5 miles of canal by 2015, representing current flow conditions and seepage loss along the canal.

Flow measurements at two locations along the canal, the Buck Owens Weir, and the Olive Drive Weir, are used to determine the average annual seepage losses along the 6.2 miles of canal between the two points. The amount of water lost due to seepage is calculated as the difference in water measured at the two weir locations, assuming evaporative losses are negligible. As summarized in Table 2, an average of 6,189 AFY was lost due to seepage in the between 2015 and 2021. Since 3.5 miles of the 6.2 miles between the weirs has been lined, this loss is over the remaining 2.7 miles of unlined canal. This equates to 2,292 AFY per mile of canal (6,189 AF / 2.7 miles). However, the average annual or monthly values are not reflective of daily seepage rates because the canal is only operated for parts of the year, based on water availability and delivery demand. For the period of 2015 to 2021, the canal was operated a total of 17 months or approximately 2.4 months per year. When only considering when the canal is operated for an entire month at a time, the average monthly loss is 2,549 per month or 944 AF per mile, per month. This indicates a daily seepage rate of 31 AF per day, per mile (transit loss reduction).

As noted in the diversion summary tables (Table 1 and 2), Calloway Canal operations averaged 2.4 months per year, or approximately 73 days per year. The length of the canal to be lined as part of the proposed Project is approximately 7,330 LF (or 1.4 miles). Additionally, it is expected that the concrete lining will reduce seepage up to 88 percent, which is based on a study conducted on the efficiency of lining canals with concrete. This study concluded that if lining is provided, that seepage losses could be reduced up to 88.16 percent[1]. Therefore, based solely on recent use of these facilities and expected efficiency of the concrete material, the amount of avoided seepage attributable to the proposed Project can be estimated as 2,788 AFY. The calculation for annual savings is as follows:

Project Savings = 31 AF/day/mile x 1.4 miles x 73 days/year = 3,168 AFY

= 3,168 AFY * 88 percent efficiency = **2,788 AFY**

[1]Karad, Mahesh M., et. al. *Seepage Losses Through Canals & Minors*. International Journal of Engineering Research & Technology. November 2023.

Table 1. Calloway Canal Flow at Buck Owens Weir (AF)

Calendar Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2015	-	-	-	-	-	-	-	-	-	-	-	-	-
2016	-	-	-	-	-	-	-	-	-	-	-	-	-
2017	452	2,406	7,162	12,214	27,011	35,853	18,406	906	198	-	-	-	104,608
2018	8,226	-	-	-	-	-	-	-	-	-	-	-	8,226
2019	4,253	-	1,051	1,823	21,421	25,152	20,861	1,580	-	-	-	-	76,141
2020	-	-	-	-	-	-	-	-	-	-	-	-	-
2021	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	12,931	2,406	8,213	14,037	48,432	61,005	39,267	2,486	198	-	-	-	188,975
Average	1,847	344	1,173	2,005	6,919	8,715	5,610	355	28	-	-	-	26,996
Non-Zero Average	4,310	2,406	4,107	7,019	4,216	30,503	19,634	1,243	198	-	-	-	62,992

Source: *Annual Hydrographic Reports for Kern River* (2015-2021)

Table 2. Seepage Losses between Buck Owens and Olive Drive Weirs (AF)

Calendar Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2015	-	-	-	-	-	-	-	-	-	-	-	-	-
2016	-	-	-	-	-	-	-	-	-	-	-	-	-
2017	12	1,851	2,679	3,366	4,971	4,899	4,756	1,228	198	-	-	-	3,960
2018	2,331	-	-	-	-	-	-	-	-	-	-	-	2,331
2019	3,306	-	-	1,140	4,243	3,991	3,759	596	-	-	-	-	17,035
2020	-	-	-	-	-	-	-	-	-	-	-	-	-
2021	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	5,649	1,851	2,679	4,506	9,214	8,890	8,515	1,824	198	-	-	-	43,326
Average	942	309	383	644	1,316	1,270	1,216	261	28	-	-	-	6,189
Non-Zero Average	1,883	1,851	2,679	2,253	4,607	4,445	4,258	912	198	-	-	-	14,442
Maximum	3,306	1,851	2,679	3,366	4,971	4,899	4,756	1,228	198	-	-	-	23,960
													Total Flow Months = 17
													Average Seepage Loss: 43,326 AF/ 17 Mo. = 2,549 AF/Month

Source: *Annual Hydrographic Reports for Kern River* (2015-2021)

*Excludes seepage with months that have no flow at the Buck Owens Weir

What are the expected post-project seepage/leakage losses and how were these estimates determined (e.g., can data specific to the type of material being used in the project be provided)?

As previously discussed, concrete is expected to reduce seepage loss up to 88 percent. Project savings prior to considering this 88 percent efficiency factor is 3,168 AFY and is equivalent to annual seepage loss. Based on the efficiency of concrete lining, approximately 12 percent of seepage is expected to continue. Thus, post-project seepage loss is estimated to be 12 percent of 3,168 AFY, which equates to 380 AFY.

What are the anticipated annual transit loss reductions in terms of acre-feet per mile for the overall project and for each section of canal included in the project?

As previously discussed, the transit loss reduction is calculated based on the total months of operation from 2015 to 2021. The Calloway Canal was operated 17 months or approximately 2.4 months per year. When only considering when the canal is operated for an entire month at a time, the average monthly loss is 2,549 AF per month or 944 AF per mile, per month. This indicates a daily seepage rate of 31 AF per day, per mile (transit loss reduction).

How will actual canal seepage reductions be verified?

Actual canal seepage reductions will be verified by monitoring flow between the two weirs. Measurements will be taken at the Buck Owens and Olive Drive weirs to estimate the volumetric loss of water. Additionally, regular stream gage measurements will be taken at representative locations between the weirs, including segments of the Canal that were previously lined. Additional information on performance measures is provided in Section 2.5.

Include a detailed description of materials being used.

The Calloway Canal will be lined with 4-inch-thick unreinforced concrete. Additional details on project construction are included in Section 2.4.6 – Readiness to Proceed.

2.4.2 Evaluation Criterion B – Renewable Energy

Subcriterion B.1 – Implementing Renewable Energy Projects Related to Water Management and Deliver

The proposed Project does not include construction or installation of renewable energy components. However, efficiencies from the project stemming from lining the Calloway Canal will help offset the impacts of climate change by reducing greenhouse gas emissions as described herein.

Subcriterion B.2 – Increasing Energy Efficiency in Water Management

Describe any energy efficiencies that are expected to result from implementation of the water conservation or efficiency project.

Energy efficiency will be achieved by using the proposed Calloway Canal lining segment to convey the District's Kern River water and Cawelo's Kern Exchange water. Transport through this route would create energy savings by eliminating seepage losses in the reach, thereby reducing the need to pump an equivalent amount of groundwater to meet in-district irrigation demands. Surface water deliveries measured at the Buck Owens Weir represents the District's historical Kern River water and Cawelo's Kern Exchange water deliveries, which are expected to occur in the future at a frequency of wet years similar to the past and possible increases of use due to timing of flows changing with climate change.

Additionally, a second energy benefit is that the amount of annual seepage saved will correspond to a long-term incremental reduced pumping lift for all groundwater pumping over time to meet the District's irrigation demand. This can be estimated using the representation of total pumping that occurs in North Kern in dry years. North Kern maintains approximately 100 deep wells that pump groundwater into their distribution system, mainly using the Calloway Canal as a regulating reservoir for daily deliveries. North Kern can cycle the deep wells on and off to meet off-peak energy rates in most dry years. This ability to cycle on and off typically occurs until very dry conditions during peak irrigation months, where the district needs to run wells continuously to meet irrigation demand.

If quantifiable energy savings is expected to result from the project, please provide sufficient details and supporting calculations. If quantifying energy savings, please state the estimated amount in kilowatt hours per year.

Two forms of energy savings are expected from Project implementation. Average annual energy savings are based on the conserved seepage number in water savings calculation of 2,788 AFY. This benefit is the amount of water that will not have to be pumped. A second energy savings component is the long-term incremental savings, represented by the average change in the depth to groundwater elevations over the Districts' irrigated acres for the life of the Project.

The change in elevation is based on an assumed rise in water table over the life of the project. Change is calculated by first finding the amount of water saved per District irrigated acre ((50 years x 2,788 AFY) / 52,000 irrigated acres = 2.44 AF of water per acre). Assuming 0.18 AF of water per 1 foot rise, the rise in water table is calculated as follows:

$$[2.44 \text{ AF/ac} \times (1 \text{ ft} / 0.18 \text{ AF})] / 2 = 6.77 \text{ ft of rise water}$$

The total energy savings is determined using the difference between the pre-project and post-project energy use. The assumed pre-project total dynamic head (TDH) or average static water

level is 424 feet, and the AF represents the average groundwater pumping in dry years. The post-project TDH is adjusted by the rise in the water table and groundwater pumping is adjusted by the conserved seepage number. The pre-project and post-project components are calculated using the following equations.

Water hp = TDH (ft) x flow rate (GPM) x 449 GPM/cfs) / 3,960

Input hp = Water hp / overall pump efficiency (OPE)

By dividing the Input hp by the flow rate and converting the amount to kilowatt hours per year (kWh/yr), the estimated energy savings can be found by multiplying the kWh/AF by the average groundwater pumping (AF) in dry years.

The total difference in energy use in a representative dry year pumping groundwater is 3,244,325 kWh/yr or 1,512 metric tons of carbon dioxide equivalent per year (MTCO2e/yr). The energy calculation is shown in Table 3. These energy savings are anticipated to occur in dry years, which occur 6 out of 10 years that are considered dry and require North Kern to pump groundwater (previously recharged and stored groundwater) to meet irrigation demands. Canal lining improvements are expected to last 50 years.

How will the energy efficiency improvement combat/offset the impacts of climate change, including an expected reduction in greenhouse gas emissions.

Given that the impacts of climate change may result in a reduction of available water supplies, the dependence on local aquifers has increased substantially. By lining the canal, surface water supplies delivered through the canal are better managed and seepage losses are eliminated. As a result, the quantity of groundwater pumping will decrease, thereby removing the need to replenish depleted groundwater storage.

The quantity that would be lost due to seepage is 2,788 AFY. The reduction in greenhouse gas emissions is equal to the energy saved because of reduced pumping. The calculation for energy reduction is as follows:

3,564,601 kWh/yr x 0.001 MWh/kWh x 0.4241 MTCO2e/MWh **= 1,512 MTCO2e/yr**

Table 3. Annual Operational Electrical Energy Savings

	Water hp	Q	TDH (ft)	OPE	Input hp	kWh/AF	AF	kWh	MWh	CO2e (MT)	Cost
Post-Project Well Pumping	236	5	416.6	56.4%	419	756	105,138	79,445,988	79,446	33,693	$11,916,898
Pre-Project Well Pumping	240	5	424	56.4%	426	769	107,926	83,010,588	83,011	35,205	$12,451,588
						Difference =	**(2,788)**	**(3,564,601)**	**(3,565)**	**(1,512)**	**$(534,690)**

Assumptions:

Average Pre-project pumping depth = 424'

Average Post-Project pumping depth = 417’ adjusting for 6.8’ rise in water table

Average Pre-Project District pumping of 107,926 AFY (2020 AWMP)

2,788 AFY of reduced groundwater pumping

Emission Factor conversion from MWh to kgCO2e = 424.1

Ag Energy Rate Average = $0.15/kWh

If the project will result in reduced pumping, please describe the current pumping requirements and the types of pumps (e.g., size) currently being used. How would the proposed project impact the current pumping requirements and energy usage?

Current pumping requirements range from 1,462 AFY in wet years (2019) and 110,285 AFY in dry years (2020). For the energy usage, the pumping requirement of 107,926 AFY or the average of dry years 2016 and 2020, is used. The District maintains use of approximately 100 deep groundwater wells as part of the conjunctive use program. Wet year supplies from the Kern River are recharged which are then available for recovery in dry years. Well sizes and pumping information is shown in the attached Appendix B.

The project will result in 2,788 AFY less groundwater pumping and result in a long-term incremental reduction in pumping lifts as indicated in the calculations on energy reduction.

Please indicate whether your energy savings estimate originates from the point of diversion, or whether the estimate is based upon an alternate site of origin.

The energy savings are estimated based on the use of up to 100 District owned wells during dry years that supplement the surface water deliveries available from the Kern River. North Kern recharges the groundwater during wet years which is stored in the groundwater beneath the District for recovery of Kern River water supply in dry years.

Does the calculation include any energy required to treat the water if applicable?

No. The district uses non-treated, potable water that is suitable for agricultural irrigation.

Will the project result in reduced vehicle miles driven, in turn reducing greenhouse gas emissions? Please provide supporting details and calculations.

No, GHG reduction is realized through reduced pumping and reduced vehicle miles is not relied on as a measure of reduced greenhouse gas emissions for this project improvement.

Describe any renewable energy components that will result in minimal energy savings/production (e.g., installing small-scale solar as part of a SCADA system).

The project does not have any renewable energy components such as SCADA or small-scale solar that will result in minimal energy savings/production.

2.4.3 Evaluation Criterion C – Other Project Benefits

Resilience and Sustainability Benefits

Will the project address a specific water and/or energy sustainability concern? Explain and provide detail of the specific issue(s) in the area that is impacting water resilience and sustainability.

The Project will address supply reliability, which is achieved through conveyance capacity improvements that will increase water delivered to the region. Regional water resilience and sustainability are directly tied to climate change, which has heavily impacted the region in recent years. Due to climate change, North Kern, and other users in the Kern Subbasin, have experienced an increased frequency of severe droughts interspersed with severe wet periods, which has decreased the amount of water delivered to the region, impacting beneficial uses including agricultural, industrial, and municipal. Regional groundwater sustainability is reliant on imported surface water. Any effort to increase delivery of water to the regional will aid in the sustainable management of groundwater resources.

Over the past two decades, North Kern and other users in the Kern Subbasin have focused planning efforts on combatting regional issues such as climate change, water supply reliability, and drought vulnerability. Planning efforts such as the Poso Creek Integrated Regional Water Management (IRWM) Plan, the Poso Creek Drought Contingency Plan (DCP), and North Kern's Management Area Plan developed in compliance with California's Sustainable Groundwater Management Act (SGMA) are key documents that address these sustainability issues. Each plan identifies several projects and management actions that seek to offset the impacts described above. This Project is identified in each of these plans as a key step in addressing supply reliability and groundwater sustainability. Further, having an additional lined conveyance route provides a level of redundancy in regional water conveyance that did not previously exist thus optimizing wet year water deliveries, which are expected to occur more frequently with climate change.

Describe the recent, existing, or potential drought or water scarcity conditions in the project area. Is the project in an area that is experiencing, or recently experienced, drought or water scarcity? Describe any projected increases to the severity or duration of drought or water scarcity in the project area.

California has experienced extensive drought and water scarcity in recent years. The region suffered an intense drought between 2012 and 2016.[2] This period saw a significant increase in the rate of groundwater depletion, doubling in comparison to previous years. Groundwater storage in the San Joaquin Valley has been depleting at an average rate of 1.5 million acre-feet per year since 1962; this rate doubled during the mentioned drought period.[3]

In Water Year 2021 (October 1, 2020, to September 30, 2021), California experienced extreme conditions of temperature and precipitation, leading to drought and water scarcity conditions. Water Year 2021 was preceded by another dry and warm year, Water Year 2020, which was the fifth driest year in terms of statewide runoff; Water Year 2021 was the second driest.[4] This was

[2]California Natural Resources Agency. Report to the Legislature on the 2012-2016 Drought. March 2021.
[3]Viers, Leroy Westerling, and Josué Medellín- Azuara. 2021. Regional Report for the San Joaquin Valley Region on Impacts of Climate Change. California Natural Resources Agency. Publication number: SUM-CCCA4-2021-003.
[4]California Department of Water Resources. September 2021. Water Year 2021: An Extreme Year

followed by a Proclamation of a State of Emergency due to drought issued by California's Governor in April, May, and July of 2021, covering a total of 50 counties including Kern County, where the District resides. The State of Emergency is still in effect today despite recent wet years. This two-year (Water Years 2020 and 2021) dry period exemplifies the trend of climate change that California has been experiencing in the 21st century. Drought ended in 2023 with a severe and unprecedented wet year that had catastrophic impacts to California communities, farming, and infrastructure. This swing between the prolonged drought and severe wet year is illustrated by Figure 2.

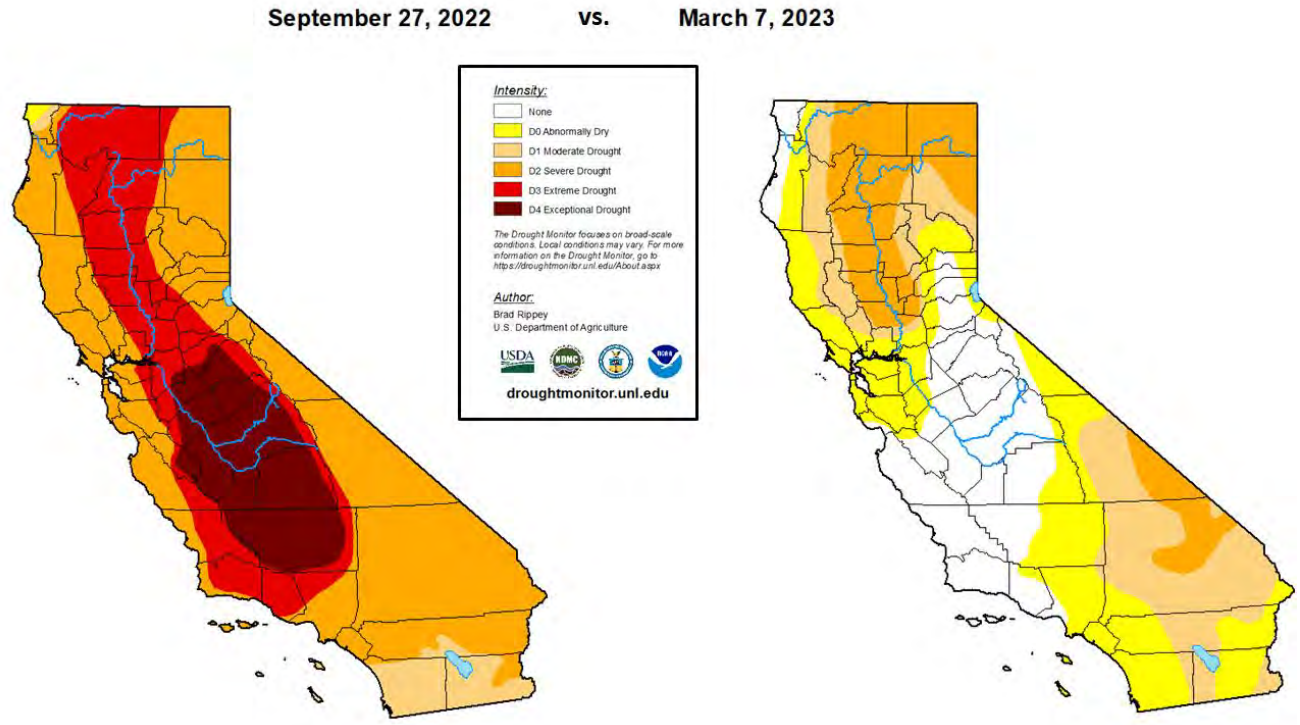


Figure 2. U.S. Drought Monitor Tool Map

As shown in the U.S. Drought Monitor tool (Figure 2), Kern County went from being in an area experiencing "Exceptional Drought" in September 2022 to "Moderate Drought to "Abnormally Dry" and some areas with non-drought conditions ("None"). The comparison of these two time periods illustrates the rapid changes of California's climate and how severe these changes can be.

As of February 2024, California is not experiencing drought; however, due to the cyclical nature of droughts in California, it is highly likely that drought will be experienced again. This is highlighted by the climate assessment in the Poso Creek DCP that North Kern developed with other members of the Poso Creek IRWM Group. The climate assessment includes climate conditions for 2030 and 2070, which highlight an anticipated decrease in both volume and dependability of the water supply sources such as the Kern River, Central Valley Project (CVP),

and State Water Project (SWP), consequently leading to reduced surface water deliveries to the region and an increased reliance on groundwater resources. The DCP emphasized that historical data predicts an inevitable reduction in primary water sources in the coming years as a result of climate change, which could expose the region to increased drought vulnerabilities. This became a reality in recent years when CVP and SWP surface allocations were reduced to 0 percent for most contractors in 2022, and a minimal amount in 2023 as a result of drought conditions.

Explain and provide detail of the specific issue(s) in the area that is impacting energy sustainability, such as reliance on fossil fuels, pollution, or interruptions in service.

The passage of California's SGMA highlighted a crucial barrier to sustainability – groundwater overdraft. North Kern resides in the Kern Subbasin, which was identified as a high priority basin for addressing groundwater overdraft. North Kern and other members of the Kern Subbasin have been working to develop a Management Area Plan in compliance with SGMA, which identifies several issues associated with groundwater overdraft. These issues include groundwater well dewatering and increased pumping lift. Well dewatering can lead to increased maintenance costs and reduced well lifespan due to corrosion of well casings and screens. Increased pumping lift results in increased energy use necessary per unit volume of groundwater pumped and corresponding higher pumping costs, as well as increased wear and tear on well pump motors and reduced well efficiency.

Please describe how the project will directly address the concern(s) stated above.

As previously highlighted, groundwater sustainability is reliant on imported surface water. Any effort to increase supply reliability of imported surface water supports groundwater sustainability. The proposed Project will optimize surface water deliveries by mitigating seepage losses, provide additional water for groundwater recharge that is needed to maintain groundwater levels, and mitigate the issues described above. Higher groundwater levels reduce pumping lift which in turn decrease energy required to pump and prevents unnecessary wear and tear on wells.

Will the project directly result in more efficient management of the water supply? For example, will the project provide greater flexibility to water managers, resulting in a more efficient use of water supplies?

Implementation of the Proposed Project will lead to the more efficient management of water supply by allowing for the increased delivery of Kern River supplies, which the District relies on to support drought resiliency in the region. A major concern in the basin is managing water to maintain groundwater levels and providing water for irrigation. By lining this portion of the Calloway Canal, more water can be delivered to the District leading to a reduction in groundwater pumping during dry years when the groundwater system is stressed due to drop

in water levels. This also allows for the better use and flexibility of the District's conjunctive use system.

Please address where any conserved water as a result of the project will go and how it will be used. Indicate the quantity of conserved water that will be used for the intended purpose(s). Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.

Conserved water as a result of the Project amounts to approximately 2,788 AFY, which will be used to meet current irrigation demand or will be recharged to replenish groundwater levels. Utilizing surface water directly reduces the amount of groundwater pumping required to meet irrigation demand. Additionally, raising groundwater levels reduces the amount of pumping lift required to later extract recharged groundwater, providing energy savings. As previously discussed, groundwater sustainability is vital to regional water resilience. The Project is identified in the District's Management Area Plan developed under SGMA as a project to implement to help achieve groundwater sustainability and in the Poso Creek DCP to mitigate drought impacts.

Ecological Benefits

Will the project benefit species?

By reducing seepage to marginal quality groundwater, reducing pumping demand of higher quality groundwater, and helping support groundwater elevations underlying irrigated lands, the proposed Project has the potential to benefit local species. Kern County has more than two dozen threatened and endangered species. As demonstrated by the Kern Water Bank, actions that support local groundwater may assist in restoring wetland and upland habitat via in-lieu groundwater recharge. Species that may benefit include the San Joaquin kit fox (*Vulpes macrotis mutica*); Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*); and San Joaquin wooly threads (*Monolopia congdonii*).

The proposed Project will indirectly benefit federally listed threatened or endangered species by improving the regulation of water supplies that have been rendered less reliable due to the imposition of measures designed to protect threatened and endangered species. These measures include seasonal pumping restrictions in the Sacramento River-San Joaquin River Delta (Delta) and restoration of flows below Friant Dam on the San Joaquin River. The pumping restrictions reduce the amount and constrain the timing of deliveries of SWP and CVP water pumped from the Delta and the deliveries of CVP-Friant Division supplies. The Poso Creek Region, to which North Kern belongs, includes districts with contracts for water from both of these sources. With regard to the San Joaquin River, the relevant species is the federally threatened (spring run)/endangered (winter run) Chinook Salmon.

Will water remain in the system for longer periods of time? If so, provide details on current/future durations and any expected resulting benefits (e.g., maintaining water temperatures or water levels, recreational benefits, etc.)

Lining the Calloway Canal will keep water in the system for longer periods of time by reducing seepage loss. When lined, the Calloway Canal will be able to deliver more Kern River water to the District, which will help reduce pumping and maintain groundwater levels in the region. As previously discussed, unlined portions of the canal currently lose approximately 31 AF per day per mile from seepage. Lining will mitigate this loss with water savings the District will use to help maintain groundwater levels for the region, providing benefits to multiple beneficial users including communities who rely on groundwater for drinking water, agriculture, and other industries.

Will the proposed project reduce the likelihood of a species listing or otherwise improve the species status?

The proposed Project contributes to the State's co-equal goals, as defined in the Amended Memorandum of Agreement Regarding Collaboration on Planning, Design and Environmental Compliance for the Delta Habitat Conservation and Conveyance Program in Connection with the California Bay Delta Conservation Plan (First Amendment MOA Collaboration BDCP, December 15, 2011). The implementation of co-equal goals is intended to provide reliable water supply for California while protecting, restoring, and enhancing the Delta ecosystem and habitat (SB1, Steinberg- Section 85054). The reach of the Calloway Canal proposed to be lined under this grant proposal, will enhance the use of the Calloway Canal in wet years to increase flexibility in timing and to complete exchanges of water deliveries that may help with the environmental water deliveries, thus, helping to improve status of several species. With regard to the Delta, relevant species include the following:

- Delta smelt (*Hypomesus transpacificus*) federally threatened;
- Longfin smelt (*Spirinchus thaleichthys*), San Francisco Bay-Delta distinct population segment (DPS), federal candidate;
- Green sturgeon (*Acipenser medirostris*), southern DPS, federally listed threatened;
- Steelhead (*Oncorhynchus mykiss iridium*), California Central Valley DPS, federally threatened;
- Chinook salmon (O. *tshawytscha*), winter-run, federally endangered; and
- Chinook salmon (O. *tshawytscha*), Sacramento River spring-run, federally threatened.

Climate Change

Describe how the project addresses climate change and increases resiliency. For example, does the project help communities adapt to bolster drought resilience?

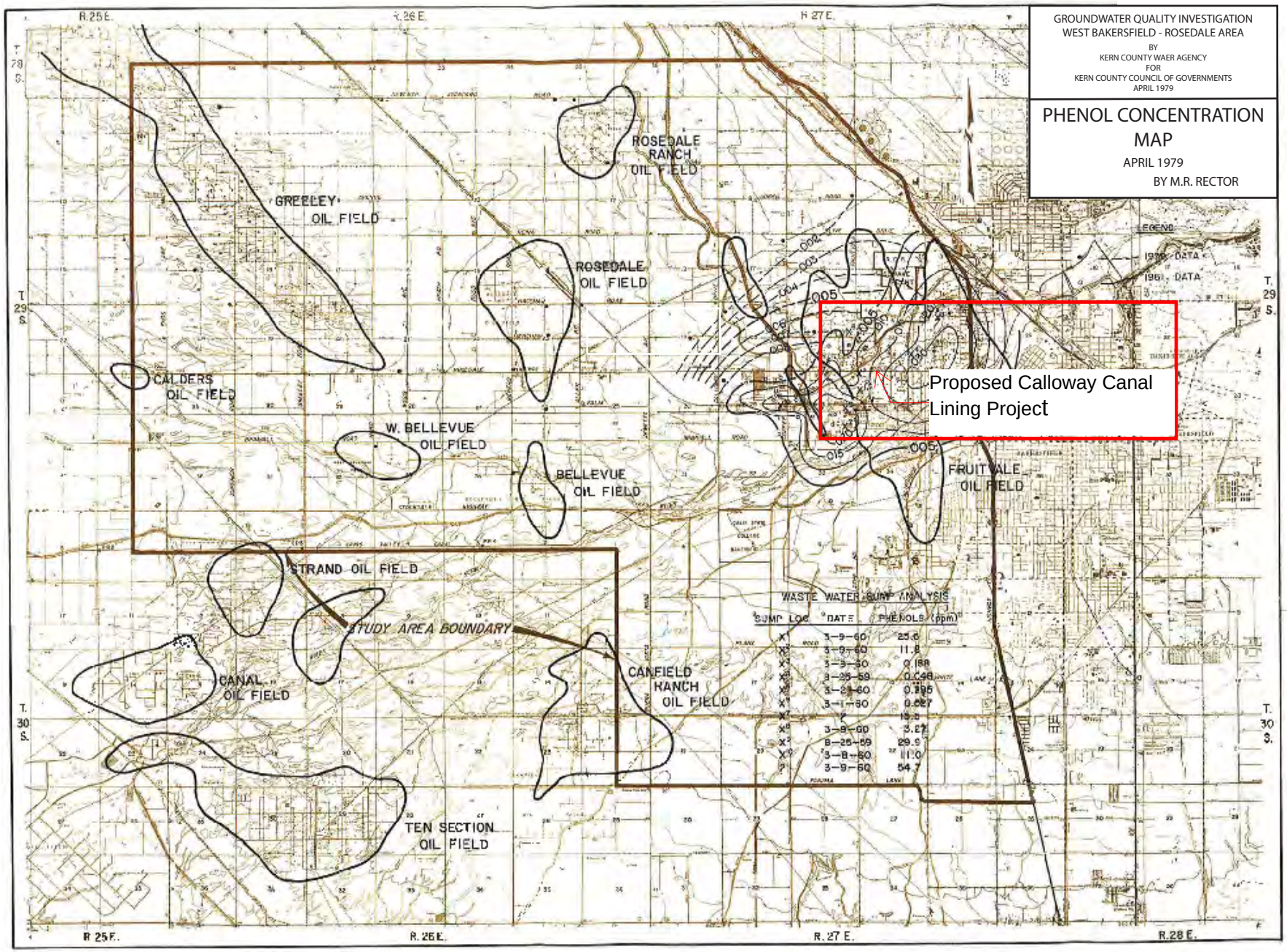
North Kern is part of the Poso Creek IRWM Group, which includes several water districts and disadvantaged communities in Kern County. This Group was established with a primary purpose of achieving regional collaboration by identifying long-term goals to improve water sustainability within Kern County. The Calloway Canal Lining is an important component in the recently completed Poso Creek DCP, developed in a collaborative effort with Reclamation. The DCP seeks to develop short- and long-term planning to mitigate climate change induced drought in the region. As part of this, projects were identified to help prepare for and better manage water during dry or drought periods. These projects, such as the proposed, seek to bolster regional drought resiliency for all beneficial users by increasing supply reliability. This Project was identified in the Poso Creek DCP as a means to improve drought resiliency by increasing reliability of Kern River supplies delivered by the Calloway Canal.

Does the project seek to improve ecological resiliency to climate change?

Overall, the Project will result in less dependence on groundwater. This is essential considering the lack of surface water supplies due to constraints on conveyance of contract supplies into the region and occurrences of severe drought in the Kern Subbasin, which are expected to occur more frequently with climate change. Conserved water will help meet existing agricultural demand within North Kern that is presently met by pumped groundwater, thus improving the use of groundwater for all users. The Project will minimize seepage losses and help with flexibility in timing of deliveries, which helps ecological resources and resiliency in the region to combat climate change.

Does the proposed project seek to reduce or mitigate climate pollutions such as air or water pollution?

The proposed lining segment overlays an area where historical data shows that the presence of petrochemical discharge is present in the groundwater (Figure 3). The presence of phenol makes the groundwater unusable without secondary or tertiary treatment, which is often cost-prohibitive. Any measures that minimize seepage to poor quality groundwater, which the Project does, mitigates movement of these phenol concentration plumes and prevents further groundwater contamination. Project implementation will ensure that more water can be delivered for recharge in areas with higher quality groundwater while also reducing seepage to poorer groundwater quality beneath the unlined segment.



North Kern Water Storage District	GEI Consultants Bookman-Edmonston Division	Phenol Concentration Map
Kern County, California	FEBRUARY 2024	Figure 3

Does the proposed project include green or sustainable infrastructure to improve community climate resiliency?

Supply reliability plays a vital role in improving community climate resilience. With prolonged drought periods occurring more frequently, it is crucial to capture and convey as much wet-year surface water as possible to use as supply during drought years. The Project will increase the amount of water delivered to the District for direct beneficial use or for groundwater recharge. The Kern Subbasin is a shared aquifer, with multiple users who rely on sustainable groundwater management including communities that rely on groundwater as their sole source of drinking water. Water brought in by the District and recharged within the District benefits all extractors in the Kern Subbasin; however, successful groundwater recharge depends on improved conveyance. Therefore, Project implementation will improve climate resiliency by increasing overall supply reliability for the region through conveyance improvements.

2.4.4 Evaluation Criterion D – Disadvantage Communities, Insular Areas, and Tribal Benefits

Subcriterion D.1 Disadvantaged Communities

If applicable, describe how the proposed project will serve or benefit a disadvantaged community, identified using the tool. For example, will the project improve public health by addressing water quality, add new water supplies, provide economic growth opportunities, or provide other benefits in a disadvantaged community?

According to the *White House Council on Environmental Quality's interactive Climate and Economic Justice Screening Tool*, most of the area within North Kern's district boundaries is classified as disadvantaged. The District is made up of largely unincorporated rural areas but does include part of the city of Shafter, a disadvantaged community (DAC). Additionally, several other DACs including the cities of McFarland and Wasco are nearby and utilize the shared aquifer. All three of these communities rely solely on groundwater for drinking water. Projects that promote groundwater sustainability ensure that there is a reliable and consistent drinking water supply for these communities. As previously discussed, the proposed Project will decrease dependence on groundwater by reducing seepage loss in the Calloway Canal and ensuring the full amount of water is delivered to the District for direct use or groundwater recharge. This augments supply and supports groundwater levels within the District and decreases regional dependence on groundwater pumping beyond the annual stored amount. This directly benefits disadvantaged communities reliant on groundwater. When groundwater levels decrease, availability and reliability of drinking water is threatened. Lower groundwater levels in these vulnerable communities can lead to dry wells in areas where water is provided by small systems and/or private shallow wells in rural unincorporated areas that do not have alternative water supplies.

These issues are highlighted by the California State Water Resources Control Board's (State Water Board) Safe and Affordable Funding for Equity and Resilience (SAFER) Program, which was developed to provide funding for short- and long-term solutions for communities that lack reliable and affordable drinking water. This Program was developed as a result of the State Water Board's recognition that millions of Californians lack access to safe, reliable, and affordable drinking water. The proposed Project supports the District's conjunctive use management program which supports the sustainable management of both groundwater and surface water supplies. In turn, mitigating seepage by lining the Calloway Canal will ensure more water is delivered to the District, which will augment groundwater levels that support supply reliability and affordability for communities by mitigating drought impacts as described above.

Additionally, promoting groundwater sustainability may contribute to the long-term economic development and resilience of these communities. Many disadvantaged communities in the region rely on agriculture as a primary source of employment and income. The availability of sustainable groundwater resources supports agriculture activities, ensuring the economic viability of these communities. Moreover, reducing seepage and ensuring full delivery of water supplies reduces groundwater dependence, provides a more resilient water supply, and reduces the community water supply vulnerabilities during drought periods or other water stresses.

2.4.5 Evaluation Criterion E – Complementing On-Farm Irrigation Improvements

Describe any planned or ongoing projects by farmers/ranchers that receive water from the applicant to improve on-farm efficiencies. Provide a detailed description of the on-farm efficiency improvements.

While the District continuously collaborates with landowners that receive water from the District to improve on-farm efficiencies, there are no planned or ongoing projects with the Natural Resources Conservation Service (NRCS) at this time.

2.4.6 Evaluation Criterion F – Readiness to Proceed

Identify and provide a summary description of the major tasks necessary to complete the project.

The District is well positioned and prepared to implement the Project upon entering into a grant agreement. The District is in the process of implementing similar projects which will provide a foundation of experience that will allow for efficient and effective Project implementation. Further, the District has implemented several projects under grant agreements with Reclamation. This experience has prepared the District to efficiently navigate implementation and coordination with Reclamation at various steps of the process, including pre-award agreement development; biological resources, cultural resources, and NEPA review; and agreement administration and progress and financial reporting.

The implementation plan consists of a series of tasks that will be performed by consultants, engineers, and contractors including the following.

- Task 1 Grant Administration and Reporting
- Task 2 Design
- Task 3 Environmental
- Task 4 Contracting
- Task 5 Permits
- Task 6 Construction
- Task 7 Construction Management

Tasks are aligned with services discussed in the Budget Narrative and presented in the Schedule. Tasks, including anticipated milestones, are described further below.

1. **Grant Administration and Reporting**

   A consultant will be engaged to provide grant administration services, including but not limited to the following:

   - Preparation of interim and final progress and financial reports
   - Agreement related cost tracking
   - Preparation of agreement amendments requests and schedule modification requests, as needed
   - Review and advisement of agreement related regulations
   - Coordination with Reclamation

   Grant administration tasks will continue for the duration of the Project and grant agreement, including through agreement close-out and the final project and financial report.

   Anticipated Milestones:

   - Submittal of Interim Performance and Financial Reports
   - Submittal of Final Performance and Financial Report

2. **Design**

   Project design and engineering will be informed by the District and engineer's experience with previous canal lining projects. An engineer will be engaged to complete the design of the proposed Project. It is anticipated that major components of the design task will include geotechnical investigation and utility investigation; preparation of preliminary, 50%, 90% and final design packages; preparation of specifications that meet industry and grant related standards and requirements; and preparation of a cost estimate.

Anticipated Milestones:

- Preliminary design
- 50% design
- 90% design
- Final design
- 90% specification package
- Final specification package

3. Environmental Documentation

Environmental and cultural resources considerations are discussed further in Section 4. Environmental and cultural documentation is presented below as tasks in the plan to implement the Project.

Task 3.1 CEQA

As the Project is located in California, and if awarded funding will have a Federal nexus, the Project is subject to the California Environmental Quality Act (CEQA) and, it is anticipated that the Project will be subject to the National Environmental Policy Act (NEPA). With regard to CEQA, North Kern is currently preparing a draft Initial Study/Mitigated Negative Declaration (IS/MND) for the lining of the Calloway Canal from the Cross Valley Canal to the Kern River (approximately 4.22 miles), which includes the proposed lining segment in this application. The IS/MND will be available for public review for approximately 30 days followed by adoption by the District's Board of Directors. Following, public review, a Notice of Determination will be filed with the California State Clearinghouse and the Kern County Clerk, as required.

Task 3.2 NEPA

The completed CEQA will be used to inform and/or supplement the NEPA process. If the Project is selected for funding, the District and its NEPA consultant will work with Reclamation's biological resources, cultural resources, and NEPA staff to determine the level of documentation required and on consultation with various agencies, as needed. North Kern acknowledges earth-disturbing activities cannot commence until Reclamation provides a notice to proceed.

Task 3.3 Pre-Construction Surveys and Training

As required, a qualified biologist will complete pre-construction surveys and conduct Worker Environmental Awareness Program (WEAP) training for construction personnel prior to commencing construction site work, as needed.

Anticipated Milestones:

- Completion of surveys

- Public review period of IS/MND
- Board adoption of IS/MND
- Commencement of coordination with Reclamation NEPA, biological resources, and cultural resources staff
- Commencement of agency consultations (ex. State Historic Preservation Office)
- Completion of agency consultations
- Completion of documentation (ex. Categorical Exclusion Checklist)
- Receipt of Notice to Proceed from Reclamation
- Completion of pre-construction surveys
- Completion of WEAP training

4. Construction Contracting

The Project will be advertised for bid using the prepared design and specifications. The construction contracts will be procured in accordance with applicable public contracting codes, the Code of Federal Regulations, and the District's purchasing policy. It is anticipated that the estimated dollar amount of the construction contract will require a formal, competitive bid process. It is anticipated that the bids will be advertised in a local newspaper and online planrooms for a duration of approximately four weeks. The engineer will conduct the bid process including coordination of advertisements and with planrooms, coordination with bidders, conducting a pre-bid meeting, responding to request for information, issuing addenda (as needed), conducting a bid opening meeting, evaluating bids, and assisting with awarding a contract. It is anticipated that the construction contract will be awarded to the lowest responsive and responsible bidder.

Anticipated Milestones:

- Advertisement of bid
- Pre-bid Conference
- Bid opening
- Award of contract

5. Permits

The District, engineer, and contractor will coordinate to obtain the required permits; however, permits will be the responsibility of the contractor and associated costs are to be included in the construction contract. Anticipated permits are discussed further below, per the Notice of Funding Opportunity's specific permit related questions.

Anticipated Milestones:

- Submittal of NPDES application
- Receipt of WDID number
- Submittal of Dust Control Plan

- Receipt of PM-10 Permit

6. Construction

As previously discussed, the construction contract will be awarded to the lowest responsive and responsible qualified bidder. The construction contract will be to furnish and install the project components defined by the specifications, as further described in Section 2.3 – Project Description. To the extent it is required under the contract, material will be procured in compliance with the *Build America, Buy America Act*. Labor will be obtained in compliance with applicable regulations including the *Davis-Bacon Act* and prevailing wage, as required.

Anticipated Milestones:

- Notice to Proceed/Mobilization
- Material testing and sampling
- 50% Complete
- Start-up and system testing
- 100% Complete and Demobilization

7. Construction Management

An experienced construction management consultant will be engaged to observe construction. Construction management tasks include construction observation; coordination and conducting of construction progress meetings; reviewing and responding to submittals; reviewing and responding to requests to information; preparing change orders as needed; reviewing invoices and recommending payments to the District; project closeout coordination; and general coordination with the contractor and District.

Anticipated Milestones

- Pre-construction kick-off meeting
- Weekly progress meetings
- Project acceptance
- Retention payment release
- Notice of Completion filing

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

Construction is anticipated to occur on District property or exclusively within maintained rights-of-way owned and operated by the District. It is noted that the District is not subject to Kern County's building and grading permits. Accordingly, encroachment permits are not anticipated to be necessary, but in the event that an encroachment permit is needed, appropriate processes will be followed and required permits will be obtained.

A National Pollutant Discharge Elimination System (NPDES) Permit and Dust Control Plan or notification will be obtained by the contractor under the construction contract, as needed. The

NPDES process will be completed by the contractor or their subcontractors and is expected to take four to six months. This process includes preparation of a Notice of Intent and Stormwater Pollution Prevention Plan (SWPPP) that includes Best Management Practices to prevent waste pollutants from flowing to surface water and groundwater and will be reviewed by the California Water Resources Control Board (State Board). Upon approval by the State Board, a Waste Discharge Identification (WDID) is expected to be issued. The NPDES process is expected to commence shortly after the construction contract is awarded and will be completed prior to construction. Preparation of the application documents and receipt of the WDID number is expected to take approximately six weeks.

For the Dust Control Plan, application or notification will be made by the contractor to the San Joaquin Valley Air Pollution Control Board for a PM-10 Dust Management Plan permit, which will require dust control management be implemented during construction to prevent air pollution. This process will take approximately six weeks and will commence shortly after a construction contract is awarded and will be completed prior to construction.

Identify and describe any engineering or design work performed specifically in support of the proposed project.

Preliminary design activity has commenced in support of the CEQA process and grant application process. Preliminary design activity to date has generally been related to reviewing the project footprint for conflicts and drafting a project description of enough detail to complete the IS/MND. A preliminary cost estimate has been prepared. Further, design for segments of the Calloway Canal that have been previously lined will be referenced as a basis for the preliminary design of this Project.

Describe any new policies or administrative actions required to implement the project.

The District does not anticipate the need for any policies to implement the Project. The District acknowledges that a resolution from the Board of Directors will be required if the Project is selected for funding. Further, the Board of Directors will take action, as needed, to award a construction contract and other non-construction agreements with engineers and consultants. No other administrative actions are anticipated to be needed to implement the Project.

Describe the current design status of the project. If additional design work is required prior to construction, describe the planned process and timeline for completing the design.

The Project is currently in the preliminary design phase. Additional design work will be required prior to construction including completion of various levels of design drawings (i.e., 50%, 90%, final), conflict and utility locating as needed, and preparation of specifications. The plan to complete design work includes commencing advancing the level of design upon potential notification of grant award, review of design by the District, and finalizing design drawings. It is anticipated that design will be completed approximately three months prior to construction, in

order to allow for enough time to complete the construction contracting process.

Please also include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. Was the expected timeline for environmental and cultural compliance discussed with the local Reclamation regional or area office?

The following schedule is estimated under the following assumptions based on statements in the Notice of Funding Opportunity: notification of selection for award will be made in the summer of 2024 and awards are anticipated to be made on December 31, 2024. The schedule is estimated based on planned implementation of the above-discussed tasks. The proposed schedule includes completion within Reclamation's required three-year duration for Funding Group 3.

It is noted that the applicant has discussed environmental and cultural compliance with Reclamation staff. In the winter of 2023, during NEPA meetings for a different project, the District's consultant and Reclamation staff discussed CEQA and NEPA documentation for a series of Calloway Canal lining projects. The District plans to line the Calloway Canal from the Cross Valley Canal Intertie to the Kern River, a distance of approximately 4.22 miles. The District has been awarded a grant to line 1 mile of the 4.22 miles and this application is to line another approximately 1.4 miles of the 4.22 miles. The District proposed to produce an IS/MND for CEQA compliance the entire 4.22 miles. The District's consultant and Reclamation discussed that one IS/MND would be acceptable for reference during the NEPA process, but that separate NEPA, and agency consultations would be required for each grant scope. In an effort to make the most efficient use of the IS/MND during the NEPA process, the IS/MND will discuss the 4.22 miles in approximately one-mile segments. The expected timeline of the IS/MND and the NEPA process for the 1-mile segment not included in this application was discussed; however, the timeline for environmental and cultural compliance for the scope in this application was not discussed in detail.

Table 4. Schedule

Stage		Major Tasks and Milestones	Duration	Estimated Start Date	Estimated Completion Date
Administration					
	Task 1	**Grant Administration and Reporting**	**36 months**	**January 1, 2025**	**December 31, 2027**
	Milestone	Submittal of Semi-Annual Reports			
	Milestone	Submittal of Final Reports			
Engineering					
	Task 2	**Design**	**36 months**	**February 1, 2024**	**January 31, 2027**
	Milestone	Preliminary Design			
	Milestone	50% design			
	Milestone	90% design			
	Milestone	Final design			
	Milestone	90% specifications			
	Milestone	Final specifications			
Environmental					
	Task 3.1	**CEQA**	**18 months**	**June 1, 2023**	**December 31, 2024**
	Milestone	Completion of Surveys			
	Milestone	Public Review of IS/MND			
	Milestone	Board Adoption of IS/MND			
	Task 3.2	**NEPA**	**12 months**	**January 1, 2025**	**December 31, 2025**
	Milestone	Commencement of Coordination with USBR			
	Milestone	Commencement of Agency Consultations			
	Milestone	Completion of Agency Consultations			
	Milestone	Completion of Documentation (ex. CEC)			
	Milestone	Receipt of Notice to Proceed from Reclamation			
	Task 3.3	**Pre-Construction Surveys and WEAP Training**	**1 month**	**April 1, 2027**	**May 1, 2027**
	Milestone	Completion of Pre-Construction Surveys			
	Milestone	Completion of WEAP Training			

Construction				
Task 4	**Contracting**	**59 days**	**February 1, 2027**	**March 31, 2027**
Milestone	Advertisement of Bid			
Milestone	Pre-bid Conference			
Milestone	Bid Opening			
Milestone	Award of Contract			
Task 5	**Permits**	**30 days**	**March 1, 2027**	**April 30, 2027**
Milestone	Submittal of NPDES application			
Milestone	Receipt of WDID number			
Milestone	Submittal of Dust Control Plan			
Milestone	Receipt of PM-10 Permit			
Task 6	**Construction**	**153 days**	**May 1, 2027**	**September 30, 2027**
Milestone	Notice to Proceed/Mobilization			
Milestone	Material Testing and Sampling			
Milestone	50% Complete			
Milestone	Start up and system testing			
Milestone	100% Complete & Demobilization			
Task 7	**Construction Management**	**153 days**	**May 1, 2027**	**September 30, 2027**
Milestone	Pre-construction kick-off meeting			
Milestone	Weekly progress meetings			
Milestone	Project acceptance			
Milestone	Retention Payment Release			
Milestone	Notice of Completion Filing			

2.4.7 Evaluation Criterion G – Collaboration

Is there widespread support for the project? Please provide specific details regarding any support and/or partners involved in the project. What is the extent of their involvement in the process? What is the significance of the collaboration/support?

This Project has widespread support from a diverse set of stakeholders, which is demonstrated by the Letter of Support from the Poso Creek IRWM Group (Group) in Appendix A. This Group is made up of various stakeholders including irrigation districts, a water conservation district, and several disadvantaged communities. In collaboration with the Group, North Kern developed the previously mentioned Drought Contingency Plan that was partially funded by Reclamation and that identified this Project as a high priority project. Additionally, this Project is identified in the District's Management Area Plan developed under SGMA, which consisted of a robust outreach program that included the input of all beneficial users including agricultural, industrial, and municipal. These complementary planning efforts illustrate the immense support for this Project and its goal of achieving groundwater sustainability, drought resiliency, and supply reliability.

Will this project increase the possibility/likelihood of future water conservation improvements by other water users?

As previously discussed, North Kern is a member of the Poso Creek IRWM Group (Group). Projects that conserve water have been prioritized as part of the Group's goals outlined in the 2019 Poso Creek IRWM Plan Update (Poso Creek Plan). Implementation of the Project supports the overall intent of the Poso Creek Plan and encourages collaboration with participating member agencies to build on previous planning and construction efforts to conserve water. Participants of the Group have a long history of implementing projects with benefits beyond their district boundaries to support regional sustainability. Successful Project implementation provides benefits to the region that fosters increased collaboration and provides incentive to implement future water conservation improvements by other water users in the region.

Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal and industrial, environmental, recreation, or others)?

Project implementation increases supply reliability for the entire Kern Subbasin. The Kern Subbasin is a shared aquifer that provides benefits to multiple users and sectors including agricultural, industrial, and municipal. Any water better managed and any increase in supply reliability directly benefits users of the shared aquifer who rely on delivery of surface water for groundwater replenishment to support industry (agricultural and other) and drinking water. By lining the Calloway Canal, North Kern is improving supply reliability by increasing the amount of surface water that can be delivered to the District for direct beneficial use or for groundwater recharge that can later be used during dry or drought years when surface water is scarce.

2.4.8 Evaluation Criterion H – Nexus to Reclamation

Describe the nexus between the proposed project and a Reclamation project or Reclamation activity. Does the applicant have a water service, repayment, or operations and maintenance (O&M) contract with Reclamation?

The District is not a registered CVP contractor; however, the District has several licenses for the installation, operation, and maintenance of structures on the Friant-Kern Canal (FKC), a Reclamation owned facility that is part of the CVP. These licenses have been issued to allow North Kern to operate and maintain discharge from groundwater wells into the FKC as part of a project unrelated to this application that operates by returning previously banked CVP contract water by CVP project partners from North Kern via the FKC.

If the applicant is not a Reclamation contractor, does the applicant receive Reclamation water through a Reclamation contractor or by any other contractual means?

The proposed Project is in the Tulare Lake Basin, which also includes Reclamation's FKC. Although North Kern is not a registered CVP contractor, it has a direct conveyance connection with CVP water supplies and often receives delivery of surface water on behalf of neighboring districts with CVP contract water supplies through turnouts located along the FKC. The CVP contractors often have a right to surplus CVP flows in addition to their CVP Class 1 and Class 2 supplies, and in wet years need to utilize banking facilities for groundwater recharge and storage to increase the reliability of their supply. In another instance, Shafter-Wasco Irrigation District exchanges Reclamation's water with North Kern by diverting water into their district from the more conveniently located Calloway Canal. North Kern effectively utilizes its absorptive capacity to bank excess water during wet years for its federal contractor neighbors and returns water to them during the dry years using canals such as the Calloway Canal.

Will the proposed work benefit a Reclamation project area or activity?

Optimizing the Calloway Canal to mitigate seepage loss directly benefit the CVP contractors who utilize the canal to return banked CVP supplies. Additionally, as discussed previously, the Calloway Canal provides an alternate conveyance route for CVP supplies that maybe restricted by restrictions in the FKC. This enables operational flexibility for all these districts by allowing effective utilization of their surface water sources when available and promotes regional cooperation towards making this basin self-sufficient.

Is the applicant a tribe?

The applicant is not a tribe.

2.5 Performance Measures

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project.

Following Project completion, measurements will continue to be taken at Buck Owens Weir and Olive Drive Weir to estimate the volumetric loss of water. The proposed performance measure quantification method is simply explained below. With Project implementation, volumetric water loss is expected to decrease.

Total Seepage = Seepage Loss at Olive Drive Weir – Seepage Loss at Buck Owens Weir *A decrease in seepage compared to previous years equates to Project water savings

Since seepage loss varies per year and water year type, annual seepage loss will be compared from year to year to measure average seepage loss reduction. This average will consider water year type and operations to determine Project performance. Additionally, occasional stream gage measurements will be taken at locations between the weirs. These locations include segments of the Calloway Canal that were recently lined and will help determine lining efficiency.

3 Budget

The budget is presented in the Budget Narrative Attachment Form, uploaded in Grants.gov.

4 Environmental and Cultural Resource Considerations

North Kern is currently preparing a Draft Initial Study/Mitigated Negative Declaration (IS/MND) for lining of the Calloway Canal from the Cross Valley Canal to Kern River (approximately 4.22 miles), which includes the proposed lining segment in this application. The IS/MND will be used as the basis to complete environmental documents, including a Biological Assessment (BA) and Cultural Resources Inventory and Evaluation Report.

In April 2021, Reclamation prepared a combined Categorical Exclusion Checklist (CEC) for the Calloway Canal Lining (North of Snow Road) and Water Delivery Improvements and Calloway Canal Lining (North of Snow Road 2200 LF to 6041 LF). Reclamation is currently preparing a CEC for the Calloway Canal Lining (Seventh Standard to the 8-1 Canal). Therefore, it is assumed that the Project will qualify for a CEC. The District will assign the environmental and cultural compliance tasks to a Consultant who has worked through similar environmental evaluations with Reclamation on the past Calloway Canal Lining segments.

Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

For the canal lining, earth-disturbing activities would include trimming the canal to conform to the lined prism (i.e., trapezoidal profile), which is not an extensive movement of quantities of material. All work on the site is subject to the requirements of an approved dust control plan as part of the San Joaquin Valley Air Pollution Control District's Rule 8021. With incorporation of construction best management practices (BMPs), the proposed Project will comply with air quality emissions for ozone and particulate matter.

The District will engage a qualified biologist to conduct a reconnaissance-level survey and preparation of a BA. Given the highly disturbed nature of the area, the potential presence of federally listed species is expected to be very low (i.e., potentially used a migratory corridor only). The BA will incorporate avoidance and minimization measures (AMMs), such as a pre-construction survey shortly before the start of construction to ensure that the construction area remains unoccupied by sensitive (endangered) species. These AMMs will be included in the Project specifications and will be followed during construction. Moreover, the duration of the construction activity is expected be relatively short (i.e., construction to occur over period of few months within the two-year window for utilizing the grant funds).

Because the canal will be conducted during the nonoperational season (i.e., dry), the Project will not impact water quality. Moreover, the project will not affect waters of the U.S. or state. North Kern will be required to prepare an implement a stormwater pollution and prevention plan (SWPPP) as part of the NPDES Construction Stormwater General Permit.

Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would these be affected by any activities associated with the proposed project?

As part of the NEPA process, Reclamation will prepare a BA and complete consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act (ESA). Several federally listed wildlife and plant species, such as San Joaquin kit fox, kangaroo rat, blunt-nosed leopard lizard, Kern mallow, and San Joaquin woolly-threads, are known to occur in Kern County; however, it is anticipated that these federally listed species would not be affected by the proposed Project with the incorporation of AMMS. Finally, designated critical habitat is not located within or near the proposed Project area.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the proposed project may have.

There are no wetlands or other surface waters inside the Project boundaries that fall under CWA jurisdiction as "waters of the United States".

When was the water delivery system constructed?

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.

Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

The proposed Project will not alter any existing features of an irrigation system (e.g., headgates, canals, or flumes) other than placing a concrete lining in the existing canal prism.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

Because the District encompasses approximately 60,000 acres in the San Joaquin Valley, not every building, structure, or feature within the boundary has been analyzed; however, based on

past Cultural Resources Inventory and Evaluation Reports prepared for the Calloway Canal projects, no buildings, structures, or features listed or eligible for listing on the National Register of Historic Places (NRHP) would be located within the Area of Potential Effect (APE). (Note the Calloway Canal was previously determined to not be eligible for inclusion on the NHRP. Therefore, it is assumed the Office of Historic Preservation would concur with a finding of no historic properties affected during National Historic Preservation Act Section 106 consultation.

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

Based on the past Cultural Resources Inventory and Evaluation Reports prepared for the Calloway Canal segments, which included a pedestrian survey and record search at the California Historic Resources Information System, no prehistoric or historic-era archaeological sites were found. Therefore, it is assumed there are no archeological sites in the proposed Project area.

Will the proposed project have a disproportionate and adverse effect on any communities with environmental justice concerns?

Based on the past NEPA documents prepared for the Calloway Canal segments, Reclamation did not identify adverse human health or environmental effects on any population. Therefore, it is assumed the proposed Project would not have a significant or disproportionately negative impact on low-income or minority individuals. Moreover, the proposed Project is designed to deliver water for agricultural purposes for which the industry employs a substantial number of low-income and/or minority individuals.

Will the proposed project limit access to, and ceremonial use of, Indian sacred sites or result in other impacts on Tribal Lands?

Based on the past Cultural Resources Inventory and Evaluation Reports prepared for the Calloway Canal segments, the nearest Indian Trust Asset (ITA) is a public domain allotment located approximately 40 miles northeast of the District. The proposed Project would not impact the ITA. Moreover, the proposed Project would not limit access to, and ceremonial use of, Indian sacred sites.

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

North Kern would implement construction BMPs (such as washing vehicles and equipment) to ensure that the proposed Project would not contribute to the introduction or spread of noxious weeds or non-native invasive species. Because of routine maintenance, which North Kern will continue, noxious weeds and non-native invasive species do not presently exist within the Calloway Canal.

5 Overlap or Duplication of Effort Statement

As discussed previously, this Project will be covered in the same IS/MND as another Reclamation grant-funded project of similar nature. Further, the District's Deputy General Manager, Ram Venkatesan, will serve as the applicant's Project Manager for this and several other Reclamation grant-funded projects. Other District staff, including the District's engineer, may also commit time to this and other Reclamation grant-funded projects.

This proposal does not duplicate any proposal or project that has been or will be submitted for funding consideration to any other funding source.

6 Required Permits or Approvals

Required permits and approvals are discussed below as well as in more detail in Section 2.4.6, Evaluation Criteria F – Readiness to Proceed.

As previously discussed, the Project is subject to CEQA and is anticipated to be subject to NEPA. CEQA is anticipated to be completed by the time a potential grant is awarded. The District's environmental consultant is in the process of drafting an IS/MND which will be filed with the Kern County Clerk and State Clearing House, as necessary, and will be available for public review for the required number of days. Following public review and review of any comments received, the District's Board of Directors will adopt the final IS/MND. Following adoption by the Board of Directors, CEQA documentation will be complete.

It is understood that compliance with the National Environmental Policy Act (NEPA) will be required if an award is made. The District anticipates coordinating with Reclamation grant officers, biological resources staff, cultural resources staff, and NEPA staff to complete the NEPA process. It is anticipated the process will take approximately one year and will include determination of required documentation, preparation and review of a Project Description and reports, consultation with the United States Fish and Wildlife Service and State Historic Preservation Office as needed, and Tribal Consultation as needed, and will conclude with issuance of a Notice to Proceed to conduct ground disturbing activity.

Several approvals are anticipated to be needed including, as discussed above, receipt of a Notice to Proceed from Reclamation upon conclusion of the NEPA process; approval by the District's Board of Directors to adopt an Official Resolution if the project is awarded; and approval by the District's Board of Directors to award a construction contract.

7 Conflict of Interest Disclosure Statement

No actual or potential conflicts of interest exist at the time of submission of this application.

8 Uniform Audit Reporting Statement

North Kern Water Storage District, the applicant, was not required to submit a Single Audit report for the most recently closed fiscal year.

9 Certification Regarding Lobbying

Per the Notice of Funding Opportunity, the signature on the accompanying SF-424 form indicates certification by the applicant of the statements in 43 CFR § 18, Appendix A.

Appendix A - Letter of Support

POSO CREEK IRWMP
Management Group

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

Mr. Ram Venkatesan
Deputy General Manager
North Kern Water Storage District
33380 Cawelo Avenue
Bakersfield, CA 93308

Re: Proposed Project – *Calloway Canal Lining: Fruitvale Avenue to Case Street*

Dear Mr. Venkatesan,

On behalf of the Poso Creek Integrated Regional Water Management (IRWM) Group, I would like to express support of North Kern Water Storage District's (NKWSD) efforts to improve the Calloway Canal.

The Poso Creek IRWM Group is supportive of and interested in the *Calloway Canal Lining: Fruitvale Avenue to Case Street* project, as it will conserve groundwater by more effectively delivering surface supplies into the basin and will improve operational flexibility and efficiency within the region.

This Project is an important improvement that will be of great benefit to both North Kern and other districts within the Poso Creek IRWM Region. I hope that our expressed support is helpful in your efforts to secure grant funding assistance to implement this project. If the funding agency would like to discuss our interest and support of your project, I would be happy to do so.

Sincerely,

Kris Lawrence
Chairman, Poso Creek IRWM Group
klawrence@swid.org
(661) 758-5369