

NORTH GILA VALLEY IRRIGATION & DRAINAGE DISTRICT

**MCPHERSON LATERAL
LINING PROJECT
PHASE 3**

**July 27, 2018
No. BOR-DO-18-F009**

**North Gila Valley Irrigation & Drainage District
1405 W. 16th Street, Ste. A
Yuma, AZ 85364-4578**

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NORTH GILA VALLEY IRRIGATION & DRAINAGE DISTRICT

**MCPHERSON LATERAL LINING PROJECT
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**North Gila Valley Irrigation and Drainage District
McPherson Lateral Lining Project
Phase 3**

Project Proposal:

North Gila Valley Irrigation and Drainage District (NGVIDD)

Location: NGVIDD is the North Gila Unit of the Yuma Mesa Division of the Gila Project, Arizona as shown on the attached maps. The District is in southwestern Arizona just North and East of Yuma, Arizona.

District Office 1405 W. 16th Street, Suite A
Yuma, AZ 85364
928-343-9447 office
928-343-9483 fax

Contact: Wade Noble and/or Meghan Scott
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Contract: Contract No. 5-07-30-W0094

Authorized Acres: 6587 acres

Water Conservation Plan: The District is current in its Water Conservation Plan.

Executive Summary, Project Description, and Background Data - McPherson Lateral Lining Project

Through Contract No. 5-07-30-W0094 NGVIDD shares an entitlement to consumptive use of 250,000 af of Colorado River water with the two other districts, Yuma Mesa Irrigation and Drainage District and Yuma Irrigation District, in the Yuma Mesa Division of the Gila Project, Arizona. The District is authorized to irrigate up to 6587 acres.

NGVIDD diverts Colorado river water through two turnouts from the Gila Gravity Main Canal of the Gila Project, Arizona. North Gila turnout no. 1 is 7 miles from Imperial Dam and North Gila turnout no. 2 is 11 miles from Imperial Dam. The two turnouts have capacities of 150 cfs and 50 cfs respectively. There are 10.2 miles of canals, mostly soil lined, and about 15 miles of laterals, mostly soil lined, in the District. Drainage is necessary and is provided by open drains and the adjacent Colorado River on the west side of the District and the Gila River on the south side of the District.

The three Phase Project will line and reline 7,393 feet of the McPherson lateral. The first Phase of 2210 feet was completed in August 2016 (and funding assistance was provided under Agreement No. R16AP00054). The second Phase of 3737 feet was completed in September 2017 (and funding assistance was provided under Agreement No. R17AP00186). The remaining 1446 feet will be done in Phase 3.

All three Phases have and will be constructed by Crawford Associates of Blythe, CA. Phase 3 of the Project will be completed with a construction estimate of \$63,262.50 (estimate attached). The per unit cost is \$43.75 a lineal foot. 1446 feet will be completed in Phase 3. Engineering for the entire Project was provided by James Davey & Associates. The per unit cost of engineering is \$1.03 a lineal foot. In addition to the above costs, costs for other materials, demolition, construction and equipment needed for completion of the project total \$16,836.54, and additional costs for administrative, legal, and miscellaneous expenses are \$4,500.00. The total budget for Phase 3 and completion of the McPherson Lateral is \$86,088.42.

The most prominent task area component of this application is improved water use efficiency in NGVIDD. The District's Water Conservation Plan addresses on-farm irrigation system improvements made by lining the ditches and structures to reduce seepage and ditch breaks and enabling management of level basins, thereby increasing efficiency of water use.

The McPherson Lateral provides water to the central lands of the District. Due to age, the lateral lining is severely deteriorated.

The leakage and seepage from the deteriorated lateral results in water quality degradation and soil quality degradation.

The proposal is to rehabilitate the lateral by rebuilding the lateral with a new pad, increasing the size to 40", and concrete re-lining the lateral thus increasing flow capacity and efficiency.

Project Schedule - The Project will be completed over two months beginning in July, 2018. Given the nature of Phase 3 of the Project, work may not be completed on a continuous basis but will be completed over time as possible. However, Phase 3 will be completed by September 1, 2018.

The benefits include - better water management planning, greater efficiencies in water deliveries, decreases in groundwater levels affecting farming operations and decreases in water loss through seepage.

Evaluation Criteria

Evaluation Criterion A—Project Benefits

- Describe the expected benefits and outcomes of implementing the proposed project.
 - o What are the benefits to the applicant's water supply delivery system?

As mentioned above - the benefits are in the increased efficiencies in water ordering

and water delivery to the fields. Less water is used when it is conveyed through a concrete lined facility. Leakage and seepage are two related problems addressed by this project.

Lined laterals in gopher country, greatly increase the safety of the system because the concrete lining is an effective gopher barrier. Loss of a lateral during produce season is a risk which can be mitigated by lateral lining. Damages to the farmer from a field loss in a lateral blowout caused by gophers or other defects start in six figures and can go to seven figures.

o If other benefits are expected explain those as well. Consider the following:

- Extent to which the proposed project improves overall water supply reliability

Reliability of the overall water supply is increased by lining as provided in this project because there is less risk of lateral failure.

- The expected geographic scope benefits from the proposed project (e.g., local, sub-basin, basin)

In an area which is forecasting over delivery of water to Mexico at 25,000 to 30,000 af this year, even seemingly small volumes of water which are conserved by the District through this project can impact uses on the lower Colorado River.

At this time, due to drought and shortage from over-allocation, we work to keep water in the river maintaining the elevation of Lake Mead. This project contributes water to the Lake Mead or to the Central Arizona Project, depending on how you view it.

- Extent to which the proposed project will increase collaboration and information sharing among water managers in the region

The District is a member of both Gila Gravity Administrative Board and the Imperial Dam Advisory Board which meet regularly. The information on this lining will be shared to the mutual benefit of the districts in the area.

- Any anticipated positive impacts/benefits to local sectors and economies (e.g., agriculture, environment, recreation, tourism)

The McPherson lateral lies within some of the most fertile soil in the world. Increasing and maximizing the efficiency of the lateral helps a multi-billion dollar economic drive to continue to provide winter vegetables to the United States and Canada.

- Extent to which the project will complement work done in coordination with NRCS in the area (e.g. with a direct connection to the district's water supply). Describe any on-farm efficiency work that is currently being completed or is anticipated to be completed in the future using NRCS assistance through EQIP or other programs.

None.

Evaluation Criterion B—Planning Efforts Supporting the Project

Describe how your project is supported by an existing planning effort.

The District is current in its Water Conservation Plan with Reclamation. That planning effort supports this project.

- Does the proposed project implement a goal or address a need or problem identified in the existing planning effort?

Efficiencies in water measurement and ordering are main targets of the District Water Conservation Plan. This project will significantly contribute to efficient measurement and delivery of water. That in turn will assist in more accuracy in water ordering. More accuracy in water ordering will help to decrease the excess water on the Colorado River which may have to be delivered to Mexico in excess of its order.

Water conservation achieved by lining and improving 7,393 feet of a main lateral in a 6587 acre district is major. It is acknowledged that the concrete work has taken three phases due to financial considerations, mostly grant funds availability.

Water Quality Degradation: there are salts in surface waters and ground waters used for irrigation. The project will rehabilitate the remaining 1446 feet of the McPherson Lateral. Currently, the condition of the lateral allows for seepage of Colorado River water which concentrates salts into the return flows to the river.

Inefficient use of irrigation water; Inefficient moisture management (Drought). The project will increase the efficiency of water delivery by providing increased lateral capacity which will allow shorter irrigation turns.

Soil Quality Degradation: Concentration of salts and other chemicals. Salt concentration can be a significant problem for the lands of the Gila Valley including the lands of NGVIDD. Rehabilitating the lateral will reduce the seepage and therefore decelerate the soil quality degradation due to salt concentration.

- Explain how the proposed project has been determined as a priority in the existing planning effort as opposed to other potential projects/measures.

Lining contributes to conservation of water by decreasing the amount of water lost due to seepage. It is well recognized that the farmers are the ones who benefit the most from more accurate and efficient delivery of water. Farming in the area today often uses high volume turn outs which are critical to the continued decline in water use on the produce during the season. The high priorities of getting the right amount of water on the crops, resulting in using less water to grow more crops, is conservation. The continued use of soil lined canals and laterals negatively impacts efficiencies and conservation. Water losses and additional water needed because of the inefficiencies of the delivery system beyond seepage are significantly great. Reducing such inefficiencies is the high priority of this project.

Evaluation Criterion C—Project Implementation

- Describe the implementation plan for the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.

Because the District needs funding for the project it has divided the overall project into three Phases. This grant application applies to Phase 3 of the McPherson Lateral Lining Project. Each phase can be completed in about two months. The schedule for this Phase 3 is July through September of 2018.

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

No permits are required for this project.

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

Engineering, including field work-design-and drawing, was performed by James Davey and Associates of Yuma, Arizona.

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

None

- Describe how the environmental compliance estimate was developed. Have the compliance costs been discussed with local Reclamation office?

All environmental studies and considerations were made in Phase 1 of the Project and were discussed with Reclamation's Yuma Area Office at that time. Costs were also absorbed in Phase 1. Phases 1 and 2 were completed in compliance with the environmental study and other considerations. The same study can be used for Phase 3 of the Project and the work will be complied in compliance therewith.

Evaluation Criterion D—Nexus to Reclamation

- Is the proposed project connected to a Reclamation project or activity? If so, how?

Yes. The District (NGVIDD) is a Reclamation project and one of the three Districts with a shared entitlement to 250,000 af of water from the Colorado River as part of the Yuma Mesa Division of the Gila Project, Arizona.

- Does the applicant receive Reclamation project water?

The District receives its Colorado River water entitlement through the Gila Project Arizona Gila Gravity Main Canal which forms the eastern border of the District.

- Is the project on Reclamation project lands or involving Reclamation facilities?

Yes, the McPherson Lateral is a Reclamation facility which is maintained and operated by the District.

- Is the project in the same basin as a Reclamation project or activity?

Yes, the District, and therefore the McPherson Lateral is in the Gila Project Arizona and is bordered on the west by the Yuma Project, Arizona.

- Will the proposed work contribute water to a basin where a Reclamation project is located?

Most certainly. The increased water savings resulting from the canal lining returns water to the Colorado River where it is picked up by another Reclamation project, the Central Arizona Project.

- Will the project help Reclamation meet trust responsibilities to any tribe(s)?

No, this project will not assist Reclamation in meeting trust responsibilities to any tribes. Although the District did participate in the 1980s in the water transfer of 50,000 af of its shared entitlement to assist in the Ak-Chin Indian Water Rights Settlement.

Evaluation Criterion E–Department of the Interior Priorities

The Project supports the following Department of Interior priorities:

Creating a Conservation Stewardship Legacy Second Only to Teddy Roosevelt

This Project impacts a Department of Interior transportation and distribution system and considers the best practices for management of water resources. The Project allows for improvement of and an increased capacity for delivery of water.

Modernizing Our Infrastructure

This Project allows for the completion of a Project that modernizes and repairs current infrastructure.

Project Schedule:

Activity	Planned Start	Planned Completion
1. Lateral Re-lining	July 1, 2018	September 1, 2018

Project Budget:

The cost share funding of \$43,044.21 for the project will be provided by North Gila Valley Irrigation and Drainage District AS Recipient.

Funding Sources	Percent of total project cost	Total cost by source
Recipient funding	50 %	\$43,044.21
Reclamation funding	50 %	\$43,044.21
Other Federal funding	0	\$0.00
Totals	100%	\$86,088.42

Budget Proposal - Please see Budget Information sheet and Budget Table attached hereto and incorporated by this reference.

Budget Narrative -

Engineering and Design was completed by James Davey & Associates for the entire McPherson Lateral Lining Project, including this Phase 3. The cost per lineal foot for engineering and design is \$1.03. Phase 3 includes the lining of 1446 feet for a total engineering and design cost of

\$1,489.38 for Phase 3.

Crawford Associates has or will complete the construction for the entire McPherson Lateral Lining Project with the exception of a few headwalls, gates, and a check gate. For Phase 3 of the Project, Crawford Associates will complete the demolition of the old canal and lining for 1446 feet. The cost of demolition per lineal foot is \$4.50 for a total of \$6,507.00 for demolition costs completed by Crawford Associates. This was included in the demolition section of the budget information sheet. The cost of lining per lineal foot is \$39.25 for a total cost of \$56,755.50. This was included in the construction section of the budget information sheet. Total costs attributed to work completed by Crawford Associates is \$63,262.50.

One of the headwalls for the completion of Phase 3 was purchased at the price of \$3,750.00, along with its associated gate at the price of \$2,135.00, which were included as miscellaneous material costs in the budget information sheet. Demolition and installation of the headwall was completed by Valley Concrete & Lining at the cost of \$2,800.00, which was included as a construction cost in the budget information sheet.

Two additional headwalls will be constructed and installed by the District. Material costs for the construction of the two headwalls is \$1,126.22. A gate will also be purchased at the cost of \$1,245.00, for total material costs of \$2,371.22. This was included in the miscellaneous materials cost section of the budget information sheet. Demolition and removal of the old headwalls will take approximately 16 hrs at the rate of \$22.00/hour, for total demolition costs of \$352.00. Construction and installation of the new headwalls will take approximately 48 hrs at the rate of \$22.00/hour, for total construction costs of \$1,056.00. These costs were appropriately allocated within the budget information sheet.

A checkgate will also be constructed and installed by the District. Material costs for the construction of the check gate is \$1,800.00. This was included in the miscellaneous materials cost section of the budget information sheet. Demolition and removal of the old check gate will take approximately 16 hrs at the rate of \$22.00/hour, for total demolition costs of \$352.00. Construction and installation of the new checkgate will take approximately 56 hrs at the rate of \$22.00/hour, for total construction costs of \$1,232.00. These costs were appropriately allocated within the budget information sheet.

Equipment will also be rented and/or used for various parts of the Phase 3 of the Project, including a concrete vibrator (2 days), backhoe (8 hrs), and dump truck (8 hrs), for total equipment costs of \$988.32.

Administrative and legal expenses in the amount of \$4,500.00 are to be paid to Noble Law Office, the District's General Counsel.

For additional detail, please also see the Budget Tables attached hereto.

All environmental and cultural resources compliance was completed during Phase 1 of this three phase Project.

BUDGET ITEM DESCRIPTION	COMPUTATION		TOTAL COST
	S/Unit	Quantity	
SALARIES AND WAGES –Position title x hourly wage/salary x est. hours for assisted activity. Describe this information for each position.			
Employee 1	\$22.00/hr.	88	\$ 1,936.00
Employee 2	\$22.00/hr.	48	\$ 1,056.00
Employee 3			
FRINGE BENEFITS – Explain the type of fringe benefits and how applied to various categories of personnel.			
Full-Time Employees			
Part-Time Employees			
TRAVEL —dates; location of travel; method of travel x estimated cost; who will travel			
Trip 1			
Trip 2			
EQUIPMENT —Leased Equipment use rate + hourly wage/salary x est. hours for assisted activity—Describe equipment to be purchased, unit price, # of units for all equipment to be purchased or leased for assisted activity: Do not list contractor supplied equipment here.			
Item A – Concrete Vibrator	\$60.00/day	2	\$ 120.00
Item B – Backhoe	\$47.77/hr.	8	\$ 382.16
Item C – Dump Truck	\$60.77/hr.	8	\$ 486.16
SUPPLIES/MATERIALS —Describe all major types of supplies/materials, unit price, # of units, etc., to be used on this assisted activity.			
Item A – Headwall 1	\$3,750.00/Headwall	1	\$ 3,750.00
Item B – Gate 1	\$2,135.00/Gate	1	\$ 2,135.00
Item C – Headwall 2	\$563.11/Headwall	2	\$ 1,126.22
Item D – Gate 2	\$1,245.00/Gate	1	\$ 1,245.00
Item E – Check Gate	\$1,800.00/Gate	1	\$ 1,800.00
CONTRACTUAL/ CONSTRUCTION —Explain any contracts or sub-Agreements that will be awarded, why needed. Explain contractor qualifications and how the contractor will be selected.			
Contractor A – Crawford & Assoc.	\$43.75/ft. Lining and Demo	1,446	\$63,262.50
Contractor B – Valley Concrete	\$2,800.00/Headwall Demo and Install	1	\$ 2,800.00
Contractor C – James Davey & Assoc.	\$1.03/ft. – Design	1,446	\$ 1,489.38
OTHER –List any other cost elements necessary for your project; such as extra reporting, or contingencies in a construction contract.			
Other			
TOTAL DIRECT COSTS			\$81,588.42
INDIRECT COSTS			
Admin. & Legal Expenses			\$4,500.00
TOTAL ESTIMATED PROJECT COST			\$86,088.42

FUNDING SOURCES	AMOUNT
Non Federal Entities	
1. North Gila Valley Irrigation and Drainage District	\$43,044.21
2.	
3.	
Non-Federal Subtotal	\$43,044.21
Other Federal Subtotal:	
1.	
2.	
3.	
Other Federal Subtotal	
REQUESTED RECLAMATION FUNDING	\$43,044.21



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BUS. (760) 922-6804
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TERMS AND CONDITIONS

1. SCOPE OF CONTRACT

Contractor agrees to furnish all of the labor, materials and equipment referred to according to the terms and conditions on both pages of this contract.

2. TIME OF PERFORMANCE

Construction will begin as soon as crop conditions will permit following a mutually agreed starting date.

3. SPECIFICATIONS

Except as modified by the express covenants contained in this contract, all work shall be performed in accordance with established methods of construction approved by the National Resource Conservation Service. Concrete thickness shall be determined on the basis of total batch volume required for the specified thickness of concrete.

4. INSPECTION

The owner agrees that either he or his agent will be available to inspect and approve the following:

- (a.) The design, capacities and location of the work contemplated prior to starting of construction.
- (b.) The material and workmanship of the work as it progresses.

It is further understood and agreed that if the owner or his agent is not available or remains silent, it will be necessarily assumed that he has approved the work and agrees not to hold the contractor responsible for the work after it has been installed.

5. DAMAGE

The owner agrees not to hold the contractor responsible for damage caused by overflowing of water, weather, expansion or contraction of the concrete, swelling or shrinking of the soil after the work has been installed.

6. EXTRA PAYMENT

It is understood and agreed that the owner will pay the contractor extra for the reasonable value of labor, materials or equipment furnished in the performance of any extra work, alterations or delays caused by the owner or his agent. It is further understood and agreed that the owner will pay the contractor extra for the performance of the following:

- (a.) Removing debris, pipe, checks, water, fences or any other obstruction from the proposed lined section prior to the start of construction.
- (b.) Irrigating the ditch pad after preliminary grading.
- (c.) Dirt or water hauling necessary for construction.

7. PAYMENT

The owner agrees to pay **CRAWFORD ASSOCIATES**, within ten days after date of billing for the work accomplished. In the event it should become necessary for **CRAWFORD ASSOCIATES**, to enforce the terms of the agreement in such event the owner promises to pay a Late Payment Charge of 2% per month (24% per year) beginning ten days after date billing, plus collection costs and attorney's fees.

ACCEPTED BY: _____

Date: _____

Invoice



JAMES DAVEY AND ASSOCIATES
Consulting Civil Engineers • Water Resources Specialists

April 13, 2017

Wade Noble
North Gila Irrigation and Drainage District
1405 W. 16th St., Suite A
Yuma, AZ 85364

Project No: NGI-09
Invoice No: 000002017125

Project NGI-09 McPherson Lateral Concrete Lining

Professional Services through March 31, 2017

Phase DES2 McPherson Canal - 2017 Project

Task DES Prepare Design Plans

Professional Personnel

	Hours	Rate	Amount
Principal Engineer	9.75	140.00	1,365.00
Engineering Technician	23.00	80.00	1,840.00
Totals	32.75		3,205.00
Total Labor			3,205.00

Total this Task \$3,205.00

Task HYDR Hydraulic Analysis

Professional Personnel

	Hours	Rate	Amount
Principal Engineer	6.00	140.00	840.00
Totals	6.00		840.00
Total Labor			840.00

Total this Task \$840.00

Task PLAN Prepare Survey Base Sheets

Professional Personnel

	Hours	Rate	Amount
Principal Engineer	1.25	140.00	175.00
Engineering Technician	22.00	80.00	1,760.00
Totals	23.25		1,935.00
Total Labor			1,935.00

Total this Task \$1,935.00

Task TOPO Topographic Survey

Professional Personnel

	Hours	Rate	Amount
Principal Engineer	3.25	140.00	455.00
Survey Crew	7.50	160.00	1,200.00
Totals	10.75		1,655.00
Total Labor			1,655.00

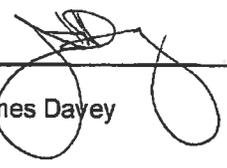
Project NGI-09 McPherson Lateral Concrete Lining Invoice 000002017125

Total this Task \$1,655.00

Total this Phase \$7,635.00

Total this Invoice \$7,635.00

Authorized
By:



James Davey

Date:

4/13/2017

NORTH GILA VALLEY IRRIGATION AND DRAINAGE DISTRICT

RESOLUTION 2018-3

McPherson Lateral Lining Project Phase 3

Resolution Adopting financial and legal obligations of North Gila Valley Irrigation and Drainage District ("District").

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE NORTH GILA VALLEY IRRIGATION AND DRAINAGE DISTRICT

The Board of Directors has appointed Wade Noble, General Counsel, and Meghan Scott, Associate General Counsel, for the District, to enter into an agreement for financial assistance on behalf of the Board in connection with the McPherson Lateral Lining Project Phase 3.

The Board of Directors has reviewed and supports the application being submitted.

The Board of Directors acknowledges that the District is capable to provide the amount of funding and/or in-kind contributions specified in the funding plan.

The Board of Directors will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement.

I do certify that the foregoing and attached is a true and correct copy of the resolution as it appears on the minutes of the Board of Directors of the North Gila Valley Irrigation and Drainage District, passed and adopted by the Board as of June 12, 2018.


Maryann C. Warner, Secretary
North Gila Valley Irrigation
and Drainage District