

Greater Wenatchee Irrigation District
3300 Southeast 8th SE Wenatchee, WA 98802-9130
509 884-4042

**FLOW METER INSTALLATION FOR BRAYS LANDING
UNIT**

Replace Propeller Meters Having Analog Readouts
with Electromagnetic Meters having Automated
Meter Reading Readouts

**Pacific Northwest Region Water Conservation Field Service
Program**

Funding Opportunity Announcement No. BOR-DO-19-F005
Due April 24, 2019

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EXECUTIVE SUMMARY

March 28, 2019
Greater Wenatchee Irrigation District
Chelan and Douglas Counties
3300 8th St SE
East Wenatchee, WA 98802

Greater Wenatchee Irrigation District (District) is submitting this Water Conservation grant application to seek financial assistance for its plan to install electromagnetic style water meters. These electromagnetic meters will be equipped with digital encoders and transmitters that will radio meter data to a data collector. An employee using the data collector will be able to gather data from all meters at two or three locations in each unit. This Automatic Reading System (AMR) electromagnetic meter installation and upgrade project will allow more closely monitored water flow, restricting outgoing water to the GPM's allowed per meter. This will result in improved water management, preventing potential water drought issues. The installation of the AMR's will also reduce the Districts' use of federal reserved power by eliminating metering head losses; save labor and reduce fuel costs by eliminating the need to visit each meter location; improve water measurement accuracy; and reduce meter maintenance primarily because electromagnetic meters have no moving parts. The District is a federal reclamation project with the Chief Joseph Project of Reclamation's Pacific Northwest Region, more specifically the Columbia Cascade Area. This grant application is submitted pursuant to WaterSmart Grants: Small-Scale Water Efficiency Projects for Fiscal Year 2019 Funding Opportunity Announcement No. BOR-DO-19-F005.

Based on the Award Date and Funding and Funding Group provided in Funding Opportunity Announcement No. BOR-DO-19-F005, the District anticipates the following schedule for this project:

July, 2019 - Notice of Award
August 2019 - Funds Awarded
August 2019 - Purchase meters
October, 2019 – October, 2021 - Install meters
October, 2021 - Project completion
2021 and Beyond - Continue phased installation of AMR mag meters for the remainder of the District

*These dates can be accelerated if funds are awarded earlier than August, 2019

BACKGROUND DATA

Description of the District

General Information

The Greater Wenatchee Irrigation District (District) is located in Douglas and Chelan Counties, Washington. The District is part of the Chief Joseph Dam Project and serves approximately 9,745 acres of irrigable lands through closed pipe distribution systems. Chief Joseph Dam, constructed by the Corps of Engineers, is on the Columbia River in north central Washington. Four irrigation divisions of the Chief Joseph Dam Project have been authorized: Foster Creek, Greater Wenatchee, Okanogan-Similkamen and Chelan. Reclamation made a reconnaissance study of the District area in 1945. A development investigation began in 1946, and a project planning report was published in 1950. Engineering investigations were made in 1952 and 1953 and economic and feasibility studies of the area were made in 1955. The final plan was prepared in 1959 and revised in 1962.

Construction of the four units of the District was authorized by the Act of Congress approved on May 5, 1958 (72 Stat. 104, Public Law 85-393). The District was built by Reclamation in the years 1960 to 1965 and was intended to water farm crops. From 1985 to 1987 the District was expanded and upgraded.

The District has New Agricultural (New Ag) and Original Land classifications for billing purposes. New Ag land was added to the District after 1985 and Original land, was included in the District prior to 1985. The District makes construction and loan payments to Reclamation according to land classifications.

The District is composed of three units: East Unit, Brays Landing and Howard Flats. See the Vicinity Map on the following page.

District Organization

The District is governed by a five-person Board of Directors elected from among the landowners, pursuant to Title 87, Revised Code of Washington (RCW). The Board of Directors appoints a Secretary-Manager for the management and administration of the District and to serve as Secretary to the Board. The District currently has six employees in addition to the Manager. The workforce includes one office support staff member and six field support staff members. The District generally begins irrigation water delivery in early April and shuts down in mid-October.

In October 1959, the District entered into Contract No. 14-06-100-1786 with Reclamation for development repayment. The contract had a repayment sum of four million four hundred seventy thousand dollars (\$4,470,000), for funded costs and equipment, machinery, tools and supplies made available to the District. The contract was amended in 1962 to a revised payment amount of four million six hundred seventy six thousand eight hundred dollars (\$4,676,800) for funded costs and equipment, machinery, tools and supplies made available to the District. In 1985, the District acquired a loan under the Small Reclamation Projects Act for project expansion, referenced as Contract No. 5-07-10-W0589. The loan was for the amount of six million five hundred seventy-six thousand dollars (\$6,576,000). The total estimated cost of the project expansion was eight million three hundred fifty-four thousand dollars (\$8,354,000), of which one million two hundred seventeen thousand dollars (\$1,217,000) was estimated to be a grant provided by the State.

East Unit

The East Unit provides irrigation water for 5,575 acres in the East Wenatchee area of Douglas County. Water is pumped from the Columbia River, approximately 677 feet to an equalizing reservoir, then conveyed to the lands through a closed-pipe system and delivered at sprinkler pressure.

Brays Landing Unit

Irrigation water for the Brays Landing Unit serves about 2,930 irrigable acres. The unit is located about 25 miles north of Wenatchee, near Orondo, in Douglas County. The land served by the unit is comprised of high terraces with irregular topography. The major facilities include a main pumping plant, discharge line, main regulating reservoir, closed pipe lateral system, and nine small pumping plants and reservoirs.

Howard Flats Unit

The Howard Flats Unit serves approximately 1,240 acres of irrigable land in Chelan County on a large, relatively flat terrace about five miles northeast of Chelan, Washington. Water is pumped from the Columbia River, through a booster pumping plant, and a reservoir relift pumping plant to terraces approximately 820 feet above the river.

East Unit Land Base and Land Use

The East Unit serves 5,575 acres in the East Wenatchee area of Douglas County. The water is supplied for this unit via a two-stage pump station located on the Columbia River, approximately three miles southeast of East Wenatchee. Water is pumped from the River Pumping Plant directly into the Booster Pumping Plant. From the Booster Pumping Plant, water is pumped into a pressurized distribution system and into the Main Reservoir (elevation 1310 feet). The Main Reservoir serves as an equalizing reservoir for the western part of the East Unit. An additional storage reservoir (Airport Reservoir) was constructed in 1987 that serves as a peaking reservoir for the East Unit. The reservoir is filled by the Booster Pumping Plant. A vertical turbine pump located at the Airport Reservoir pumps into the Main Reservoir pressure zone. The East Relift pumps from the Main Reservoir pressure zone to the East Reservoir (elevation 1,365 feet). The East Relift No. 2, located at the Airport Reservoir, also pumps to the East Reservoir. The North Relift Pumping Plant pumps from the Main Reservoir pressure zone into the pressure distribution system served by the North Reservoir (elevation 1,407 feet).

Brays Landing Unit Land Base and Land Use

The Brays Landing Unit is located about eight miles north of Orondo, in Douglas County. The water supply for this unit is pumped from wells located adjacent to the Columbia River. There are two sets of wells. The North Water Supply Wells include five wells located in the Sun Cove development. Those wells pump to Reservoir 1 (elevation 830 feet). Pumping Plant No. 1 pumps from Reservoir 1 up to Reservoir A (elevation 1048 feet). Pumping Plant A, pumps from Reservoir A to the pressurized distribution system that leads to Reservoir B (elevation 1344 feet). Pumping Plant B pumps water into the pressurized distribution system that leads to Tank C (elevation 1480 feet) Pumping Plant C pumps water into the pressurized distribution system that leads to Tank D (elevation 1590 feet). The South Water Supply Wells include three wells. Those wells pump into a distribution system that leads to Pumping Plant F, which in turn pumps to tank C. Pumping Plants D and E boost pressure from that system into the system served by Tank D. The service area of this unit is 2,818 acres in size. The original size of this unit was 1,667 acres following completion of United States Bureau of Reclamation's project in the 1960s. The unit was expanded in 1985 to its present size (2,930 acres) and the South Water Supply Wells and associated piping system were constructed.

Brays Landing Unit Pumping Facilities				
Type of Pumping Facility	No. Units	Total Horsepower	Rated Flow (cfs)	Rated Head (feet)
Wells (North)	5	750	32.2	135
Wells (South)	3	1400	16.26	606
Pumping Plant No. 1	5	1200	31.2	241
Pumping Plant A	5	1450	31.2	317
Pumping Plant B	5	495	19	161
Pumping Plant C	3	200	9.1	130
Pumping Plant D	2	50	2.45	112
Pumping Plant E	2	80	2.67	145
Pumping Plant F-High	3	750	11.02	350
Pumping Plant F-Low	2	80	1.98	206
Totals	35	6455		

Brays Landing Unit Reservoir Facilities

Name	Capacity		Elevation
	gallons	acre-feet	
1	242000	0.74	830
A	338000	1.05	1048
B	338000	1.05	1344
Tank C	228600	0.7	1480
Tank D	174500	0.54	1590
Totals	1321100	4.08	

Brays Landing Unit Pipeline Facilities

Size of Pipe	Length	Type of Pipe
27	3,826	Steel
21	7,593	Steel
18	3,810	Steel
16	9,643	Steel
14	8,666	Steel
12	15,757	Steel
10	11,102	Steel
	2,173	PVC
8	7,203	Steel
	3,896	PVC
6	25,813	Asbestos-Cement
	6,663	PVC
4	8,382	Asbestos-Cement
	2,373	PVC
Totals	116,900	

There are a total of 22.1 miles of District owned pipeline in the Brays Landing Unit. The unit contains eleven pressure reducing valves (PRV) in laterals. There are also 200 service meters, of which 17 are 4-inch meters, approximately 140 are 3-inch meters and the remainder are 2-inch meters.

Energy Supply and Use

All water supplied by the District is pumped. Therefore, the sources of electrical power and the use of electrical energy are management priorities. In recent years the District's total energy requirement for pumping has averaged about 32,950,000 kilowatt-hours (kw-hrs) per year. Approximately 91 percent of that energy is supplied by the United State Bureau of Reclamation (Reclamation) as federal reserved power. Approximately 8 percent is supplied by the Douglas County Public Utility District (Douglas PUD) and about 1 percent is supplied by the Chelan County Public Utility District (Chelan PUD).

The District is a division of the Chief Joseph Dam Project. In the context used here, federal reserved power is the portion of the electrical generation of Chief Joseph Dam set aside to supply the pumping needs of the various irrigation divisions of Reclamation's Chief Joseph Dam Project. Other energy generated at Chief Joseph is available to the regional grid as part of the Federal Columbia River Power System or for other federal purposes.

Reclamation's supply of reserved power to the District is described in the 1959 repayment contract. These contract provisions enable Reclamation to enter into additional contracts with the Bonneville Power Administration (BPA) and with local utilities for the transmission of reserved power to District pumping facilities.

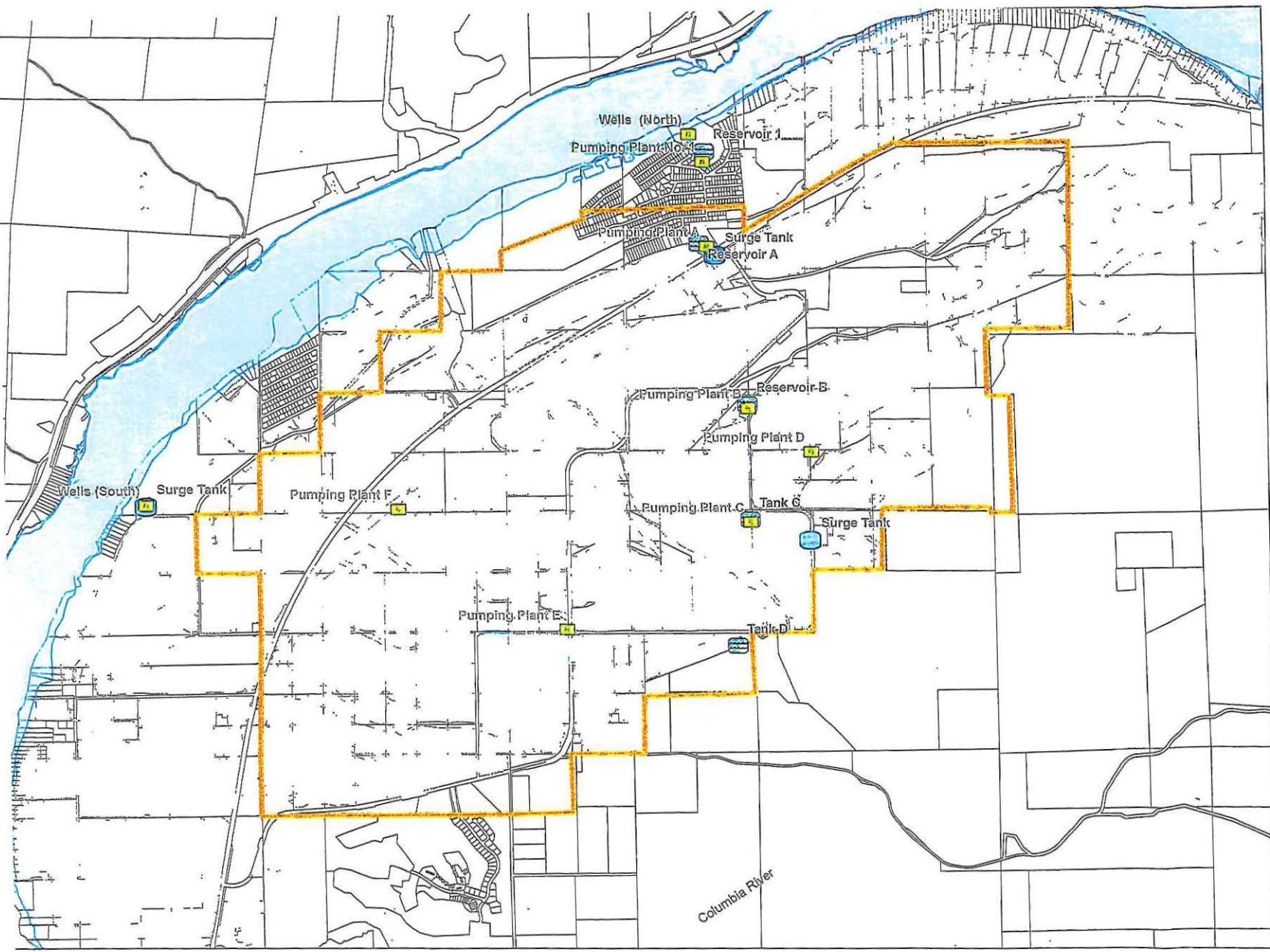
To accomplish that transmission, Reclamation and BPA entered into a transmission, transformation and delivery contract in 1964. That contract was superseded by a similar contract in 1974 (BPA Contract No. 14-03-17506). That current contract has a 50-year term expiring at the end of 2023. This contract provides for the transmission of the reserved power over federal transmission lines and for transformation at federal substations.

Not all District pumping plants are at locations convenient to federal transmission lines and federal substations. In these locations, the repayment contract between the District and Reclamation and the BPA transmission, transformation and delivery contracts enable both Reclamation and BPA to enter into contracts with local utilities to provide power services. The BPA contract also enables the reserved energy itself to come from anywhere within the interconnected federal system and not necessarily directly from the Chief Joseph Dam. In 1963, Reclamation entered into a 50-year contract with Chelan PUD for transmission service to the Howard Flats Unit. In 1964 Reclamation entered into a 50 year contract with Douglas PUD for transmission service to the Brays Landing Unit. These contracts allow Chelan PUD and Douglas PUD to bill a wheeling charge to Reclamation for the transmission service. These wheeling charges are passed on to the District as part of Reclamation's annual reserved energy. The energy delivered via these transmission contracts is still treated as federal reserved power even though it is delivered via local utility lines. A contract has been extended with Chelan PUD through 2023, and Douglas PUD through 2035.

The 1959 repayment contract assures the delivery of federal reserved power up to the capacity of the transmission and transformation facilities identified to be constructed pursuant to that contract. The contract also provides that the District may enter into contracts with others for the supply of additional pumping energy and/or additional transmission and transformation services subject to approval by Reclamation. All costs for such additional energy and services are the District's responsibility and not part of Reclamation's reserved energy billing process.

Brays Landing

Greater Wenatchee Irrigation District



Legend

- braystanding unit boundary
- Pipeline
- Pump Stations
- Reservoirs
- Surge Tank
- brays landing irrigated ag
- city_limits
- Parcels
- Waterbodies

1 in = 2,000 feet
2,000

Feet

DRAWING IS NOT TO SCALE
IF BAR IS NOT 1" LONG



TECHNICAL PROJECT DESCRIPTION

Flow Meter Conversion and Upgrade for Howard Flats Unit and Brays Landing Unit

Greater Wenatchee Irrigation District (District) adopted its current Water and Energy Conservation Plan (WECP) in April 2015. The upgraded plan is scheduled to be complete in 2019. Following are excerpts from Chapter 6 of that WECP describing the District's recent history and long-range plans regarding flow meters.

"6.1 Improvements Implemented Since the 1999 Water Conservation Plan

6.1.1 Meters

Greater Wenatchee Irrigation District (District) has approximately 1250 flow meters in use. The meters installed as part of the original construction, were propeller-type flow meters. The District has replaced approximately 500 of the original meters with Sparling brand propeller meters.

Since 1999 replacement meters have been electromagnetic meters (mag meters) rather than propeller meters. Propeller meters measure the velocity of water flowing in a pipeline using a propeller inserted within the pipe parallel to the direction of the flow. The propeller creates a head loss due to the energy required to rotate it and also creates a potential collection point for solids entrained in the water. The revolutions of the propeller are counted by a rotating cable which is read by a speedometer head that calculates and displays instantaneous flow rate (in gpm or cfs) and cumulative flow volume (in gallons or ac-ft). The head loss, obstruction and moving parts make propeller meters more prone to maintenance, breakdown and calibration problems. Mag meters have no mechanism within the pipe itself and thus create no head loss or obstruction. Electrodes contained within the cylindrical body of the meter create an electromagnetic field within the pipeline. Based on Faraday's Law of Electromagnetic Induction, the flow through this electromagnetic field creates an electrical voltage that is proportional to the velocity of flow. This is sensed electronically, eliminating the need for moving parts.

Replacing propeller meters with mag meters eliminates metering head losses, eliminates pipeline obstructions and reduces maintenance labor and expenses associated with metering. The District is using Siemens brand electromagnetic meters. These meters have a digital readout head that displays instantaneous flow in gallons per minute and totalized volume in acre-feet. These meters have the capability to be converted for remote reading at a later date. Utilizing one brand of meter simplifies overall meter maintenance needs, simplifies water delivery record keeping, and simplifies SCADA hardware and software requirements. Meter replacement costs are currently averaging about \$2,500 each. Approximately 150 Siemens mag meters have been installed since 1999. Approximately 600 additional meters still need to be replaced.

6.5 District – Wide Opportunities for Improvements

6.5.1 Continuation of Meter Replacement

The District's progress in replacing flow meters is reported in Section 6.1.1. This work is ongoing and the District intends to continue. Approximately 600 more meters will be replaced with Badger electromagnetic meters having digital readouts. These meters have the capability to be converted for remote reading at a later date. The current replacement cost is about \$4000 per meter."

The District has determined that replacing the flow meters as simultaneously as possible and in a programmatic fashion will provide more immediate and more widespread benefits than if meter replacement continues on the current piecemeal approach. The District has also researched both automated meter reading (AMR) systems and supervisory control and data acquisition (SCADA) ready meter reading systems. The District has determined to launch a programmatic meter replacement effort using electromagnetic (mag) meters with AMR readouts. The AMR mag meters will transmit meter data by radio where it can be read by an employee using a data collector at a few strategic points in each of the District's three units. This system will provide the future opportunity to add radio relay sites that can relay the meter data from the data collection points to the District's SCADA system.

The District estimates that it will take several years to convert the entire District to AMR mag meters. That time span is a function of both hardware costs and labor requirements. **The District has determined that the phase of this programmatic AMR mag meter project will continue the process in the Brays Landing Unit replacing an additional 35 of the 150 meters that still require replacement. This phase is the scope of this grant application.** This phase is expected to take 1 year to complete. In future phases, the District will continue to convert the Brays Landing Unit meters and all of the East Unit meters to AMR mag meters.

The District has the labor capacity and budget capacity to purchase and install approximately 35 AMR mag meters with the assistance of Federal funding. This budget capacity is based on the assumption of the approval of this grant request.

Table 1 shows an inventory of existing meters.

	2-inch	3-inch	4-inch	10-inch	Total
Howard Flats Unit	26	50	4	0	80*
Brays Landing Unit	2	145	20	0	167
East Unit	160	306	4	1	471
Totals	188	501	28	1	718

*Meter replacement in the Howard Flats Unit is complete. Brays Landing Unit has begun with a total of 150 meters to upgrade. This will occur during future phases of this meter replacement program.

E.1.1. Evaluation Criterion A—Project Benefits (35 points)

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.

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

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

- Extent to which the proposed project improves overall water supply reliability
The expected geographic scope benefits from the proposed project (e.g., local, sub-basin, basin)
- Extent to which the proposed project will increase collaboration and information sharing among water managers in the region
- Any anticipated positive impacts/benefits to local sectors and economies (e.g., agriculture, environment, recreation, tourism)
- 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.
 - Describe the expected benefits and outcomes of implementing the proposed project.

The installation of Badger Mag Meters benefits the District with water efficiency with more closely monitored water flow, restricting outgoing water to the gallons per minute (GPMs) allowed per meter. This will result in improved water management, preventing potential water drought issues. Through the month of March, our state has received an abnormally low precipitation level. The installation of the AMR's will also reduce the Districts' use of Federal Reserved Power by eliminating metering head losses; save labor and reduce fuel cost by eliminating the need to visit each meter location; improve water measurement accuracy; and reduce meter maintenance primarily because electromagnetic meters have no moving parts. The financial assistance will also benefit the District with the current OSHA and L&I laws relating to confined spaces and the regulation requiring three employees to read one meter. With the current employees of six field personnel and three units to maintain, taking half the field to read meters isn't realistic. While upgrading the meters, we are able to eliminate the need for multiple employees to read the meters, resulting in labor, fuel, and equipment wear and tear savings.

With the age of the infrastructure, existing replacement parts has become obsolete. Without upgrading the meters, it becomes challenging to obtain accurate water usage.

E.1.2. Evaluation Criterion B—Planning Efforts Supporting the Project (35 points)

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

During budget preparations, the aging infrastructure as a whole was discussed. Due to the failure of accurate meter readings, and Labor & Industry standards, this has become a focal point. Added benefits to the District will reduce power costs, meter repairs as well as pump repairs.

All water supplied by the District is pumped. Therefore, the sources of electrical power and the use of electrical energy are management priorities.

As stated in our Water and Energy Conservation Plan (WCP), updated October, 2018 it reads in part:

Greater Wenatchee Irrigation District has approximately 1,250 flow meters in use as part of the original construction in 1962 and an expansion in 1985. Prior to 1999, approximately 500 of the original meters were replaced with Sparling brand propeller meters. The revolutions of the propeller are counted by a rotating cable that is read by a speedometer head that calculates and displays instantaneous flow. The head loss, obstruction and moving parts make propeller meters more prone to maintenance and calibration problems, as well as failure. Because mag meters have no mechanism within the pipe itself, therefore, they do not create head loss or cause obstruction.

Meter replacement costs are currently averaging \$5,000 each, including the cost of the meter, vault, hardware and labor. Approximately 92 Badger (mag) meters have been installed since 2014. The 2011 WCP reported 600 meters still in need of replacement. Since that time, 92 meters have been replaced with approximately 508 additional meters still in need.

Please note: on-farm improvements themselves are *not* eligible activities for funding under this FOA. This criterion is intended to focus on how the WaterSMART Grant project will complement ongoing or future on-farm improvements. NRCS will have a separate application process for the on-farm components of selected projects that may be undertaken in the future, separate of the WaterSMART Grant project.

E.1.3. Evaluation Criterion C—Project Implementation (10points)

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. ***Please also see Section C.3.3. Length of Projects.***

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

- Identify and describe any engineering or design work performed specifically in support of the proposed project.
- Describe any new policies or administrative actions required to implement the project.
- Describe how the environmental compliance estimate was developed. Have the compliance costs been discussed with the local Reclamation office?
- Milestone schedule would be as follows:

Task	Jul 2019	Oct 2019	Oct 2019 - Oct 2021	April 2022
Planning & Procurement, purchase meters				
Install meters, and test				
Finish Installation				
Benefits Tracking				

- Task 1. Planning and purchase of meters
- Task 2. Install a few meters, and test for accuracy
- Task 3. Continue installation of meters
- Task 4. Tracking of water and energy conservation, beginning or irrigation season

Because the proposed project is replacing existing meters, there is no added engineering or design work needed. Permits are also unnecessary for the implementation of this project. After the opportunity for funding has been approved, the meters can take up to six weeks for delivery.

E.1.4. Evaluation Criterion D— Nexus to Reclamation (10 points)

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? Please consider the following:
 - Does the applicant receive Reclamation project water?
 - Is the project on Reclamation project lands or involving Reclamation facilities?
 - Is the project in the same basin as a Reclamation project or activity?
 - Will the proposed work contribute water to a basin where a Reclamation project is located?
- Will the project benefit any tribe(s)?

The District is a Federal Reclamation Project with the Chief Joseph Project of Reclamation's Pacific Northwest Region, more specifically the Columbia Cascade Area, receiving Reclamation project water.

E.1.5. Evaluation Criterion E— Department of the Interior Priorities (10 points)

Up to **10 points** may be awarded based on the extent that the proposal demonstrates that the project supports the Department of the Interior priorities. Please address those priorities that are applicable to your project. It is not necessary to address priorities that are not applicable to your project. A project will not necessarily receive more points simply because multiple priorities are addressed. Points will be allocated based on the degree to which the project supports one or more of the Priorities listed, and whether the connection to the priority(ies) is well supported in the proposal.

1. Creating a conservation stewardship legacy second only to Teddy Roosevelt

- a. Utilize science to identify best practices to manage land and water resources and adapt to changes in the environment;
- b. Examine land use planning processes and land use designations that govern public use and access;
- c. Revise and streamline the environmental and regulatory review process while maintaining environmental standards.
- d. Review DOI water storage, transportation, and distribution systems to identify opportunities to resolve conflicts and expand capacity;
- e. Foster relationships with conservation organizations advocating for balanced stewardship and use of public lands;
- f. Identify and implement initiatives to expand access to DOI lands for hunting and fishing;
- g. Shift the balance towards providing greater public access to public lands over restrictions to access.

2. Utilizing our natural resources

- a. Ensure American Energy is available to meet our security and economic needs;
- b. Ensure access to mineral resources, especially the critical and rare-earth minerals needed for scientific, technological, or military applications;
- c. Refocus timber programs to embrace the entire 'healthy forests' lifecycle;
- d. Manage competition for grazing resources.

3. Restoring trust with local communities

- a. Be a better neighbor with those closest to our resources by improving dialogue and relationships with persons and entities bordering our lands;
- b. Expand the lines of communication with Governors, state natural resource offices, Fish and Wildlife offices, water authorities, county commissioners, Tribes, and local communities.

4. Striking a regulatory balance

- a. Reduce the administrative and regulatory burden imposed on U.S. industry and the public;
- b. Ensure that Endangered Species Act decisions are based on strong science and thorough analysis.

5. Modernizing our infrastructure

- a. Support the White House Public/Private Partnership Initiative to modernize U.S. infrastructure;
- b. Remove impediments to infrastructure development and facilitate private sector efforts to construct infrastructure projects serving American needs;
- c. Prioritize DOI infrastructure needs to highlight:
 - Construction of infrastructure;
 - Cyclical maintenance;
 - Deferred maintenance.

The Importance of Infrastructure recognizes the deteriorating water systems. Key principles are to Align Infrastructure Investment with Entities Best Suited to Provide Sustained and Efficient Investment. The Federal Government provides services that non-Federal entities, including the private sector, could deliver more efficiently. This statement reflects the needs of our District with efficiency in water savings, power and fuel.

The Administration will look for opportunities to appropriately divest from certain functions, which will provide better services for citizens, and potentially generate budgetary savings. The budgetary savings for our District includes labor, O&M (fuel, parts, equipment, etc).

Encourage Self-Help. Many States, tribes, and localities have stopped waiting for Washington to come to the rescue and have raised their own dedicated revenues for infrastructure. Localities are better equipped to understand the right level – and type – of infrastructure investments needed for their communities, and the Federal Government should support more communities moving toward a model of independence. Greater Wenatchee Irrigation District is in the process of contacting financial institutions for bond/loan information to continue with this much needed, extensive project.

PROJECT BUDGET PROPOSAL, FUNDING PLAN AND BUDGET NARRATIVE

Labor Costs:

The meters and communications equipment will be installed by District employees. The estimated cost of that labor and labor expense is detailed below. Documented is both hourly wage as well as itemized fringe benefits.

2016	Labor Supervisor	Laborer	Office
Hourly Base	\$17.49	\$17.17	\$24.86
SS/Medicare	\$1.34	\$1.31	\$1.90
L & I	\$0.77	\$0.77	\$0.11
PERS	\$2.24	\$2.20	\$3.19
Opt. & Life	\$0.17	\$0.17	\$0.17
Medical Ins.	\$9.78	\$9.78	\$9.78
Dental Ins.	\$0.69	\$0.69	\$0.69
Annual Leave	\$0.87	\$0.86	\$1.43
Sick Leave	\$0.81	\$0.79	\$1.15
Employee Vehicle*	\$3.90	\$3.90	\$0.00
Total	\$38.06	\$37.65	\$43.29

*Current average hourly fleet cost to provide a District vehicle to each employee.

Table 5 – Labor Cost

	Hours Per Meter	Total Meters	Total
Labor Supervisor	4	35	\$5,328.40
Laborer	4	35	\$5,271.00
Office	40 per year	1 year	\$1,731.60
			\$12,331

*Current average hourly fleet cost to provide a District vehicle to each employee.
Source – Greater Wenatchee Irrigation District

Equipment Description

Badger M-5000 mag meters, including
Absolute Digital Encoders and
ORION Transmitters

	<u>Unit Cost</u>	<u>No. of Meters</u>	<u>Extended Cost</u>
2 inch Badger Orion Transmitter	\$2,115	35	\$74,025
Vaults/Lids	\$104	35	\$3640
	\$1750	35	\$61,250
Subtotal		22	\$151,246
	Sales Tax		\$11,530
Total			\$150,445

Total Component Costs

\$150,455

Materials and Supplies:

Miscellaneous costs, estimated at \$4,500, are intended to cover items such as programming changes to the District's water records and water billing software to interface with the AMR meter data. Other miscellaneous costs could include appurtenant parts and supplies necessary for installing these meters or if some of the meters need to be larger than anticipated at this level of planning. This has been documented under Miscellaneous in the budget information.

Travel/Mileage:

Greater Wenatchee Irrigation District will be utilizing District employees for this project. Employee vehicles has been included in the Labor Costs.

Subcontracts:

Greater Wenatchee Irrigation District will be utilizing District employees for this project. No additional costs are anticipated.

Environmental and Regulatory Compliance:

There are no anticipated costs associated with this category.

Budget information clarification

Cost Classification:

1. Administrative and legal expenses
Office staff hours for implementation and execution of grant

7. Site work
Employee labor costs

10. Equipment
Meters

11. Miscellaneous
Additional items for securing meters



3835 N. Clemons St.
East Wenatchee, Wa 98802

QUOTE

Phone: (509) 884-6644
Fax: (509) 884-4567

Job Name & Address
444 Water Vault Quote
East Wenatchee, WA

Customer Name & Address
Greater Wenatchee Irrigation District

Bid Date: _____ Time: _____ F.O.B. E.Wenatchee

Codes	Quantity	Description	Unit Price	Total Amount
		<i>Individual Pricing</i>		
	Ea.	444 Open Bottom Water Vault 444 Open Bottom Water Vault Base 440-13 Vault Lid w/ Padlock Hasp	\$1,875.00	
		<i>Truck Load Pricing /c</i>		
	Ea.	444 Open Bottom Water Vault 444 Open Bottom Water Vault Base 440-13 Vault Lid w/ Padlock Hasp	\$1,750.00	

Pallets will be charged out at \$20.00 ea. 4x4 Dunnage at \$2.00 per LF and 6x6's at \$4.00 per LF.

www.h2precast.com

Signature Justin Peters
Title Sales Manager

Detailed Activity Narrative

- The District is a division of the US Bureau of Reclamation's (Reclamation) Chief Joseph Dam Project located in north Central Washington. The District is located within Chelan and Douglas Counties. Approximately 9,600 acres of irrigable lands are being served by closed pipe systems of the East, Howard Flats and Brays Landing units. The three units are separate land areas requiring independent irrigation systems. The District was formed to operate and maintain facilities constructed by Reclamation in the mid-1960s.
- As a Division of the Bureau of Reclamation, Greater Wenatchee Irrigation District has been involved with Bureau projects since the Bureau partnered with GWID. GWID has an excellent history working with the Bureau, in both day to day operations as well as funding opportunities.
- The District would like to implement wireless automatic read meters (ARM), compatible with our current SCADA (**Supervisory Control and Data Acquisition**) system. This operation will continue with the first Phase in the Brays Landing Unit. The District will purchase meters from General Pacific, and install the meters, testing the meters for accuracy. GWID has invested approximately \$100,000 toward ARM meters including software. As with all new meters, testing for accuracy is compiled both manually and electronically. Once the initial testing is complete, and satisfaction as been met, GWID will continue with the remainder meter purchasing. Our long-term goal is to partner with other Municipalities sharing radio towers for future cost-sharing savings.
- Milestone schedule would be as follows:

Task	Jul 2019	Oct 2019	Oct 2019 - Oct 2021	April 2022
Planning & Procurement, purchase meters				
Install meters, and test				
Finish Installation				
Benefits Tracking				

- Task 1. Planning and purchase of meters
- Task 2. Install a few meters, and test for accuracy
- Task 3. Continue installation of meters
- Task 4. Tracking of water and energy conservation, beginning or irrigation season

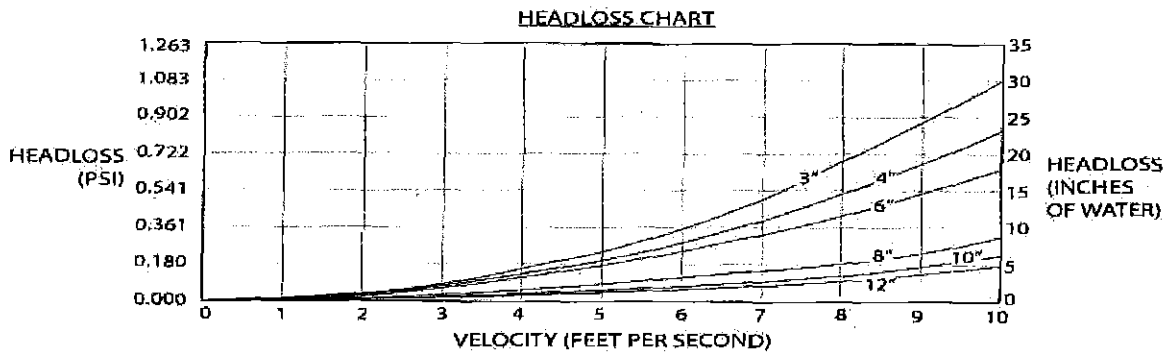
- Benefits applicable to the proposed project:
 - **Reduces leaks and seepage** - Potential for reducing leaks and seepage with SCADA ready magnetic flow meters. This will be obtained with instant meter reading capability. These meters have the capability to flag a meter that has run an excessive amount of water in a 24-hour period, based on allowable GPMs
 - **Makes water more available for other uses** - The new meters would allow access to monitor for instantaneous usage, high volume, resulting in low-pressure. This helps ensure all farmers receive the necessary water for their crops.
 - **Reduces operation costs** - By purchasing the new magnetic flow meters, there will be less maintenance as magnetic meters do not require maintenance such as the electronic meters do. Approximately 20% of our labor costs are associated with maintenance on electronic meters.
 - **Reduces energy costs** - There will also be a significant reduction in power bills, as the head loss for electronic meters adds up quickly. The estimated savings is 229,300 kw-hr throughout our irrigation season, or enough to power 29 homes.
 - **Improves water supply/delivery reliability** - With the SCADA ready meters, receiving the water usage will allow for high peaks to be recognized at the time of occurrence. With this knowledge, comes the ability to notify water users of economic ways to conserve.
 - **Compliance with Labor & Industries** – Currently our meters are located over the 2' limit Labor & Industries allows for confined spaces. This results in extra personnel needed to read each meter.

Performance and improvement measurement upon completion:

- The water and energy conservation benefits will be accomplished from measured meters when calibrated correctly. The benefits tracking will result in accurate readings improving water usage. This is also an important feature when billing for excess water, removing the human error factor in misread meters.
 - As the age of existing meters become obsolete, parts needed for repairs also becomes difficult to obtain. This can result in inaccurate or no readings.
- Supporting detail on determining benefits:
 - As part of the meter reading with the new AMR meters, functions include*:
 - **Tamper** The list of endpoints that have reported a tamper condition.
 - **Reverse Flow** The list of endpoints that have reported a reverse flow condition.
 - **Encoder Error** The list of endpoints that have reported an encoder error condition.
 - **No Usage** The list of endpoints that have reported a no usage condition.
 - **Potential Leak** The list of endpoints that have reported a potential water leak condition.
 - **Permalog Leak** The list of Permalog endpoints that have reported a potential leak condition.
 - **Low Battery** The list of endpoints that have reported a low battery.

*source <https://www.badgermeter.com/resources/5c7f8798-569b-4bea-a0fd-0d4285138f21/orion%20mobile%20reading%20system%20ors%202.5%20manual%20ori-um-00039-en.pdf/>

- Replacing propeller meters with mag meters will eliminate metering head losses and lower meter maintenance costs. While the head loss in a modern propeller meter is small, the total energy lost due to head loss in propeller meters throughout the District’s large enclosed pressurized system is significant. A calculation estimating the energy that would be saved by converting the existing propeller meters with mag meters is presented below and in Tables 6 and 7.



Source: McCrometer, Inc., Installation, Operation and Maintenance Manual, 24517-11 Rev. 4.0, November 2013.

Table 7 – Energy Losses

Energy Losses Due To Metering Head losses			
	3-inch meters	Energy Loss per Meter at 0.50 cfs (224 gpm)	Energy Loss per 24 hour day
Howard Flats Unit	50	0.106 kw	127 kw-hr
Brays landing Unit	145	0.106 kw	369 kw-hr
East Unit	306	0.106 kw	778 kw-hr
Total	501		1,274 kw-hr
			Potentially 229,300 kw-hr per 180 day irrigation season
Average Reserved Power Use 1990- 2009			
Bonneville Power Administration	30,038,450 kw-hr		
Douglas County PUD	2,531,924 kw -hr		
Chelan County PUD	383,222 kw-hr		
Total	32,953,596 kw-hr		
Metering Losses/Power Use	229,300/32,953,596 =	0.007 or just under .75 of 1%	

Environmental and Regulatory Compliance

This AMR electromagnetic meter installation project will be installing meters in existing facilities. All work will be within the existing footprints of existing facilities. No excavation or other sit disturbances are anticipated. No local planning department permits or building permits will be required.

GREATER WENATCHEE IRRIGATION DISTRICT
3300 SOUTH EAST 8TH STREET EAST WENATCHEE WA 98802-9130
509-884-4042

Resolution 03.05.19.01:

RE: Funding Opportunity Announcement No. BOR-PN-19-F005

The Board of Directors of the Greater Wenatchee Irrigation District, by resolution, hereby authorizes Mike Miller, Secretary/Manager to pursue WaterSmart Grant BOR-DO-19-F005. By adopting this resolution, the Board of Directors has designated Mike Miller as the appropriate official to pursue this grant.

The Board also confirms there will be matching funds available upon acceptance of this Grant. Upon adoption, GWID agrees to work with Reclamation to meet all established deadlines for entering into a cooperative agreement.

Signed:

President, Michael Brownfield: *Michael Brownfield* Date: 3/5/19

Vice President, Michael Clayton: *Michael Clayton* Date: 3-5-19

Robert Koenig: *Robert D Kay* Date: 3-5-19

John Lawrence: _____ Date: _____

Douglas Bromiley: *Douglas Bromiley* Date: 3/5/19

Current Manager, Michael Miller: *Michael Miller* Date: 3/5/19