

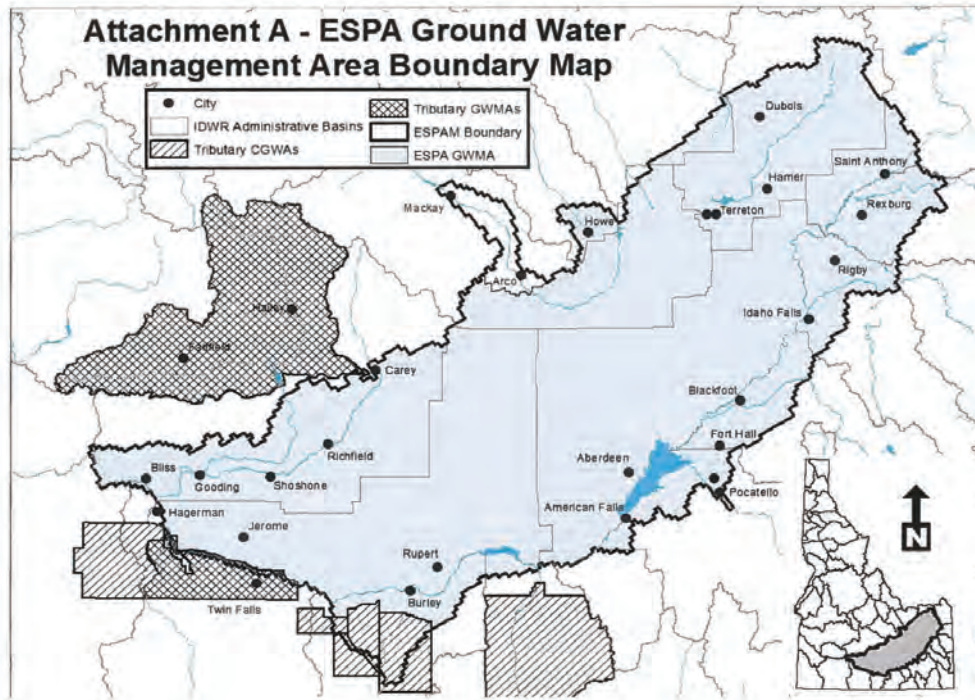
# WaterSMART

## Small-Scale Water Efficiency Projects for FY2021

Funding Opportunity No. **R21AS00300**

### **A & B Irrigation District Groundwater Well Meter Upgrades in the ESPA**

Rupert, Idaho



A & B Irrigation District

Dan Temple, General Manager  
414 11<sup>th</sup>. Rupert, ID 83350

Phone: 208-436-3152

**March 18, 2021**

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# Technical Proposal and Evaluation Criteria

## Executive Summary

Date: Application due date: March 18, 2021

Applicant: A&B Irrigation District  
Rupert, Minidoka County, Idaho

Project Title: A&B Irrigation District Groundwater Well Metering Upgrades in the ESPA

### Project Summary:

A&B District has measured groundwater extractions with mechanical propeller meters for 25 years. The district now plans to upgrade groundwater measurement to electromagnetic meters over a multi-year period. Electromagnetic meters will also comply with East Snake Plain Aquifer (ESPA) regulations set forth by the Idaho Department of Water Resources (IDWR).

A&B will make use of district and Bureau funds to upgrade **twenty-five** or approximately 15% of the meters on remaining groundwater wells in the district in the next two years. A&B will contract with a meter manufacturer for the purchase and configuration of electromagnetic meters that will satisfy state regulations as well as the district's water measurement and data needs. District staff is skilled in construction/repair of pipelines and will perform the installation of these new meters.

Approximate Length: Two Years

Completion Date: May 15, 2024

Federal Facility: The A&B Irrigation District was a federal Reclamation Facility until title was recently transferred on January 8, 2021. A&B is located on a Federal facility, Reclamation's Minidoka Project. A&B is part of the Minidoka Project most of which is still a federal Reclamation Project. A&B will continue to utilize a water right that is in the name of the Bureau of Reclamation and A&B District.

## Background Data

### A&B Irrigation District:

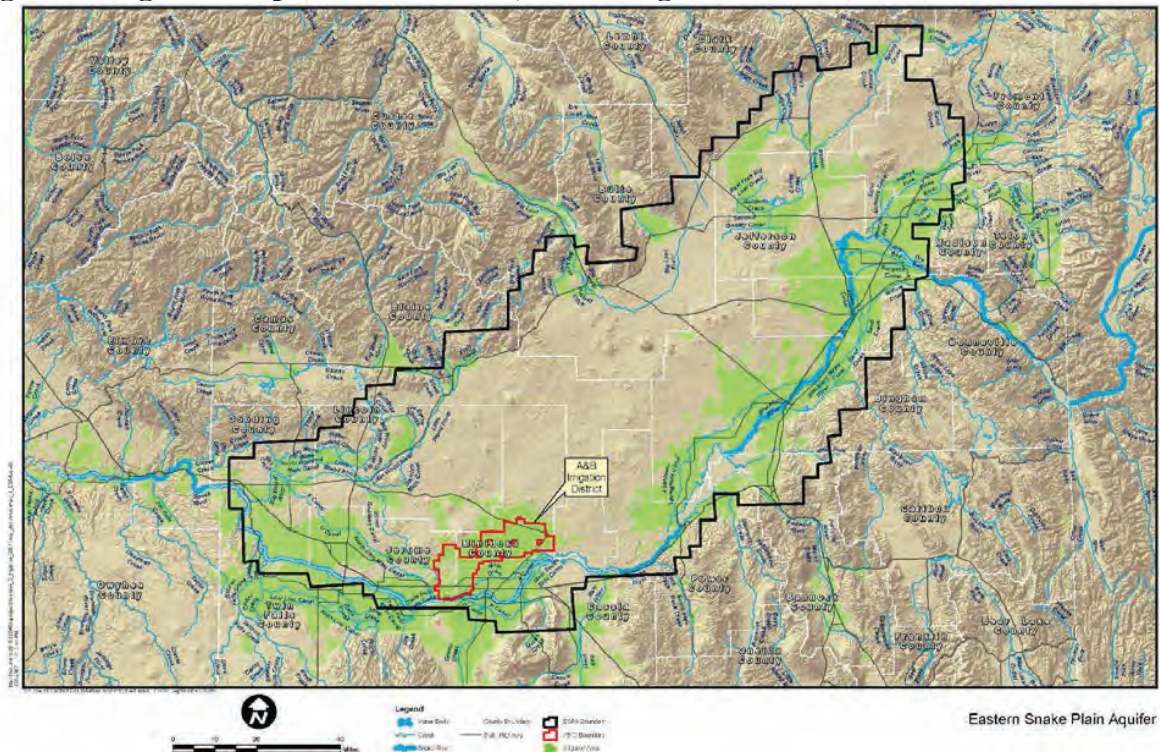
The A&B Irrigation District (A&B or District) was formed by the landowners of the Northside Pumping Division of the Minidoka Project, (Fig. 1) a federal irrigation reclamation project, to operate and maintain the project and to repay to the United States the construction costs of the project. The District was organized pursuant to Idaho law and entered into a repayment contract with the U.S. Bureau of Reclamation (Reclamation) in 1962. The District operates two units, Unit A with a surface water delivery system at the Snake River, and Unit B with deep groundwater wells in the Eastern Snake Plain Aquifer (ESPA). Reclamation provides reserved power to the District by

a contract through the Bonneville Power Administration's southern Idaho Power Pool.

The District has metered its groundwater and surface water diversions and deliveries for 25 years with propeller meters and has implemented a Conservation Plan since 2002 which outlines measurement practices for surface water and groundwater diversions. The IDWR implemented a metering order in the Fall of 2015 to address groundwater declines affecting flow in down-gradient springs. This requires measurement at the first diversion from the waters of the state with a state-approved flowmeter. Until recently, IDWR has allowed the District to measure groundwater with mechanical propeller meters, but will now require A&B to measure diversions with an approved meter which must be a full-profile electromagnetic totalizing flow meter.

## Area Map

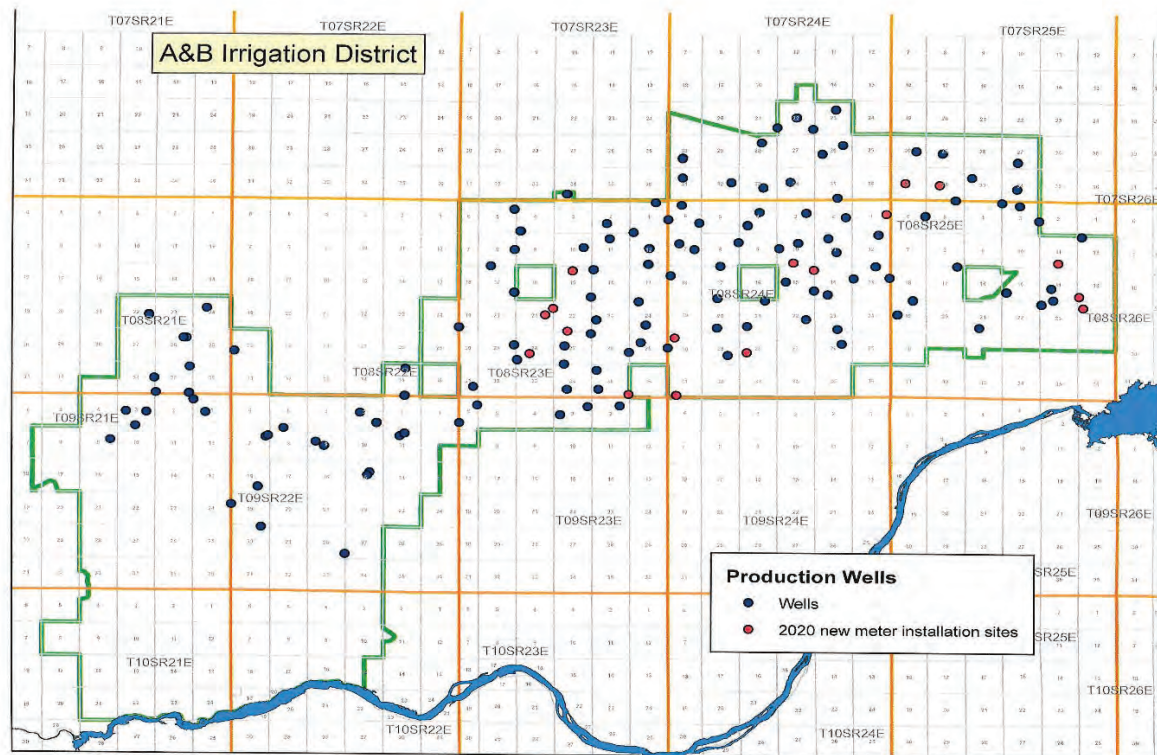
**Figure 1- Regional Map (Southern Idaho, A&B Irrigation District)**





## Project Location

Figure 2 - Deep Production Wells in A&B Irrigation District



## Technical Project Description and Milestones

A&B Irrigation District intends to improve groundwater extraction measurement within the district by upgrading to electromagnetic meters for groundwater measurement with assistance from the WaterSMART Small-Scale Water Efficiency Grant. A&B owns and operates 182 deep groundwater wells which in turn provides irrigation water to approximately 66,000 acres in the district.

**Meter Upgrades:** The district proposes to implement Phase Two of the process to upgrade each mechanical propeller meter with electromagnetic meters with no moving parts. Converting all wells to electromagnetic meters is expected to be a multi-year project. A&B began by replacing approximately 10% of the propeller meters (twenty individual) identified in red in **Figure 2** in 2020 with assistance from the FY'20 Small-Scale Water Efficiency Project Grant from the Bureau and will continue annually as funding is available. This one-year project provided the District with valuable knowledge on staff requirements for conducting such field work and necessary information to plan for completion of the metering across the district.

The proposed project will upgrade old mechanical meters to an electromagnetic meter with no moving parts featuring datalogging capabilities. The new meters will also be telemetry-capable if the District decides to deploy remote telemetry. The new meters will also reduce the amount

of staff time required for meter service and repairs. Meter downtime will be reduced improving water use records at A&B. The district is proposing to upgrade **twenty-five** mechanical propeller meters with electromagnetic meters in the next two years. The meters planned to be installed will be the McCrometer DuraMag electromagnetic meter. The DuraMag is a battery-powered flanged full-bore electromagnetic meter. The DC-powered version of the DuraMag is approved by the Idaho Department of Water Resources (IDWR). These meters will provide operational advantages to the district as well as improving data collected for water management in the ESPA.



Upon the successful award of this proposal, meters will be ordered in late December of 2021 and 2022 for delivery in January, 2022 and 2023 respectively. Installation of meters will be scheduled for January/February of 2022 and 2023 during the off-season of each respective year.

## Evaluation Criteria

**Evaluation Criterion (A)- Project Benefits:** *Up to 35 points may be awarded based upon evaluation of the benefits that are expected to result from implementing the proposed project. This criterion considers a variety of project benefits, including the significance of the anticipated water management benefits and the public benefits of the project. This criterion prioritizes projects that modernize existing infrastructure in order to address water reliability concerns, including making water available for multiple beneficial uses and resolving water related conflict in the region.*

*Describe the expected benefits and outcomes of implementing the proposed project.*

- *What are the benefits to the applicant's water supply delivery system?*

The meters that are proposed to be installed have an accuracy of +/- 1% compared to the accuracy expected in the Water Conservation Plan of 5% for the mechanical propeller meters. This improved measurement will provide for better accuracy for delivery to patrons of the A&B District. Greater accuracy of deliveries will improve efficiency of pumping practices in the district and will reduce inefficiencies including unnecessary pumping and conserve water in the local aquifer.

Improvements in technology will also be realized with the implementation of the new meters. Each of the meters installed will be equipped with internal dataloggers as a standard feature. These internal dataloggers will allow ditch riders to download time-stamped digital records of water pumped or delivered within specified time intervals. This is an improvement of water deliveries for internal purposes such as billing or pumping records for reporting purposes under state requirements.

Electromagnetic meters are also telemetry-ready in case A&B decides to deploy remote telemetry units for meter reading or other water management sensors in the future which will further the water management efficiencies of the district.

- *If other benefits are expected explain those as well. Consider the following:*
  - *Extent to which the proposed project improves overall water supply reliability*

Since A&B delivers water to its patrons by volume, the new meters will provide more accurate flow measurements to ensure that the amount delivered is correct. The district has also deployed Variable Frequency Drive (VFD) pumps on some pumps in the district. Meters installed on VFD pumps will improve the operational efficiency and performance of these pumps improving equipment longevity and energy efficiency.

This will improve on-farm water management and distribution throughout the district. These meters are more conducive to provide signal outputs for center pivots or other irrigation systems in the district. Farmers will also be able to quantify the amount of water being used for on-farm irrigation management purposes.

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

The new meters will have significant effects across the entire A&B district which manages approximately 182 deep groundwater wells. These wells cover an area which is approximately 6 miles deep and 30 miles wide (**See Figure 2**). Improved water management will have benefits within the district as well as for downstream water users that will experience sustained spring flows due to improved baseflow from groundwater.

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

The new meters proposed are well-suited to groundwater measurement. The short installation distance capable for these electromagnetic meters is conducive to water measurement in A&B with limited distance to existing underground pipelines. These meters also have no moving parts and consequently will not stop due to mechanical wear and tear. Standard equipment for the new meters also includes an internal datalogger which the district can use for recording water deliveries to patrons during the irrigation season. The datalogging feature will enable the district to improve data collection on water use in the Snake River Basin consistent with A&B's Conservation Plan.

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

This project will support improved groundwater management as well as more uniform water distribution across the district which will mean that more fields will be watered more effectively for better productivity. This in turn will prevent less waste of water resources and conserves water in the aquifer for future uses. Improved groundwater management will reduce the drawdown and slow or reverse the decline of the water table in the local aquifer.

- *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.*

New meters also have pulse-output capability in case farmers want to integrate flow data into their irrigation system. Having meters at individual turnouts will facilitate EQIP applications for such practices as soil moisture monitoring, surge valves, pivot nozzle conversions, etc.

**Evaluation Criterion (B) Planning Efforts Supporting the Project:** *Up to 35 points may be awarded based on the extent to which the proposed on-the-ground project is supported by an applicant’s existing water management plan, water conservation plan, System Optimization Review (SOR), or identified as part of another planning effort led by the applicant. This criterion prioritizes projects that are identified through local planning efforts and meet local needs.*

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

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

Yes, The board considers measuring water as accurately as possible to be a priority consistent with the **A&B Irrigation District Water Management and Conservation Plan**. This plan calls for the measurement of all surface and groundwater diversions in the district with stated accuracies. Section 5.1 of the Conservation Plan states that “During the irrigation season all delivery points receiving water are measured 6 days a week...”.

The A&B Water Management and Conservation Plan also discourages wasteful use of project water within the district. The Plan establishes a tiered system of escalated rates for water users that use water in excess of the allotted rate for that farm account. This discourages the non-beneficial use of water while careful water measurement by the district promotes water conservation. Accurate water measurements will make it easier to leave more water in the aquifer for future use and to provide baseflow for the Snake River downgradient of the district.

The new meters will improve the data collected on volumes of groundwater pumped within the district and delivered to patrons for irrigation purposes as required by the Conservation Plan. This is also consistent with Section 2A of the **Idaho State Water Plan** which promotes water use efficiency for reduced consumptive use. Water measurements will be taken at a higher degree of accuracy than the propeller meters used previously and will also aid in the implementation of technology such as datalogging flow rates or remote meter monitoring.

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

Despite A&B’s long history of groundwater measurement with mechanical propeller meters, the IDWR is enforcing the ESPA measurement order uniformly to the A&B District as well as other districts in the basin. The A&B Board of Directors has resolved at its **Feb 10, 2021** board meeting to initiate meter upgrades.

**Evaluation Criterion (C) Project Implementation:** *Up to 10 points may be awarded based upon the extent to which the applicant is capable of proceeding with the proposed project upon entering into a financial assistance agreement. Applicants that describe a detailed plan (e.g., estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates) will receive the most points under this criterion.*



- *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.*

June, 2021: Successful notification of award from the Bureau

July, 2021: Sign contract with the Bureau

Oct, 2021: Initiate Environmental Compliance with local Bureau office. Determine adequate sizing of meters for Phase Two meter order.

Dec, 2021: Order flowmeters from manufacturer

Jan/Feb, 2022: Install 10 - 15 new meters at pumps or farmer turnouts

Dec, 2022: Order flowmeters from manufacturer

Jan/Feb, 2023: Install 10 - 15 new meters at pumps or farmer turnouts

May, 2023: Prepare Final Project Report for Bureau

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

No permits will be required for this project.

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

A&B will complete the necessary design work for the diversion points and pipelines from the wells. A&B has extensive experience completing similar projects and will complete the necessary designs for meter installation at each well for this project.

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

No new policies are needed.

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

A&B staff have spoken with Melissa Jayo-Guerricagoitia of the Bureau of Reclamation in Boise, Idaho. Melissa reported the Bureau would be taking the lead on the environmental compliance requirements and work with the District if we are awarded a Small-Scale Water Efficiency grant.

**Evaluation Criterion (D) Nexus to Reclamation:** *Up to 10 points may be awarded based on the extent that the proposal demonstrates a nexus between the proposed project and a Reclamation project or activity. Describe the nexus between the proposed project and a Reclamation project or activity, including:*

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

A&B was a Reclamation District until proceeding with title transfer in the January of 2021. However, once this project is complete, A&B will still utilize a Reclamation water right.

- *Does the applicant receive Reclamation project water? Is the project on Reclamation project lands or involving Reclamation facilities?*

Yes. A&B receives Reclamation water and equipment will be installed on various groundwater pumps and pipelines owned and managed by A&B.

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

Yes. All installations of equipment will be within A&B boundaries which is part of the part of the federal Minidoka Project.

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

Yes. The project is located in the Upper Snake River Basin where Reclamation has several projects. The project will benefit Reclamation storage facilities in the Upper Snake River Basin above Milner Dam.

- *Will the project benefit any tribe(s)?*

Yes, Improved groundwater storage in the local aquifer will have the potential to improve spring flows and reach gains in the American Falls area for the benefit of the Shoshone-Bannock Tribes.

## **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.*

A&B plans to accomplish meter upgrades or improvements with this project. The meters will be in the same locations as previous meters and any environmental impacts will be minimal. All pipeline work to be done will be above ground installations.

*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?*

No, Endangered species will not be affected.

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

No.

*When was the water delivery system constructed?*

Construction of A&B District was completed and began delivering water in 1962.

*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.*

Discharge pipes of existing wells will need slight modifications, but no changes will be made to canals, headgates, or flumes as a result of this project.

*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 Bureau of Reclamation has determined that the Unit A Pumping Plant #1 is eligible for listing on the National Register of Historic Places. This project will not change or affect structure or function of the Unit A Pumping Plant #1 or its historical status.

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

No

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

No

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

No

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

No

## Board Resolution

### OFFICIAL RESOLUTION OF THE A&B IRRIGATION DISTRICT

Resolution NO. 2021-01

**WHEREAS**, the United States Department of Interior, Bureau of Reclamation, has announced the WaterSMART Grants for Small-Scale Water Efficiency Projects for Fiscal Year 2021 to provide financial assistance to water managers.

**WHEREAS**, A&B Irrigation District has a present need for funding to implement irrigation water meter upgrades necessary under Idaho Department of Water Resources (IDWR) regulations.

**NOW, THEREFORE, BE IT RESOLVED** that the A&B Irrigation District Directors agree to and authorize the following:

- The A&B Irrigation District Directors have reviewed and support the proposal submitted;
- The A&B Irrigation District is capable of providing the amount of funding and/or in-kind contributions, specified in the funding plan; and
- If selected for a WaterSMART Grant, A&B irrigation District will work with the Reclamation to meet the established deadlines for entering into a cooperative agreement.

DATED: February 10, 2021



Hector Parkin, Vice-President  
A&B Irrigation District

ATTEST:



Megan South, Secretary  
A&B Irrigation District



## Project Budget

### Funding Plan

Funding Sources	% of Total Project Cost	Total Cost by Source
Costs to be reimbursed with the requested federal funding	50.0%	\$47,434
Costs to be paid by applicant, A&B ID	50.0%	\$47,434
<b>TOTAL PROJECT COST</b>	100%	\$94,867

Budget Item Description	Computation \$/unit	Quantity	Quantity Type (hours/days)	Total Cost
<b>Salaries and Wages</b>				
Project Manager	\$31.55	20	hours	\$631
Construction Crew	\$20.00	1380	hours	\$27,600
Electrician	\$25.47	60	hours	\$1,528
				\$0
				\$29,759
<b>Fringe Benefits</b>				
	No fringe benefits being requested by this project			
<b>Travel</b>				
	No federal funds to be used for travel to install equipment			
<b>Equipment</b>				
10" DuraMag Electromagnetic Meter	\$2,021.00	15	ea	\$30,315
12" DuraMag Electromagnetic Meter	\$2,426.00	10	ea	\$24,260
Subtotal				<b>\$54,575</b>
<b>Supplies and Materials</b>				
Grounding Rings for 10" Mag Meters	\$ 248.00	15	ea	\$3,720
Grounding Rings for 12" Mag Meters	\$ 260.00	10	ea	\$2,600
DC Power Supply	\$ 58.00	25	ea	\$1,450
Subtotal				<b>\$7,770</b>
<b>Contractual/Construction</b>				
				\$0
Subtotal				<b>\$0</b>
<b>Total Direct Costs</b>				
				<b>\$92,104</b>
<b>Indirect Costs</b>				
		3%		<b>\$2,763.13</b>
<b>Total Estimated Costs</b>				
				<b>\$94,867</b>

Funding for our project will be provided by the WaterSMART grant and the A&B Irrigation District. No letters of commitment from outside sources will be needed.

## Budget Narrative

The estimated project cost is **\$94,867**. Upon delivery of the supplies, the grant funds from the BOR will help pay for the equipment purchased from the meter distributors. Quotes for meters and accessories have been obtained from distributors and are included in **Attachment 1**.

In-kind contributions from A&B will be a combination of cash required to purchase meters and accessories as well as the staff time and services required for the administration and field work to install the meters. This will amount to approximately **\$47,434** as noted in the Budget Proposal. A&B will be responsible for all the labor, heavy equipment, and the materials needed for meter installation at the sites to accommodate the new equipment. This is reflected in the budget as an in-kind contribution to the project.

In-kind contributions that do not cover our share will be made up by the A&B Operating fund. The expenditures benefit the project by improving A&B's ability to monitor and deliver constant water flows to the farmers and to our own canals and laterals.

## Total Costs

The district requests **\$47,434** from the Bureau's Small-scale Water Efficiency Grant. The remaining **\$47,434** will come from the A&B Irrigation District in cash and in-kind services.

## Unique Entity Identifier and System for Award

A&B Irrigation District is registered on the SYSTEM for Award Management (SAM). The unique entity identifier is **072962608**. The A&B Irrigation District will maintain an active SAM registration throughout the project.

Attachment 1



**Quotation**

**Quote Number: 158977 Rev0**

Codes: 001 / 006 / 066

Company: A B IRRIGATION DISTRICT  
 Address: PO BOX 675  
 City: RUPERT  
 State: ID Postal Code: 83350

**Quoted By:** Cherish Stack  
**Date Quoted:** Feb-04 2021 **Expires:** Mar-06 2021  
**Payment Terms:** TO BE ADVISED (TBA)  
**Shipping Terms:** FCA SELLER'S PREMISES (FCA)

Following is the information requested

Line #:	Item Number:	Description:	Qty:	UM:	List Price:	Disc:	Net Price:	Ext. Price:
1.000	DM10-1001	10" DURA MAG 150# AWWA Class D Flanges Battery Powered Pulse Output No Cable Hardwired Cable Connections Data Logger	15	EA	\$2,526.00	20%	\$2,020.80	\$30,312.00
1.100	3-2781-10-K	Grounding Ring Assy., 10" UM Grounding Rings for above meter	15	EA	\$248.00	20%	\$198.40	\$2,976.00
1.200	115-12	Power Supply (12VDC) Power Supply for above meter	15	EA	\$58.00	20%	\$46.40	\$696.00
Subtotal (List):					<b>\$42,480.00</b>		Subtotal (Net):	<b>\$33,984.00</b>
2.000	DM12-1001	12" DURA MAG 150# AWWA Class D Flanges Battery Powered Pulse Output No Cable Hardwired Cable Connections Data Logger	10	EA	\$3,032.00	20%	\$2,425.60	\$24,256.00
2.100	3-2781-12-K	Grounding Ring Assy., 12" UM Grounding Rings for above meter	10	EA	\$260.00	20%	\$208.00	\$2,080.00
2.200	115-12	Power Supply (12VDC) Power Supply for above meter	10	EA	\$58.00	20%	\$46.40	\$464.00
Subtotal (List):					<b>\$33,500.00</b>		Subtotal (Net):	<b>\$26,800.00</b>
All Prices are in US Dollars (USD)					<b>Total List Quoted: \$75,980.00</b>		<b>Total Net Quoted: \$60,784.00</b>	

\*\*\*\*Above pricing does not include tax or shipping cost\*\*\*\*

This quotation applies to equipment cost and does not include freight, site visits for pipe measurement, cable run evaluations, equipment start-up, end user training or submittals. These value added services will be quoted separately through your local McCrometer Factory Representative.

McCROMETER, INC.'S STANDARD TERMS AND CONDITIONS OF SALE FOR PRODUCTS AND SERVICES  
 REV. 1.4 04/17

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Continues on next page...

**\*158977\***

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