WaterSMART Grant: Water and Energy Efficiency Grants for Fiscal Year 2024
Category A Application 11/13/2024

BWD Project Lining of Reservation Main Canal Phase 2 of 4

A COLLABORATIVE PROJECT BETWEEN

BARD WATER DISTRICT

BUREAU OF RECLAMATION

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1. Technical Proposal and Evaluation Criteria

1.1 Executive Summary

Two Year Project
If NTP by 03/31/25
04/01/25 – 06/30/27

This application is being submitted on November 13, 2024,
By: Bard Water District (BWD), Winterhaven, Imperial County, California

The Bard Water District (BWD) in Winterhaven, California, is located along the lower Colorado River and borders Arizona (Yuma) and Mexico (Algodones). BWD along with the Quechan Indian Tribe request funding under Category A to complete **Project 2 – Phase 2 of 4: Lining an additional 1,250 ft. of the Reservation Main Canal (RC) with concrete to improve the existing water conveyance and delivery infrastructure to increase water savings and reliability.** Due to funding limitations (BWD matching), the Lining of the entire Reservation Main Canal (5,650 ft.) is planned for completion in four phases. This project complies with our approved 2020 Five-Year Water Conservation Plan as well as our 10-year Capital Improvement Plan. BWD maintains communication with the local Yuma Area Office (within the Lower Colorado Basin – Region 8) Environmental Planning and Compliance Office to meet compliance requirements for projects, including the lining of the RC Canal.

We will accomplish the goals established for the WaterSMART Water and Energy Efficiency program by implementing activities that will **increase water supply savings and reliability** by lining an additional 0.25 miles of earthen Reservation Main Canal and replacing or rebuilding required appurtenances, thus, **conserving water. This Project** will **control water loss, reduce seepage and transpiration, prevent upstream flooding/erosion, provide faster and more consistent, reliable, and efficient flow/delivery down-stream and prevent over-topping of the turnout gates and laterals and the dirt banks to reduce water needed and prevent catastrophic crop damage from unscheduled flooding.** The concrete lining of the entire Reservation Main Canal would conserve approximately 1,404 acre-feet/year. In addition, the amount of water required/delivered would be reduced by being able to safely increase flow rate. **This Phase 2 of 4 Project would conserve 351 acre-feet/year.** Project 1, Phase 1 of 4, Lining the initial 1,750 ft. of the Reservation Main Canal was awarded in August 2024.

BWD is located on a Federal **USBR** facility and is a Reclamation project (Yuma Project, 1909). It receives water from the Colorado River via the All-American Canal.

1.2 Project Location

Bard Water District (BWD) operates and maintains the Reservation Division of the U.S. Bureau of Reclamation's Yuma Project, located in the Bard Valley of southeastern most Imperial Valley, California. The Yuma Project is one of USBR's oldest projects, being constructed in the first decade of the 20th Century. The 13,676 acres of irrigated farmland in Bard Valley includes 7,556 acres of land on the Quechan Indian Reservation and 7,120 acres of private land.

The lining of the Reservation Main (RC) Canal will significantly conserve water by reducing water loss by seepage. The Project is located in Imperial County, California and is within 10 miles of the

Mexican border. The project Latitude is 32.80782° or 32° 48’ 28” north; the project Longitude is 114.53578° or 114° 32’ 9” west.

Project beneficiaries are Bard Water District members (lands within the Reservation Division of the U.S. Bureau of Reclamation (USBR) Yuma Project) and the Fort Yuma Quechan Indian Tribe.

A map of the Reservation Main Canal location is provided below and noted by the red arrow.

1.3 Technical Project Description

This project complies with our approved Five-Year Water Conservation Plan and has been a priority to BWD and the Quechan Indian Tribe for many years.

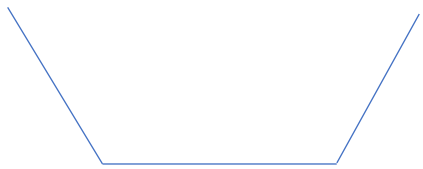
The Four-phase Reservation Main Canal Improvement Project consists of concrete lining and rehabilitation of approximately 1.07 miles of existing unlined canals as well as replacement of deteriorated structures. The RC provides water to agricultural fields in the Bard Water District (Bard and Indian Units). It is currently a 100% unlined earthen canal with a capacity of 220 cubic feet/second. The lining of the RC will significantly conserve water by reducing water loss by seepage.

This project will be performed on a **BOR asset** (Bard Irrigation District) that is operated and managed by the Bard Water District under contract number **19-XX-30-N0965**. It includes both the

Fort Yuma Indian Reservation Indian Unit and Bard Water District (7,600 and 7,100 Acres, respectively). BWD maintains a continuous working relationship with the Bureau of Reclamation's office in Yuma as well as USBR's Technical Service Center and receives Reclamation project water via the All-American Canal. The BWD manages Colorado River water and the irrigation systems for the **BOR asset** (Bard Irrigation Unit and Indian Irrigation Unit). See Appendix for BWD Description, Background, and History.

Several turnouts or checks will require work to tie them into the concrete liner. This can include modifying, rebuilding, or replacing some components of a structure. A brief description of these three structures is provided below.

Figure 1
Cross Section of Trapezoid Canal



Turnouts (5)
Most turnouts are for the laterals that deliver water to the west. Turnouts are structures used to divert water from a main supply channel, such as the Reservation Main to smaller Laterals or ditches.

Check Structures (2)
A check is a structure built to regulate or raise the water level in a supply channel. In some cases, a check combines the functions of both a check and a drop: the water level may be raised upstream of the structure and dropped on the downstream side. Almost all the checks appear to be as they were originally constructed.

Work to be Accomplished and Approach

Post Award/Review:

Environmental Compliance

Historical Architectural and Engineering Report

Documentation/Submittals to BOR

Final Budget with Backup (Quotes) and Updated Staff, Salaries and Fringe

SOW – Confirmed and Milestone/Task Schedule Updated

Contract Signed and NTP

BWD Project Activities:

Phase 1: Engineering/Design/Planning

Final design meetings, plans, specifications, and estimates for the concrete lining of the lateral and appurtenances (tie-ends, turn-outs, check gates, wingwalls).

Hydrology study/recommendation (Optimum/Required flow rates and pressures, elevations, capacity, etc.)

Phase 2: Construction/Lining the Canal

BWD Site Preparation (Clearing and Grubbing)

BWD Hauling dirt to fill entire 0.25 miles trapezoid section, build up walls and bottom

BWD Final grading and compacting (Preparing for trencher)

Contractor/Trencher – Cut trapezoid and pour concrete (boat) to lining of the canal

BWD work crew will coordinate with trenching company to tie-in appurtenances. Rebuild or replace, as necessary. The additional finish work may be completed later during scheduled dry downs so as to not adversely affect the farmers/producers.

We have an exceedingly small interval to complete the construction portion of this project in order to minimize any adverse effects on farmers (April – July); so, that is why we use a trencher that can complete a project in several weeks (during a dry-down). If we tried to line the sections of canals ourselves, it would take months instead of weeks and the farmers/producers would lose substantial income.

Materials:

Concrete

Pipe

Clean Fill Dirt

Fuel and Lubricants

Forms

Steel; Rebar, Eye Hooks, Plates, Strips, Gates

Equipment:

(All Bard owned except for trencher): Will use USACOE Region 7 rates for equipment listed on USA COE Table 2-1.

Motor Grader 12M3

CAT 938G

CAT 420F Backhoe

Tracked Excavator 330C

Rubber Tired Excavator 318F

Dump Truck

International Water Truck

Mac/Cozad Lowboy

Flatbed/Tiltbed

Ford F150 PU Trucks (2)

Ford F150 – Crew Cab Truck

Ford XLT Super Crew

Lighting (Night)

TIG Welder

ARC Welder

Stihl Concrete Saw

Tamper

Roller

720 & 830 Capital Trapezoid Trencher w/boat (slip form for concrete) provided by Crawford Associates (Contractor)

1.4 Evaluation Criterion A

1) Describe the amount of estimated water savings. *For projects that conserve water, please state the estimated amount of water expected to be conserved (in acre-feet per year) as a direct result of this project.* ***Please include a specific quantifiable water savings estimate; do not include a range of potential water savings.***

This Phase 2 Project, Lining 0.25 of the earthen Reservation Main Canal, would conserve 351 acre-feet/year. The estimate for water savings of the entire four phase project of lining of the Reservation Main Canal is 1,404 acre-feet per year. Over the lifespan of the project (50 years) the water saving will be 70,200 acre-feet. Significant additional water savings will also occur due to the overall greater delivery efficiencies of the concrete lined canal, the ability to completely drain the canal, and improved speed of irrigation, but are not easily quantified.

2) Describe current losses. *Please explain where the water that will be conserved is currently going and how it is being used. Consider the following:*

- *Explain where current losses are going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground)?*

Current water losses are seeping into ground and any extra surface water into BWD's drainage system to return to the Colorado River.

- *If known, please explain how current losses are being used. For example, are current losses returning to the system for use by others? Are current losses entering an impaired groundwater table becoming unsuitable for future use?*

The drainage ditches are a constant O & M problem as they support invasive and noxious weeds, that the farmers/growers constantly mechanically remove along their fields. This further deteriorates the sidewalls and causes continual erosion, so the drainage ditches become wider. We are working with the farmers and NCRS to develop a remedy to provide a better return flow system. However, much of this water has high salinity and other contaminants, so it is of poor quality.

- *Are there any known benefits associated with where the current losses are going? For example, is seepage water providing additional habitat for fish or animal species?*

This water loss currently provides little or no benefit to the watersheds along the Colorado River because of its quality.

3) Describe the support/documentation of estimated water savings. *Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations.*

George Cairo Engineering, Inc., a Civil and Agricultural Engineering Firm and Water Resource Specialist, assisted with the earthen seepage loss estimate for the Reservation Main Canal noted below.

RC CANAL
EARTHEN SEEPAGE LOSS ESTIMATE

1. RC Canal
   42' wide at the top of the canal
   32' wide at the bottom of the canal
   6'8" deep from the high-water line

		Area
base	a	32
Base	b	42
Height	h	6.667
	Solution =	246.679

1	ft:ft	Side slope
32	ft	bottom width
6.667	ft	HWL
50.86	ft	Wetted perimeter
5600	ft	Length Canal
284799.89	ft^2 area	Wetted Perimeter FULL
3.92	Ac-ft/day	Seepage Rate
358	day	Days Wet
1404.39	Ac-ft	Seepage Total -- Water Lost

Physical and Chemical Properties of Soils

13	Indio	Soil name and Map symbol
0.6-2.0	In/hr	Permeability
0.6	In/hr	Total Average

0.3	in/hr	Permeability
0.025	ft/hr	Permeability
0.6	ft/day	Permeability

*assuming water is flowing at normal depth

4) Please address the following questions according to the type of infrastructure improvement you are proposing for funding. *See Appendix A: Benefit Quantification and Performance Measure Guidance for additional guidance on quantifying water savings.*

Canal Lining/Piping: *Canal lining/piping projects can provide water savings when irrigation delivery systems experience significant losses due to canal seepage. Applicants proposing lining/piping projects should address:*

a. *How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.*

   The seepage rate of 3.92 acre-feet per day times the number of wet days 358 plus the 0.6 permeability totals the estimated average annual water savings that will result from the four-phase Lining the RC Canal Project. **This Phase 2 project will line 0.25 of the RC Canal so 0.25 X 1,404 total acre-feet from entire RC Canal Lining will result in 351 acre-ft annual water savings.** (Relevant GCE data and calculations above in question 3.)

b. *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? If so, please provide detailed descriptions of testing methods and all results. If not, please provide an explanation of the method(s) used to calculate seepage losses. All estimates should be supported with multiple sets of data/measurements from representative sections of canals.*

   Water Budget Description (From BWD 2020 Water Conservation Plan – NCRS and USBR assisted with these calculations in 2010 that are included in the 2020 Water Conservation Plan)

   The water budget (hydrological balance) was the tool for analyzing water management problems and opportunities, provided that adequate and reliable flow data is available. It is a useful way to organize quantitative information. The water budget approach is very flexible and can be applied in different temporal and scalar dimensions. It can encompass the entire delivery system (water district) or focus on water applied to a field. The water budget can be described for various time periods, such as an annual, monthly, or daily time-step basis. Shorter time steps can assist in identifying problem areas in the system data.

   The water budget concept is that the sum of system inflows is equal to the sum of system outflows, assuming the sold moisture is the same at the beginning and end of the period studied. Inflows consist of all the sources of water supply to the distribution system. Outflows consist of all water removed from the system. By comparing measured inflows and outflows in a water budget, it is possible to identify unaccounted for water losses. For example, if the diversion into the canal and all the water deliveries from the canal (i.e., the farm turnouts) were known, the difference between the diversion and the sum of the water deliveries would be the conveyance loss from the canal. This conveyance loss is the result of seepage (-), evaporation (-), precipitation (+), operational spills (-) and the interception of surface-water runoff (=) and ground water flow (+/-).

c. *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)?*

The expected post-project seepage losses from the Reservation Main Canal will decrease to 16.3 Acre-Feet/Year for each 0.25 Mile Section. We anticipate a decrease to 70 acre-feet/year for the total canal in seepage/leakage losses based on literature review of earthen vs. concrete lined canals.
Research and Development Office, Reclamation R & D (up to 95%), Xudong Han, An Experimental Study on Concrete and Geomembrane Lining Effects on Canal Seepage in Arid Agricultural Areas (86%).

This will be confirmed by pre-water delivery data for specific intervals/crops with post-data.

d. *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?*

Transmission losses are inevitable as water flows through a canal and is exposed to the atmosphere. Factors affecting these losses include temperature, humidity, wind velocity, and the area of water exposed to the atmosphere. These losses are more pronounced during the hot summers like those in the BWD in Winterhaven, CA. Statistical data indicates that transmission losses constitute 2 to 3% of the overall water losses in a canal. Based on that assumption, the transmission losses for the Reservation Main Canal are projected to be 2.1 acre-feet for the overall project and 0.49 acre-feet for the second phase lining of the project.

e. *How will actual canal loss seepage reductions be verified?*

Ponding (Data from 2010 studies) compared to current ponding studies during several intervals (High and low temperatures) after Reservation Main Canal is lined.

f. *Include a detailed description of the materials being used.*

Concrete 4000 PSI	Retarder	Plasticizers
Micro NS Fibers	Non-Structured Fibers	NC Accelerators 4000 PSI

Evaluation Criterion B

If the project does not implement a renewable energy project but will increase energy efficiency, please respond to Subcriterion B.2. Increasing Energy Efficiency in Water Management. If the project has separate components that will result in both implementing a renewable energy project and increasing energy efficiency, an applicant may respond to both.

This Phase 2 of 4 Reservation Main Canal lining project is not a renewable energy project. However, the modernization of this conveyance system will allow for future installation of solar powered SCADA units to control delivery system flow.

E.1.2.2 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 water efficiency project (e.g., reduced pumping).

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

The EPA estimates that only 10% of Greenhouse gas emissions come from agriculture, and they are primarily from livestock, soils, and rice production. However, this project, the Lining of the Reservation Main Canal can reduce emissions by:

- Improving operating practices – less time required for O & M and vehicle use.
- On-farm components, EQIP grants for farmers to replace older equipment with high emission releases as well as be able to use fuel with less carbon output.
- Improving soil health, better water quality from lined conveyance systems, less CO_2 and N_2O emissions.
- USDA grants to support conversion to solar power (lights, pumps, gate controls, refrigeration).

- *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).*

This project modernization will allow for future installation of solar powered SCADA units to control delivery systems flow.

Evaluation Criterion C—Other Project Benefits

Resilience and Sustainability Benefits. Will the project address a specific water and/or energy sustainability concern? Please address the following:

• Explain and provide detail of the specific issue(s) in the area that is impacting water resilience and sustainability. Consider the following:

- *Describe 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. Provide support for your response (e.g., reference a recent climate informed analysis, if available).*
- *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.*
- *Please describe how the project will directly address the concern(s) stated above.*

Living in the southwestern United States in a semi-arid region, BWD is accustomed to natural variations in climate from rare flood events to persistent drought conditions. These shortages have been magnified by climate change and population growth. In order to do our part, we initiated a seasonal fallowing program in 2015 to reduce our water consumption which continues to this day.

Bard Water District (BWD) provides agricultural irrigation water to the Bard Unit and Indian Unit (Fort Yuma Indian Reservation) in Winterhaven and Bard, California. BWD has developed their Drought Contingency Plan to address water shortage issues in the Lower Colorado River Basin. Our goals are to conserve available water and minimize the adverse impacts of water supply shortages or other water supply emergency conditions. We are primarily focused on Best Management Practices and Value Engineering Designs to modernize and upgrade our antiquated and deteriorating infrastructure. This includes lining our canals, laterals, and ditches; installing new gate structures; new technology for meters, measurement devices and water/soil absorption units. We have determined that 30% to 50% of our water loss is due to these poor conditions. Even though we a small, rural water district we border Mexico and are at the end of the Colorado River on the US side. We have 2nd Priority Water Rights but being at the end of this river system is of great concern to us.

Our second focus is working in partnership with NRCS and our farmers and ranchers to help them to develop strategies for reducing water consumption, without causing adverse economic impacts to themselves and the community. This includes seasonal fallowing, drip, or spray irrigation instead of flood irrigation, planting crops that use less water, as well as anticipating seasonal water fluctuation needs.

We have developed our Drought plan to create a collaboration framework that enables us to easily implement responses and actions as well as being flexible and functional. Our plan is pro-active in that we want to conserve water year-round during both drought and non-drought conditions.

A key element for critical resource planning is an incremental or staged triggering criteria for drought severity and corresponding response actions. Each stage is triggered by an anticipated actual water shortage condition and each stage has several triggering criteria. The triggering criteria is based upon the analysis of the vulnerability of the water source under anticipated drought conditions. The drought condition stage, water shortage triggering criteria, and corresponding demand reduction goals are presented in the Table below.

Level of Water Shortage, Triggering Efforts, and Demand Reduction Goals

Stage Level	Stage Title[1]	Water Shortage & Triggering Criteria	Voluntary Efforts	Reduction Goal
1	Normal	Abnormally Dry Minor Shortage 10%	Seasonal Fallowing, Efficient Irrigation, Low Water Crops, Measurement Devices – 5% Reduction Capital Improvements: Conveyance Repair/Lining (3 Mile) – 5% Reduction	10%

2	Alert	Moderate Shortage 11 – 25%	Cumulative Effect – Baseline 5% Farmers Efforts Conveyance (3 Mile) Each Year Adds 5% so 10%	15%
3	Warning	Severe Drought 26% - 35%	Cumulative Effect – Baseline 5% Farmers Efforts Conveyance (3 Mile) Each Year Adds 5% so 15%	20%
4	Critical	Extreme Drought 36% - 50%	Cumulative Effect – Baseline 5% Farmers Efforts Conveyance (3 Mile) Each Year Adds 5% so 20%	25%
5	Emergency	Exception Drought Over 50%	Cumulative Effect – Baseline 5% Farmers Efforts Conveyance (3 Mile) Each Year Adds 5% so 25%	30%

[1]Most drought occurs after several years of little rainfall so have shown a cumulative effect of our voluntary efforts. For example, for any year we plan to conserve 10%, 2nd year 15%, 3rd year 20%, 4th year 25%, and 5th year 30% due to our yearly infrastructure improvements and growers' actions.

- *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?*

Yes, any canal lining project, results in a more efficient management of water supply by:

1) Reduced water volume requests due to more reliable water levels (elevation) and faster flower rates.
2) Reduced water volume requests due to improved check/turnout gates (leakage).
3) Reduced water volume requests if drip lines or sprinklers used instead of flood irrigation.
4) Reduced water volume requests due to lining ditches or repairing concrete (reduce seepage and transpiration).
5) Reduced water volume requests due to more accurate field data (size and soil intake characteristics).
6) Reduced water volume requests due to system assessment and subsequent improvements.
7) Prevent monetary loss and wasted water from crops destroyed because of uncontrolled flooding or bacterial contamination.

- *Please address where any conserved water as a result of the project will go and how it will be used, including whether the conserved water will be used to offset groundwater pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.*

Conserved water will go to lower priority users. The water we save will remain in the system under the stewardship of BOR because it will not be diverted. They will be able to determine its best use. This project will also enable us to conserve approximately 24% of the water going through the delivery system, allowing us to be pro-active in addressing drought, shortfalls, and other critical water issues.

- *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.

USBR controls water not requested (due to less volume needed after lining) and water that enters our drain systems returns to the Colorado River.

BWD meets the terms of Section 9504 (a)(3)(B) of Public Law 111-11 in that no additional acreage will receive irrigation water saved from this project. We currently abide by our quota and have strived to reduce it by encouraging our growers to implement seasonal fallowing, upgrading to water reduction irrigation delivery systems, and growing crops that require less water. All of our saved water goes to "lower priority" users.

- *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 following local issues impact our energy sustainability:
Brown-outs due to high energy usage, especially in desert summers.
Power outages due to windstorms.
Pollution – We are a non-attainment area for dust (PM-10).
Fuel supply/costs for vehicles and farm equipment.

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

The following steps can be taken to address these issues:
Solar power for critical units
Electric vehicles or low carbon emissions
EQIP grants to replace older farm equipment
Wind rows or cover crops to reduce dust

Ecological Benefits. *In addition to the separate WaterSMART Environmental Water Resources Projects NOFO, this NOFO places a priority on projects that that result in ecological benefits, through this section and other sections above, consistent with the SECURE Water Act. Please provide information regarding how the project will provide ecosystem benefits, including the following:*

- *Will the project benefit species (e.g., federally threatened or endangered, a federally recognized candidate species, a state listed species, or a species of particular recreational, or economic importance)? Please describe the relationship of the species to the water supply, and whether the species is adversely affected by a Reclamation project or is subject to a recovery plan or conservation plan under the Endangered Species Act (ESA).*

Water left in the Lower Colorado System will benefit the Yuma Clapper Rail and the Southwest Willow Flycatcher. These birds nest and raise their young along the Lower Colorado River watershed in the spring. This watershed is the corridor for wildlife preserves as well as small lakes and recreational areas. We have a local conservation group Friends of Haughtlin Lake who are working to protect the watersheds in our area.

Numerous riparian and marshy areas form a perimeter between the agricultural fields and the All-American Canal, the Colorado River (East) and desert (West) as well as the Mesas (North) that divert runoff from rainfall into overshoots maintaining natural riparian areas. Bard Water District is a participant in the Multi-Species Conservation Plan/Program that was developed for the Lower Colorado River area. We work closely with AZ Fish and Game and the Audubon Society. We alert and assist Fish and Game with mammal rescues from the large canals and participate in Bird Species Counts and Surveys.

Endangered Species in Bard Water District

Birds	Reptiles	Fish	Mammals
SW Willow Flycatcher Nest along our river corridor.	Desert Tortoise Nest/Feed in washes with creosote bushes.	Colorado Pike Minnow – Not seen below Glen Canyon Dam anymore.	Lesser Long Nosed Bat Bat Boxes were placed along our river corridor to improve habitat.
Yuma Clapper Rail (Ridgeway) Nest in dense Cattail and Tule marshes along our river corridor.	Flat Tailed Horn Lizard Resides in areas surrounding our district, eats Harvester ants.	Razorback Sucker Not seen below Grand Canyon anymore.	Sonoran Pronghorn Rarely sighted, primarily Big Horn Sheep, Deer, and Wild Donkeys utilize washes and river for food and water. YPG to the North provides water stations.
Burrowing Owl Nest on ground burrows near agricultural fields.			

- *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.).*

No, which will help conserve water by reducing losses from transmission, seepage, and transpiration. We will be able to increase flow rates and water levels (elevation) so less water will be required. There will also be reduced water logging.

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

By conserving water, we promote biodiversity. Endangered species in this desert habitat rely on the Lower Colorado River and its backwaters, riparian areas and natural lakes and the marshy habitat is supports for nesting, spawning and daily life. It also is part of the migration pathway for many bird species. Their habitat was greatly affected by the dams constructed along the Colorado River and then by the increased demand for water by towns and farming. During drought conditions this is intensified, and their critical habitat threatened, especially during the summer when water demands are increased.

- *Please describe any other ecosystem benefits as a direct result of the project.*

This project utilizes sound hydrological strategies coupled with time-tested structures (concrete lining) to create a more efficient and responsive water delivery system. Located in a rural area, and surrounded by desert, we are uniquely positioned to promote stewardship. Through our partnerships with our water users (farmers) we are creating a balance between water conservation, planning, efficiency, and cost savings. We are addressing issues brought about by changes in the environment, especially drought. We are using a "Best Practices" model by conserving water and subsequent watersheds and habitats by a variety of voluntary activities (BWD as well as On-Farm) as previously discussed (seasonal fallowing, irrigation method, crop vs. water requirements , system delivery improvements, etc.). Through our partnerships with our water users (farmers) we are creating a balance between water conservation, planning, efficiency, and cost savings.

Each of us, the Colorado River and Gila River areas create watershed and riparian areas. The buffer zone that exists between us and that area consists of desert with washed (replenished by rainfall, complemented by the surrounding mountainous terrain). Most of the visible habitat is located along this river corridor, with native plants (reeds, cottonwood, willow, and sedges) then native shrubs and trees. These provide habitat for our native species as well as migratory birds. This watershed creates a natural wildlife corridor from New Mexico to California. We are southwest of the Gila River (and its tributaries: Agua Fria and Salt Rivers) that continues west to join the Lower Colorado River in Yuma that support wildlife preserves (Kofa, Mitry Lake and Cibola). We work closely with our state and federal agencies to solve conflicts from wildlife to agricultural fields and water delivery systems.

The project, by increasing surface water and ground water retention, will inherently improve water quality by increasing volume and promoting natural attenuation from aquatic plants and from its flow through its 1.07-mile sand and gravel bottom. These plans will improve water supply reliability and sustainability by lining this canal (infrastructure), conserving water (significantly reducing water loss), and increasing efficiency of the system.

Climate Change: E.O. 14008 emphasizes the need to prioritize and take robust actions to reduce climate pollution; increase resilience to the impacts of climate change; protect public health; and conserve our lands, waters, oceans, and biodiversity.

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

Yes, by conserving water, increasing efficiency and water quality. Especially since the local residents and Tribes rely on wells for their municipal water supplies. Increase water can also be used to fight fires in this rural area where there are few hydrants.

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

We have limited natural resources in the fragile desert environment, other than water. We are using a "Best Practices" model by **conserving, protecting, and restoring** our natural resources (water and subsequent watersheds and habitats) through BWD system improvements and On-Farm voluntary activities (as discussed in 1.4.4 On Farm Criteria). We also will comply with Executive Order 14008: Tackling the Climate Crisis at Home and Abroad and the 30 – 30 Initiative.

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

Yes, Lining of the Reservation Main Canal will reduce climate pollutants through reducing time required for O & M and vehicle use; improving on-farm components - EQIP grants for farmers to replace older equipment with high emission releases as well as be able to use fuel with less carbon output; improving soil health, better water quality from lined conveyance systems, less CO_2 and N_2O emissions; and USDA grants to support conversion to solar power (lights, pumps, gate controls, refrigeration).

- *Does the proposed project include green or sustainable infrastructure to improve community climate resilience?*

Lining of the Reservation Main Canal advances BWD's mission to continue lining the District's canals to promotes clean and sustainable infrastructure and reduce the deficiencies of earthen canals. This project will reduce constant O & M, limit deterioration of the sidewalls and promote water efficiency and reliability for a projected 50 years to improve community climate resilience.

- *Does the proposed project contribute to climate change resiliency in other ways not described above?*

The recent Lower Colorado Drought Contingency Plan signed in 2019 clearly demonstrates the seriousness of the water supply for the Lower Colorado River. This project is part of our Drought Plan to modernize 1-3 miles of our conveyance system to reduce our water demand (as well as seasonal fallowing). As should in the plan, most districts are facing mandatory reductions in time of drought or shortfalls. Bard Water Users have Priority Two rights and as such have adequate

water for agricultural use. We, however, as stewards of the Colorado River, have been putting forth an effort since 2013, to conserve water so it is available to other lower priority users. Every modernization project we complete contributes to our water conservation effort.

Evaluation Criterion D—Disadvantaged Communities, Insular Areas, and Tribal Benefits

E.1.4.1 Subcriterion D.1. Disadvantaged Communities

E.O. 14008 affirms the advancement of environmental justice for all through the development and funding of programs to invest in disadvantaged communities. This criterion, which is used to identify projects that advance the Justice 40 Initiative, includes all Federally recognized Tribes and Tribal entities, and any disadvantaged communities in insular areas (American Samoa, Guam, the Northern Mariana Islands, or the Virgin Islands) identified pursuant to the following criteria.

• Please use the White House Council on Environmental Quality's interactive Climate and Economic Justice Screening Tool (CEJST), available online at Explore the map Climate & Economic Justice Screening Tool (screeningtool.geoplatform.gov/ en/#17.59/36.63278/-105.181329) to identify any disadvantaged communities that will benefit from your project. The CEJST developed by the White House Council on Environmental Quality is a geospatial mapping tool that utilizes publicly available, nationally consistent data sets related to climate change, the environment, health, and economic opportunity to identify disadvantaged communities. In addition to identifying specific census tracts that are disadvantaged, the CEJST includes the lands of Federally

West Imperial County is a rural, low-income, disadvantaged community (Bard, Winterhaven, and Fort Yuma Indian Reservation). The rural area represents a population that has historically been excluded from funding sources, planning, and development. The Quechan Indian Reservation and the cities of Bard and Winterhaven represent a large minority of Hispanics and Native Americans interspersed with families from early settlers. The Quechan Indian Tribe were excluded from the initial water right negotiations and had to sue the federal government over 30 years ago to be included. They only received compensation for the water but nothing for the impact on their way of life that changed drastically (using natural flooding for managing and harvesting their produce and desert plants as well as the cleansing and reconstructing their homes each year).

The nearest town to the project area are Bard and Winterhaven, which includes Fort Yuma Indian Reservation. These locations are considered severely disadvantaged and economically distressed communities. THE MHI for Fort Yuma is $27,188 and the MHI for Winterhaven is $9,719 which are both substantially lower than the California MHI of $67,169. Unemployment Rate is more than 2% higher than the statewide average. Fort Yuma's unemployment rate is 22.1% and Winterhaven's unemployment rate is 57.1%. This project will serve 1,295 residents on the Fort Yuma Indian Reservation because this structure is on the Indian Unit. It will reduce the costs due to water losses during use as well as costs for this large project.

Bard Water District Disadvantaged Community Variables		
Variable	**Winterhaven**	**Quechan Indian Tribe**
Population	192	1,277
Low income, high and/or persistent poverty	MHI[1] $10,736 64.8% Live in Poverty	MHI[1] $27,793 36.4% Live in Poverty
High unemployment and underemployment	53.8%	15.7%
Racial and ethnic residential segregation, particularly where the segregation stems from discrimination by government entities	17% Native American 35.9% Hispanic Median Age 72.6	100% Native American or Family Members
Linguistic isolation	Spanish Speaking	Spanish Speaking
High housing cost burden and substandard housing	90% Substandard	70% Substandard
High transportation cost burden and/or low transportation access	Limited Public Transportation	Limited Public/Tribal Transportation
Disproportionate environmental stressor burden and high cumulative impacts	Poverty Level Magnify	Poverty Level Magnify
Limited water and sanitation access and affordability	Archaic System	Archaic System
Disproportionate impacts from climate change	Poverty Level Magnify	Poverty Level Magnify
High energy cost burden and low energy access	Utility Rates High	Utility Rates High
Access to healthcare	Limited, small clinic	IHS for BIA registered

[1]MHI = Median Household Income

As evident in the Table above, the population includes a majority of Hispanics and Native Americans in the BWD. This underserved and underrepresented community reside in a sparsely populated rural area, with little or no tax base to support their infrastructure. They are isolated by historically being considered less than equal as Native Americans and as agricultural workers. Although age is not a variable, the median age for those living in Winterhaven is 72.6, seniors also being an underserved population.

Subcriterion D.2. Tribal Benefits

The Department is committed to strengthening tribal sovereignty and the fulfillment of Federal Tribal trust responsibilities. The President's memorandum, Tribal Consultation and Strengthening Nation-to-Nation Relationships, asserts the importance of honoring the Federal Government's commitments to Tribal nations. Address the following, if applicable:

- *Does the proposed project directly serve and/or benefit a Tribe? Will the project increase water supply sustainability for an Indian Tribe? Will the project provide renewable energy for an Indian Tribe?*

Yes, the Quechan Indian Tribe is part of the Indian Irrigation Unit which is served by this system. The Cocopah Tribe in AZ also receives water through the Bard system via the Yuma Main Canal.

- *Does the proposed project support Tribal led conservation and restoration priorities, and/or incorporate or benefit Indigenous traditional knowledge and practices?*

Yes, the Quechan Indian Tribe is active in pursuing water conservation opportunities to improve the irrigation measures on Tribal lands. BWD works closely with the Quechan tribe through planning and implementation efforts that are respectful of their traditional knowledge and practices. **The project also meets Executive Order 13985: Advancing Racial Equity and Support of Underserved Communities.**

- *Does the proposed project directly support tribal resilience to climate change and drought impacts or provide other Tribal benefits such as improved public health and safety through water quality improvements, new water supplies, increased renewable energy, or economic growth opportunities? Does the proposed project support Reclamation's Tribal trust responsibilities or a Reclamation activity with a Tribe?*

Yes, by conserving water for the Tribe, especially since they rely on wells for their water supply.

Evaluation Criterion E—Complementing On-Farm Irrigation Improvements

If the proposed project will complement an on-farm improvement eligible for NRCS assistance, please address the following:

- *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.*

The 0.25 Lining of the Reservation Main Canal will complement projects already developed by our local NRCS office to assist growers in this area. One grower already received EQIP funding for ditch lining that pass through our system. NRCS has new projects listed for twenty-one land parcels. We hosted a meeting for growers about EQIP, and USDA had a workshop here in 2019. We also have contacted Bobbi McDermott, a retired NRCS employee, and she has met with us several times and has agreed to work with our local growers. We have provided our growers with a tentative list of accepted projects and have met with our new NRCS representative. The three growers listed below have provided Letter of Intent to collaborate with Bard Water District and NRCS for an EQIP grant.

Acreage Likely to be Improved: 3,636 or 51% of acres in BWD Unit (7,100 acres total)

Amigo Farms	875 Acres
Next Gen	750 Acres
Top Flavor Farms	2011 Acres

Once the Reservation Main Canal is lined, flow rates and elevations determined; NRCS and our growers will work together to address their concerns and identify potential system improvements. This may include:

1. Check Gate Systems – New Check Gates – replacing poorly functioning or leaking, increasing size, or upgrading type.
2. Ditches – Concrete lining, increasing size or elevation.
3. Irrigation Systems – Purchasing drip lines or sprinklers.
4. Evaluating Field Irrigation Systems – Surveys/Measurements – Field elevations, water/sold absorption rates as well as cost analysis.
5. Hydrology Study – Flow rates and volumes – modeling to determine most efficient design
6. Measurement Devices – Installing flow meters, water/soil absorption
7. Innovative Methods to kill bacteria in concrete line (copper or zinc composites in concrete mortar), chemical additives to water supply, UV, or ozone treatment.

Three growers have provided Letters of Intent/support for this grant application. Their acreage encompasses 51% of the land served by the Reservation Main Canal. They also lease other small parcels of land in this area.

- *Have the farmers requested technical or financial assistance from NRCS for the on-farm efficiency projects, or do they plan to in the future?*

Yes, the farmers served by Bard Water District have collaborated with our local NRCS office and successfully applied for EQIP grants for on-farm water efficiency improvements.

- *If available, provide documentation that the on-farm projects are eligible for NRCS assistance, that such assistance has or will be requested, and the number or percentage of farms that plan to participate in available NRCS programs.*

On-farm projects are beneficiaries of NCRS planning and recommendations for water efficiency improvements. These efforts have resulted in EQIP funding for on-farm projects.

- *Applicants should provide letters of intent from farmers/ranchers in the affected project areas.*

Letters of support are included in the Appendix from farmers in the project area.

- *Describe how the proposed WaterSMART project would complement any ongoing or planned on-farm improvement.*

Steve Alameda, Top Flavor Farms, received EQIP funding in 2018 for water that passes through our system for concrete lining of two earthen ditches. Other growers (48% of the land) that receive water from the Reservation Main Canal include: Ross Martin, Griffin Family Properties, Anthony Costa and Sons, Tanimura and Antle, and Johnny Cloud. We plan to encourage these growers to collaborate with NRCS for EQIP funding also.

- *Describe the on-farm water conservation or water use efficiency benefits that are expected to result from any on-farm work.*

The Reservation Main Canal is badly deteriorated and requires constant monitoring during water delivery to reduce erosion and prevent overflows. The flow is also reduced, which in turn requires more water to be released. There is also the problem of bacteria (E.coli) being present in the bottom sludge. All these conditions negatively impact the farmer. If the Reservation Main Canal is lined, a great volume of water can be delivered faster and more efficiently so less water is needed (shorter duration); less damage from erosion and risks of bacterial contamination; and less chance of overflows and uncontrolled flooding causing contamination subsequent destruction of an entire crop. Also, we will collaborate with our farmers to determine what best practices/improvements are needed to meet the requirements of the newly lined canal. This will include elevation of existing irrigation systems (delivery systems, elevations, and grade), hydrological and soil evaluation, needs/shortcomings, recommendations. This will also include long-term planning to allow for growth and to address future needs.

These **irrigation efficiency improvements** can be achieved by EQIP funding for one or more of these improvements:

1) Replacing deteriorated leaking check gates and structures to **prevent operational losses**.
2) Concrete lining, thus **eliminating seepage** issues from deteriorated earthen field ditches and deteriorated concrete ditches. Also **reduce evaporation** and **transmission** losses due to less time spent in conveyance system.
3) Installing larger capacity concrete ditches containing high-flow turn-out structures **for better management and to reduce water quantities needed**.
4) More closely matching water volume to field dimensions and soil moisture intake qualities structure **for better management and to reduce water quantities needed**.
5) Purchasing/utilizing drip irrigation or sprinklers when practical (seed germination, light watering) and cost effective **to reduce water quantities needed**.
6) Evaluating Field Irrigation Systems – Surveys/Measurements – Field elevations, water/soil absorption rate as well as cost analysis **for better water management and efficiency**.
7) Hydrology Study – Flow rates and volumes – modeling to determine most efficient design since volumes are the most constant FACTOR **for better water management and efficiency**.
8) Innovative Methods to kill bacteria in concrete liner (copper or zinc composites in concrete mortar), chemical additives to water supply, UV, or ozone treatment to **eliminate catastrophic crop destruction.**
9) Improved conveyance and perimeter berms to prevent uncontrolled flooding to **eliminate**

catastrophic crop destruction.

The water currently delivered from the Reservation Main Canal must flow slowly for several reasons.

1) Prevent the erosion of the sidewalls.
2) Prevent overflow along the RC and uncontrolled water loss.
3) Prevent uncontrolled flooding of the agriculture fields and subsequent contamination of produce (crops must be destroyed).
4) Minimize agitating the bottom sludge (loaded with bacteria).

Once the Reservation Main Canal is lined, flow rates and elevations determined, NRCS and our farmers can work together to improve their end of the system. This could include their check systems, ditches, irrigation systems, field elevations, soil monitoring, measurement devices, etc. Based on collaboration with NRCS, our growers will select their project to improve efficiency, conserve water, and subsequently reduce their costs.

- *Estimate the potential on-farm water savings that could result in acre-feet per year. Include support or backup documentation for any calculations or assumptions.*

Entire Canal 1,404 Acre-Ft./Yr. or 25% for one 0.25-mile section = 351 Acre-Ft./Yr.

Flow rates are measured at the head gate to the lateral which serves the customer. Run times, start, and stop times are on the ditch rider's inspection record. Volumes are computed and transferred to a water card. Pooling was also done to calculate seepage and evaporation.

- *Please provide a map of your water service area boundaries. If your project is selected for funding under this NOFO, this information will help NRCS identify the irrigated lands that may be approved for NRCS funding and technical assistance to complement funded WaterSMART projects.*

A map of Bard Water District area boundaries has been provided in the Appendix. Our district includes the Bard Unit and the Indian Unit, see the Appendix for Background and History.

Evaluation Criterion F—Readiness to Proceed

Identify and provide a summary description of the major tasks necessary to complete the project. ***Note: Do not repeat the more detailed technical project description provided in Section D.2.2.2 Application Content. This section should focus on a summary of the major tasks to be accomplished as part of the project.***

Summary of Major Tasks

Phase 1: Engineering/Design

Design meetings, Plans, Specifications, and Estimates for the Concrete Lining of the Lateral and Appurtenances (Tie-Ends, Turn-outs, Check Gates, Wingwalls).

Phase 2: Construction/Lining the Canal (0.25 Mile Section of the Reservation Main Canal)

Site Preparation, Earthwork: Trenching, Grading and Compacting, Concrete Lining of the Canal and Constructing Appurtenances.

Phase 3: On-Farm Component – Assessment and Planning

We will also provide technical assistance to our affected farmers to evaluate their on-farm irrigation systems/management to determine what improvements, modifications, or equipment they need to successfully handle the subsequent improvements to the Reservation Main Canal.

Phase 4: Farmer's EQIP Grant Applications (This component not funded by this grant.)

Based upon Phase 3 Recommendations.

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

There are no permits required for this project.

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

BWD has included time and funding for the Engineering of the Reservation Main Canal Lining and Appurtenances for this additional 0.25 Lining.

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

There are no new policies or administrative actions required 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 work.

Engineering and Design is planned as Phase 1 of the project. Twenty-eight weeks are planned for completing this phase. Due to estimated Engineering costs of $120,000 for the entire Reservation Main Canal, Engineering expenses are included for each phase of the project. Phase 1 is included in the Task and Milestone Schedule outlined below.

Please also include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. Milestones may include, but are not limited to, the following: complete environmental and cultural compliance; mobilization; begin construction/installation; construction/installation (50% complete); and construction/installation (100% complete). Was the expected timeline for environmental and cultural compliance discussed with the local Reclamation regional or area office?

Tasks and Milestones with Tentative Schedule

Phase	Milestones/Tasks	Duration Weeks	Interval
Pre-Work	**Activities**		
	USBR Environmental Compliance	0	Completed
	USBR – USBR Review and Award NTP	12	4/01/25 – 9/30/25
	BWD Contractors' Bid Packages/Award/Selection	4	1/1/26 – 3/31/26
Work	**Activities**		
1	Engineering/Design for Lining Reservation Main Canal	28	Completed During Phase 1 of 4
2	Construction – Lining Reservation Main Canal	16	4/1/26 – 7/31/26
	Bid Packages/Award/Selection	4	1/1/26 – 4/30/26
	Site Preparation: Earthwork, Grading/Compacting	4	4/1/26 – 4/30/26
	Trenching and Concrete Lining	12	5/1/26 – 7/31/26
	Concrete Finish Work (Tie-Ends, Supporting Structures	12	5/1/26 – 7/31/26
	Appurtenances, Gates, Structures – During Trenching and Periodically During Dry-Downs	12	5/1/26 – 7/31/26
On-Farm	**Components (Concurrent)**		
3	On-Farm Component – Assessment and Planning	4	10/1/26 – 2/1/27
	Assessment of Current Conditions (Water, Soil, Grade, Elevation, Delivery Systems/Structures)		
	Impact(s) on Existing System from Canal Lining		
	Possible Solutions/Projects with EQIP		
4	NRCS/Farmers EQIP grant application	8	2/1/27 – 3/31/27
	Assist farmers with application process, provide documentation and support.		
	Project Closeout	12	4/1/27 – 6/30/27

Evaluation Criterion G—Collaboration

Please describe how the project promotes and encourages collaboration. Consider the following: 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?

Although our district is small and rural, which puts us at a disadvantage in competing for larger grants; this also makes us a close-knit community. We must work together to survive. Our local office serves as a nexus for our operations. Our Board members and growers are very active in our planning efforts. They want the most for their funding contributions, and they have a wish list for their and their children's future.

Yes, the project demonstrates collaboration between our water district and our agricultural users. It can be used as an example to other water managers reflecting on how assessment, planning, usage, need, and corrective measures can be achieved to benefit a district. Even though the costs for modernizing irrigation systems can be cost prohibitive, we demonstrate that we can slowly upgrade and replace our conveyance system and appurtenances, a few at a time and line our canals and laterals in sections, one-quarter mile at a time. Our water users are very supportive of any funding we receive to help improve our system. They actively participate in our water conservation methods because it is not only good for our water resources, but it also provides them a cost savings, especially with labor costs increasing.

- *What is the significance of collaboration/support?*

Without the collaborative support of our community, we would not be able to implement our Water Conservation Plan and the improvements needed to better manage and reduce water use. Our partnership is demonstrated in several ways:

a. Voluntary seasonal fallowing program.
b. Irrigation methods that promote water use reduction (sprinklers, drip, etc.)
c. Crops that require less water.
d. Helping fund O & M costs (Percent of fallowing and $25/acre.)
e. Strategies/support/approval for proposals/grants that require matching funds.
f. Creating a mutually beneficial partnership that improves efficiency and reduces costs.
g. Creating the framework for addressing and responding to incidents (ranging from routine to emergencies).

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

Yes, NCRS currently uses our district to demonstrate projects to others. These include both district and grower activities. We also work with Arizona Western College and participate in their symposiums as well as other agency workshops and meetings. We also work closely with the Quechan Tribe and collaborate with them for their irrigation infrastructure grant applications.

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

Yes, this project benefits BWD's agricultural farmers, the municipal communities of Bard and Winterhaven, and the Quechan Indian Tribe.

- *Please attach any relevant supporting documents (e.g., letters of support or memorandum of understanding).*

Letters of support are included in the appendix.

Evaluation Criterion H—Nexus to Reclamation

Describe the nexus between the proposed project and a Reclamation project or Reclamation activity. Please consider:

- *Does the applicant have a water service, repayment, or operations and maintenance (O&M) contract with Reclamation?*
- *If the applicant is not a Reclamation contractor, does the applicant receive Reclamation water through a Reclamation contractor or by any other contractual means?*
- *Will the proposed work benefit a Reclamation project area or activity?*
- *Is the applicant a Tribe?*

This project will be performed on a **BOR asset** (Bard Irrigation District - Cocopah Canal) that is operated and managed by the Bard Water District under contract number **19-XX-30-N0965**. It includes both the Fort Yuma Indian Reservation Indian Unit and Bard Water District (7,600 and 7,100 Acres, respectively). BWD maintains a continuous working relationship with the Bureau of Reclamation's office in Yuma as well as USBR's Technical Service Center and receives Reclamation project water via the All-American Canal. The BWD manages Colorado River water and the irrigation systems for the **BOR asset** (Bard Irrigation Unit and Indian Irrigation Unit). See Appendix for BWD Description, Background, and History. The water conserved through this project will go to lower priority users who are more affected by water shortages. USBR can use this water to aid other growers, municipalities, or other nearby entities. This will be especially important during times of shortages and drought.

1.5 Performance Measures

Pre-project Estimation of Baseline Data:
We have already completed the following tests that are included in our Water Conservation Plan.
Ponding Tests: Seepage and Evaporation
Inflow/Outflow Testing: data is collected whenever water is released. This is incorporated into our database. We can generate report for early and late seasons by adding the ratio of acre-feet diverted to acre-feet received to calculate efficiency. Adjustments are made for evaporation (including season/ambient temperatures).

Post-Project Methods for Quantifying Benefits of Canal Lining:
Pre-project results will be compared with Post-project results to calculate water savings. We will

compare ratio of acre-feet diverted to acre-feet received to calculate efficiency. These stats will be updated in our Water Conservation Plan. This data will be provided in our SOR plan.

2.0 Project Budget

2.1 Funding Plan and Letters of Commitment

The **Federal share** is **49%** and the **Non-Federal** share is **51%**.

BWD In-kind Contributions: Salaries/Fringe, Equipment, Materials/Supplies, Indirect Costs
We will utilize our staff and heavy equipment for all project activities, including specific Tasks and Milestones. This will include Project Management, on-site excavation, demolition, and installation. Costs will be greatly reduced using BWD staff and equipment.

Bard Cash Contribution: Remaining Contractual/Construction costs of $30,000.

Costs incurred before start date: $0.00

2.2 Budget Proposal

SOURCE	AMOUNT
Costs to be reimbursed with the requested Federal funding	$437,500.00
Costs to be paid by the Applicant	$451,528.00
Value of third-party contributions	$0.00
TOTAL PROJECT COSTS	**$889,028.00**

Project Costs Breakdown:
Federal Funding

BUDGET ITEM DESCRIPTION	AMOUNT
Materials	$0.00
Equipment	$0.00
Construction	$437,500.00
In Direct Costs – De Minimis	$0.00
TOTAL FEDERAL FUNDING	**$437,500.00**

Non-Federal Funding – In Kind and Cash

BUDGET ITEM DESCRIPTION	AMOUNT
Salaries and Wages*: In Kind*	$118,619.00
Fringe: *In Kind*	$63,134.00
Travel:	$0.00
Equipment: *In Kind*	$155,600.00
Materials and Supplies: *In Kind*	$36,000.00
Contractual/Construction:	$30,000.00

Other: Environmental Compliance & Engineering	$30,000.00
In Direct Costs – De Minimis	$18,175.00
TOTAL NON-FEDERAL FUNDING	**$451,528.00**

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity TYPE	TOTAL COST
	$/Unit	Quantity		
SALARIES/WAGES				
Project Manager	$45.43	360	HR	$16,355.00
Water Master	$29.56	360	HR	$10,642.00
Equipment Operators (2)	$25.02	800	HR	$40,032.00
Concrete Fabricator	$22.69	360	HR	$8,168.00
Gate Fabricator	$22.69	360	HR	$8,168.00
Laborers (2)	$15.52	720	HR	$22,349.00
Administrative Assistant	$26.54	120	HR	$3,185.00
Contract and Grants Specialist	$27.00	360	HR	$9,720.00
			Subtotal	$118,619.00
FRINGE BENEFITS				
Project Manager	$16,354.80	.4534	%	$7,415.00
Water Master	$10,641.60	.4383	%	$4,664.00
Equipment Operators (2)	$40,032.00	.5891	%	$23,583.00
Concrete Fabricator	$8,168.40	.5605	%	$4,578.00
Gate Fabricator	$8,168.40	.4997	%	$4,578.00
Laborers (2)	$22,348.80	.5533	%	$12,366.00
Administrative Assistant	$3,184.80	.4694	%	$1,495.00
Contracts and Grants Specialist	$9,720.00	.4583	%	$4,455.00
			Subtotal	$63,134.00
EQUIPMENT (Bard Water District)				
Front End Loader CAT 938G	$100.00	160	HR	$16,000.00
Rubber Tired Excavator CAT M318F	$100.00	120	HR	$12,000.00
Excavator 330 C	$100.00	120	HR	$12,000.00
Dump Truck GMC	$100.00	160	HR	$16,000.00
Dump Truck Kenworth	$135.00	160	HR	$21,600.00
Water Truck – GMC	$50.00	120	HR	$6,000.00
12M3 Motor Grader	$150.00	160	HR	$24,000.00
Mac/Cozad Lowboy	$150.00	120	HR	$18,000.00
Flatbed/Tilt Truck	$75.00	120	HR	$9,000.00
Service Truck 1 Ton 2000 Ford	$50.00	240	HR	$12,000.00
Project Manager and Water Master Trucks (2)	$25.00	360	HR	$9,000.00
			Subtotal	$155,600.00

SUPPLIES AND MATERIALS				
Fill Dirt	$12.00	3,000	CU YD	$36,000.00
Concrete included with Trencher	$0.00	200	CU YD	$0.00
			Subtotal	$36,000.00
CONTRACTUAL/CONSTRUCTION				
Construction Management Included On-Site Engineering/Survey	$20,000.00	1	LS	$20,000.00
Concrete Testing	$10,000.00	0.25	Mile	$10,000.00
Trencher	$350.00	1,250	LF	$437,500.00
			Subtotal	$467,500.00
OTHER				
Engineering and Design	$30,000	1		$30,000.00
Environmental and Regulatory Compliance	Completed			
			Subtotal	$30,000.00
TOTAL DIRECT COSTS	**$870,853.00**			
INDIRECT COSTS				
De minimis	10%		base	181,753.00
TOTAL ESTIMATED PROJECT COSTS	**$889,028.00**			

2.3 Budget Narrative

Salaries and Wages:

Project Manager – Nick Bahr, General Manager
Manage Overall Project: Bid Procurement Process; Scheduling of Staff and Equipment.

Water Master – Shawn Weddle
Assist Project Manager – Help supervise BWD employees and Alert/Coordinate with Water Users

EQ Operators – 2
Initial site preparation – some excavation and demolition activity, provide support for all construction activities including logistics

Laborers – 2
Assist with all construction activities

Gate Fabricator
On-site installation and modifications

Contracts & Grant Specialist – Lydia Mendoza

Contract Administration, Tracking, Quarterly and Final Reports

Administrative Assistant – Maria Alonso
Purchasing, Payroll, Tracking, Equipment/Staff Hours for Tracking

Fringe: Fixed
The Bard Water District certifies that the labor and fringe rates included in the budget proposal represent the actual labor rates of the identified personnel.

Travel: No Travel Required

Equipment: Will use Bard equipment (Bard Schedule) Site preparation, load and transport dirt, Earthwork, Installation/rebuild structures, and final clean-up. Dust control.
Vehicles used for project management and in support of on-site Bard crew.

Motor grader 12M3
CAT 938G
CAT 420 F Backhoe
Tracked Excavator 330C
Rubber Tired Excavator 318F
Dump Truck
International Water Truck
Mac/Cozad Lowboy
Flatbed/Tilt bed
Ford F150 Pickup Trucks (2)
Ford F150 Crew Cab Truck
Ford XLT Super Crew
730 & 830 Capital Trapezoid Trencher with Boat (Slipform for concrete) provided by Crawford Associates **(Contractor)**

Used as needed:
Lighting (Night)
TIG Welder
Tamper
Stihl Concrete Saw
ARC Welder
Roller
730 & 830 Capital Trapezoid Trencher with Boat (Slipform for concrete) provided by Crawford Associates **(Contractor)**

Materials and Supplies:
Concrete for appurtenances (Aprons, Tie-Ends, Frame, Sidewalls, etc.)
Fill dirt to bring to fill trapezoid at required slope/grade
Forms/Traverse Joints/Structures for Concrete work NC
Safety: Barriers/Temporary Fencing, Level D Personal Vests, glasses, hard hats, gloves; Drinking Water; Shade Provided by BWD at **no** costs.

Contractual:
Engineering and Design – George Cairo Engineering LLC
Trencher

Environmental Regulatory Compliance Costs:
Complete HAER for Environmental Compliance – Completed during Phase 1

Indirect Costs
10% de minimis of overall sub-total.

3.0 Environmental and Cultural Resources Compliance

- *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*

.

BWD's Reservation Main Canal (0.25) Phase 2 of 4 Lining Project will have no significant impact to the surrounding environment. All earth-disturbing work will occur within existing canal and sidewalls.

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

As this area is greatly disturbed and in constant agricultural use, there are no threatened or endangered species or critical habitat present.

- *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 within the project boundary.

- *When was the water delivery system constructed?*

The Reservation Main Canal was constructed as part of the original 1909 Yuma Project.

- *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.*

Yes, this project will result in upgrades to several turnouts or checks to tie them into the new 0.25

Mile of the Reservation Main Canal concrete lining. These upgrades can include modifying, rebuilding, or replacing some components of a structure to maximize water efficiency.

- *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.*

The features in the Bard Water District Listed or Eligible for Listed on the National Register of Historic Places include: The All- American Canal, USBR Dams, Head Gates, and Retention Areas, Old Southern Pacific Rail Line and Bridges, Fort Yuma, Potholes, and Petroglyphs. None of these will be impacted by this project.

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

There are no archaeological sites in the project area.

- *Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?*

This project will not have disproportionally high or adverse effects on low income or minority populations. This project will positively affect these populations.

- *Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?*

The project will not limit access to and ceremonial use of sacred sites or impact Tribal lands.

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

No, this project will have the opposite effect, reducing noxious weeds and non-native invasive species.

4. Required Permits or Approvals

There are no permits or approval required for this project beyond of Reclamation's requirements.

5. Letters of Project Support

Please see attachment for Letters of Support on this project. Letters of support from:

- Various Local Farmers

6. Official Resolution

An official resolution approved by the Bard Water Irrigation and Drainage District will be submitted within 30 days. There is no third-party financial support.

7. Overlap or Duplication of Efforts Statements

Bard Water District does not have any projects which overlap between the proposed project nor any other active or anticipated proposal or projects in terms of activities, costs, or commitment of key personnel. The submitted proposal from BWD is not in any way duplicative of any proposal or project that has been or will be submitted for funding consideration to any other potential funding source.

8. Conflict of Interest Disclosure

Bard Water District does not have any existing conflicts of interest, nor do we anticipate having any conflict of interest during the Federal award period.

9. Uniform Audit Reporting Statement

Bard Water District is compliant with the submission of uniform audit reporting statements as an entity that has received $750,000 in U.S. dollars or more in Federal grant award funds during a single fiscal year.

10. Certification Regarding Lobbying

Bard Water District certifies no current lobbying activities. Please see the completed SF-LLL Form.

11. Appendices

Appendix A: BWD Background
Appendix B: Letters of Project Support
Appendix C: Map of Project Area
Appendix D: Official Resolution (Submit within 30 days)

Appendix B Letters of Support

October 29, 2024

Nick Bahr, General Manager
Bard Water District
1473 Ross Road
Winterhaven, CA 02283

Subject: Letter of Support for Project R24AS00052 – BWD Lining of Reservation Main Canal (RC), Phase 2 of 4

Dear Nick,

We are pleased to submit this Letter of Support for the BWD Project – Lining of the Reservation Main Canal (RC), Phase 2 of 4, to increase water supply savings and reliability by lining an additional 0.25 miles of earthen Reservation Main Canal and replacing or rebuilding required appurtenances, thus, conserving water. We have supported previous BWD lining projects by fallowing our fields that receive water from BWD and pledge our continuing support to this new project.

The concrete lining of the earthen Reservation Main Canal will provide new opportunities for us to adapt and improve our irrigation systems. This project improvement will help us optimize efficiency, reliability, and safety of our water systems, subsequently improving water management and conservation. This will also reduce the risk of bacterial contamination from the sludge at the bottom of the currently earthen Reservation Main Canal and reduce noxious/invasive plants.

The Reservation Main Canal currently irrigates 1,650 acres of our agricultural fields. We are pleased with the recent canal lining improvements in the District and will continue to support BWD in its efforts to improve water system delivery management and conservation.

Sincerely,

Steve Alameda, President
Topflavor Farms Inc.

Amigo
FARMS, INC.

BRUCE E. WILLIAMS
PRESIDENT

WILLIAM J. SCOTT JR.
VICE PRESIDENT

October 29, 2024

Nick Bahr, General Manager
Bard Water District
1473 Ross Road
Winterhaven, CA 02283

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The Reservation Main Canal currently irrigates 875 acres of our agricultural fields. We are pleased with the recent canal lining improvements in the District and will continue to support BWD in its efforts to improve water system delivery management and conservation.

Sincerely,

William J Scott Jr, VP
Amigo Farms, Inc.

fruits&veggies more matters

4245 E. 32ND STREET • YUMA, ARIZONA 85365 • (928) 726-3738 • FAX (928) 726-3744
www.amigofarms.com

Reservation Main Canal