

WATERSMART: SMALL-SCALE WATER EFFICIENCY GRANTS FOR FISCAL YEAR 2019

DISTRICT FLOW MEASERMENT PROJECT – PHASE I

HUNTLEY PROJECT IRRIGATION DISTRICT

Funding Opportunity Announcement No.

BOR-DO-19-F005

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1.0 EXECUTIVE SUMMARY

The applicant, Huntley Project Irrigation District (HPID), is located in Yellowstone County, Montana, 10 miles east of Billings, Montana running along the south side of the Yellowstone River. HPID includes the towns of Huntley, Worden, Ballantine, and Pompey's Pillar. The HPID is a USBR facility built in 1905 to serve 32,500 acres of irrigable land between Huntley and Pompey's Pillar with a total water right of 850 cfs diverted from the Yellowstone River. The now system serves over 800 landowners, irrigating nearly 30,000 acres of prime irrigated agricultural ground.

The District Flow Measurement Project – Phase I includes the installation of three (3) permanent control sections and flow measurement stations to provide real-time flow data to system operators resulting in an optimization of water management within the system. In its current configuration there are no water measurement devices, temporary or permanent, within the HPID delivery system. Without measurement at critical areas of the system operators are left to manage water levels by “feel” which leads to fairly large swings in canal levels and inefficient delivery of diverted waters. The location of the three proposed measurement sites revolve around the HPID Highline Canal Lift Station, a critical infrastructure component located in the middle of the District which regulates flows in the Main Canal, Lower Canal, and Highline Canal. The project will allow the District to monitor flows in the three main canal systems as well as monitor efficiency in the Lift Station, leading to less spills through the water season and building the backbone for a comprehensive water measurement network. The District Flow Measurement Project work is scheduled to begin in the spring of 2020 and will be completed by June 2020. Construction is estimated to take two months and will be completed prior to the 2020 irrigation season.

2.0 BACKGROUND

2.1 Irrigation District Description

The Huntley Project Irrigation District (HPID) is located along the Yellowstone River east of Billings, Montana. HPID canals stretches approximately 27 miles west to east along the southern banks of the Yellowstone River through the towns of Huntley, Worden, Ballantine, and Pompey's Pillar. The HPID currently serves nearly 30,000 acres of irrigated farmland owned and operated by over 800 family farms. Irrigators in the HPID primarily raise alfalfa, sugar beets, corn, and small grains such as wheat and malt barley. The HPID infrastructure was constructed by the United States Bureau of Reclamation (USBR) in the 1905 and was officially operational in 1908. HPID entered into contract with the USBR in 1927 to complete operation and maintenance of the overall project. The HPID maintains a water right, in joint with the USBR, from the Yellowstone River to irrigate the acres within the District. The flow rate specified in the water right amounts to approximately 850 cfs.

The project diverts water from the Yellowstone River using both gravity and pump systems. The gravity distribution system extends from the intake of the Main Canal at the diversion dam on the Yellowstone River, in the northeasterly direction for about 27 miles. At mile 13.77, a 35-foot drop in the Main Canal is utilized to lift water into the Highline Canal. It is at this point where the Main Canal ends and the Highline Canal and Lower Canal originate. At this drop there are two (2) direct-connected turbine driven pumps in which the 300 cfs capacity of the Main Canal drops through the turbines and develops sufficient power to lift up to 100 cfs of water 42-feet to the Highline Canal with the remaining 200 cfs sent into the Lower Canal. Two-thirds of the 300 cfs capacity of the Main Canal at the pumps drops through the turbines into the Lower Canal and develops sufficient power to lift the remaining 100 cfs to the Highline Canal. An auxiliary 150-horsepower electric pump was installed in 1975 to lift approximately 25 cfs to the Highline Canal. Anita Reservoir is filled during slack periods with water delivered through the Highline Canal to supplement the supply from the hydraulic pumps during periods of high demand.

This application deals specifically with permanent water measurement on the three major canals as they converge on the Highline Lift Station. The District has worked diligently to address water losses and leakage throughout the delivery system in an effort to increase delivery efficiency and increase water conservation within the HPID. In 2013, the HPID began actively monitoring water losses through the system and focused on documentation of water losses using instant measurements using slug flow analyses. At this point the District does not have permanent flow measurement devices installed on any part of the delivery system, using instantaneous measurement once a year to identify areas of significant losses. This however, does not allow the District to use flow measurement data to improve delivery efficiency and regulate canal levels. At times this leads to spilling of excess water down District drains as the system is adjusted and operators travel up and down the hundreds of miles of canals and laterals. Installation of permanent measurement devices will allow for real-time data to be monitored by District staff so adjustments in the system can be made when fluctuations in demand arise without excessive spilling.

The proposed project would include the installation of three permanent flow measurement stations, one on each of the major canals entering and/or leaving the Lift Station. The first station would be installed in the Main Canal upstream of the Lift Station intake. The second station would be installed in the Lower Canal downstream of the Lift Station. The third station would be installed downstream of the discharge into the Highline Canal. All three will be set up to transmit data back to the District Headquarters (HQ) and will have digital readouts. A repeater tower will be installed to transmit the information back to HQ and will be used as the backbone for future system expansion in the outer reaches of the delivery system.

2.2 System Infrastructure

The HPID infrastructure consists of gravity canals and laterals fed through a diversion dam directing water from the Yellowstone River into the delivery system. The HPID system contains 20 miles of main canal, 22 miles of carriage canal, 202 miles of laterals, and 187 miles of drains along with a 400 acre-foot off-stream storage reservoir. The Highline Canal is located approximately 14 miles from the diversion which is fed through

two hydraulic turbine driven pumps mounted in a drop on the Main Canal. The pumps lift 100 cfs up to the Highline Canal which services a large portion of the District.

The District has placed an emphasis on water conservation, reducing seepage losses, and increasing delivery efficiency. Over the last 10 years the District has completed a number of projects funded primarily through their per acre assessments. The District set up a dedicated Construction Fund of which \$2.00 per acre is contributed annually to help fund water conservation projects within the HPID. Below is a list of the major water conservation projects the District has completed recently.

- Converted 1 mile of lateral to pipeline (east end of District)
- Replaced $\frac{3}{4}$ mile of overshot pipe (east end of District)
- Converted $\frac{1}{2}$ mile of Lateral G to pipeline (east end of District)
- Removed over 3,000 cubic yards of silt at Anita Reservoir (east end of District)
- Sealed two 50" x 200' pumping plant intake lines (east end of District)
- Replaced 1935 Ballantine drain pump (west end of District)
- Re-graded and rip-rapped $\frac{1}{4}$ mile of Main Canal at head end for flow, seep, & erosion (west end)
- Converted $\frac{3}{4}$ mile of lateral to pipe on Road 9 (west end of District)
- Converted $\frac{1}{2}$ mile of lateral to 18" pipe at Smiths (east end of District)
- Replaced 800' of 24" Extension Line Siphon (east end of District)
- Replaced 1905 Fly Creek Crossing structure (west end of District)
- Converted $\frac{1}{4}$ mile of lateral to 18" pipe on C-03 (west end of District)
- Converted $\frac{1}{4}$ mile of lateral to 18" pipe on C-02+2 (west end of District)
- Converted $\frac{1}{2}$ mile of lateral to 12" pipe on E-02 (west end of District)
- Converted $\frac{1}{2}$ mile of lateral to 15" pipe on E-02 (west end of District)
- Installed $\frac{1}{2}$ mile of liner in Lower Canal (east end of District)
- Converted 800' of lateral to 36" pipe on Main E (west end of District)
- Extended 100' of 36" pipe at the Fly Creek Siphon (east end of District)
- Extended $\frac{1}{2}$ mile of 15" pipe on the Reservoir Line (east end of District)

Having addressed a large number of smaller seepage and water conservation projects the District is focusing on installation of water measurement stations to better track and manage the flow of diverted water within the system. Additionally, the installation of stations will help the District identify the next areas for water conservation projects. It is worth noting that the District Flow Measurement Project – Phase I is being proposed for completion following reconstruction of the Highline Pump Station and will serve to help monitor effectiveness of the pump station improvements.

2.3 Past Project Coordination - USBR

The HPID is partner district with the USBR, jointly holding title to the water rights for the District. HPID recently partnered with the USBR in 2011 to repair flood damage to the Pryor Creek Siphon downstream of the Tunnel 2 area. The District used the PL 111-11 program to loan \$1,000,000 for the repair and replacement of the siphon (Loan Number BD1205606702). The emergency repairs to the siphon were completed without significant interruption to the irrigation season due in part to the partnership and coordination between the USBR and HPID. The working relationship between the USBR and HPID has been valuable and crucial in the completion of water and energy conservation projects.

3.0 PROJECT LOCATION

The intake for the HPID is located at latitude 48.875° North and longitude 108.345° West with the proposed project being located around the Highline Pump Station located at latitude 45.954° North and longitude 108.120° West. A map of the proposed project area and its relationship to the Yellowstone River and Huntley, Montana is shown in Figure 1 on Page 7. The project is located within the Yellowstone River Basin (6-digit Hydraulic Unit (HU) = 100100). Figure 1 shows the general location of the District Flow Measurement Project – Phase I with the HPID. Exhibit 1 shows the location of the proposed permanent flow measurement stations within the project area in greater detail.

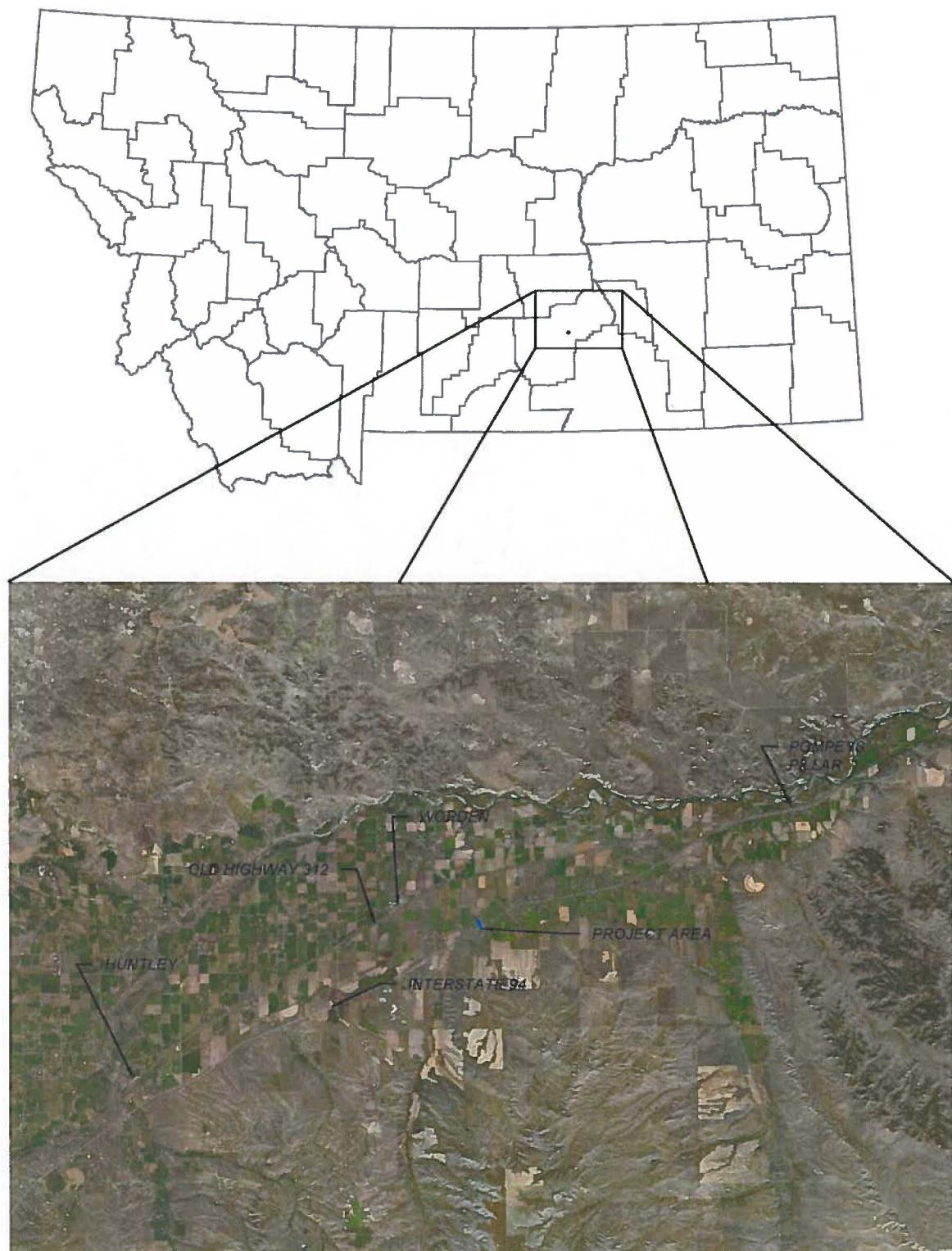


Figure 1. General Location Map

4.0 TECHNICAL PROPOSAL

4.1 Description

The District Flow Measurement Project – Phase I involves the installation of three permanent stations within the HPID delivery system. The stations will be located on three main delivery canals around the Highline Pump Station, the nexus between all three canals, to provide real-time flow measurement throughout the irrigation season.

Each flow measurement station will include 100-foot control section within the respective canals, allowing the measurement device to be calibrated. Control sections will be lined with a geomembrane canal liner to both maintain consistent bank characteristics as well as prevent seepage losses. Permanent measurement stations will consist of a 48-inch diameter concrete manhole with a 6-inch diameter PVC pipe protruding into the canal to create a hydraulic connection. Within the manhole an ultrasonic water level measurement sensor will be mounted to record water depth in the canal. A solar panel, data logger, and transmitter will be connected to the ultrasonic sensor recording canal depth over time. Once transmitted, the data will download into a calibrated database that converts water depth into canal flow data. Software upgrades and equipment will be included as part of the project to ensure all data collected is used properly. Additionally, a radio transmission tower will be installed in the Pump Station intake area to serve as a repeater tower, transmitting the data back to HPID HQ. Exhibit 2 shows a typical layout of the flow measurement stations to be installed at the locations identified in Exhibit 1.

The completion of the proposed project would allow the District to monitor canal levels and measure flows at critical points in three major delivery canals throughout the irrigation season. Real-time monitoring of the measurement stations will allow District staff to more effectively manage water levels in the delivery systems, minimizing water level fluctuations and preventing unplanned spills into wasteways. With the data provided by the stations, operational staff will be able to regulate flows within the system and optimize the beneficial use of diverted waters.

4.2 Project Timeline

The District Flow Measurement Project – Phase I will be ready for construction upon completion of the 2019 irrigation season and will be completed prior to the 2020 irrigation season. The District has set aside the necessary matching funds for installation of the measurement stations from their Construction Fund collected through annual assessments of its users. Preliminary engineering and planning for the project have been completed. The project does not include or require any easement or right-of-way acquisition as the flow measurement stations will be installed in the existing canal right-of-way. The HPID has worked to make sure that the project is shovel ready upon completion of the funding package. A detailed project timeline is provided in Section 5.3 – Project Implementation.

5.0 EVALUATION CRITERIA

5.1 Project Benefits

The proposed project will provide significant benefits in water management through the implementation of permanent water measurement stations at locations critical to delivery management. Installation of real-time data recording with transmission back to District HQ will allow staff to continually monitor level changes at and around the Highline Canal Pump Station. Tracking water levels in the Main Canal will allow operators to control spills upstream and manage diversion flow into the system. For the first time operators will have notification of water levels at the system's midpoint allowing for the timely adjustments to wasteways and the headworks diversion to ensure that diverted flows are meeting their optimum beneficial use.

Installation of measurement on the Highline Canal will help the District manage water delivery to over 8,000 acres of traditionally water-short area. The ability to track flows in the Highline Canal will help the District fill Anita Reservoir, an off-channel storage reservoir, in the early part of the season and manage water levels in the reservoir late in the season. For the first time operators will have accurate data on the efficiency of the Pump Station and be able to make adjustments match pumped water with demand. Measurement of water within the Highline Unit will set the stage for implementation of

additional snapshot monitoring/measurement to help identify areas for delivery efficiency and water conservation projects in the future. That is something the District has not been able to accurately do to this point.

Installation of permanent measurement on the Lower Canal will allow the District to accurately track and optimize flows in the delivery system. Because the Lower Canal sees significant fluctuation in water levels it is imperative to be able to track flow at the head of the system and make changes quickly. This station will allow operators to accurately calibrate manual reads on check structures within the Lower Canal and correlate those with flows at the head of the canal. This will allow for more timely adjustments to water levels and minimize spills in the lower system. Similarly, working in conjunction with the other stations it will allow operators to push water to the areas of the District that need it most with a high level of accuracy.

Implementation of Phase I is critical in getting the base system in place to expand to other parts of the delivery system. Along with the installation of a repeater tower at the center of the District these stations will serve as the start to a system-wide measurement and monitoring system to improve delivery efficiency. Once in place, the information will allow operators to maximize the beneficial use of diverted water and minimize diverting water into wasteways mid-system. More effective delivery will help to sustain the local production economy and major businesses located within the HPID. Additional benefits will come for wildlife and habitat in Anita Reservoir with the District being better equipped to manage flows into the reservoir throughout the season from the Highline Canal. Beyond the local benefits to HPID and Yellowstone County, the project will inevitably benefit downstream water users by giving District operators the tools they need to manage water within the delivery system to its maximum beneficial use.

5.2 Planning Efforts

The District has identified canal and water optimization as a top priority for the last five years, completing conservation projects throughout the District. The next step in water management improvement for the District is flow measurement and monitoring. The District has worked with local USBR field

staff to take slug flow measurements within its canal delivery system each year for the last 5 years to identify and target areas of significant water losses. That effort will continue but will be fortified by the installation of the three permanent flow measurement stations and continual data collection. Establishment of baseline data within the middle of the delivery system will help the District and USBR field staff isolate and more effectively identify future improvement areas within the delivery system. Phase I as proposed will serve as the backbone of a future water measurement/monitoring system constructed throughout the District. It will take an additional two phases with a total of six additional permanent measurement stations to complete the full network.

The District is also coordinating with the Yellowstone River Conservation District Council (YRCDC) and the Montana Department of Natural Resource Conservation (DNRC) in the identification of water management and conservation projects within the Yellowstone River Basin. The group, with the participation of HPID, is working towards a watershed-wide plan for implementation of Best Management Practices for diverted water throughout the Yellowstone River Watershed. HPID has supplied the YRCDC its water conservation plan and list of water conservation projects targeted for the next ten years. Implementation of the District Flow Measurement Project will work not only toward achieving the District's goals but will also support the efforts of the YRCDC and MT DNRC.

5.3 Project Implementation

The District Flow Measurement Project – Phase I will be ready for construction upon completion of the 2019 irrigation season and will be completed prior to the 2020 irrigation season. The District has set aside the necessary matching funds for installation of the measurement stations from their Construction Fund collected through annual assessments of its users. Preliminary engineering and planning for the project have been completed. Final design work will be completed as part of the project along with environmental and archeological/historical review through the USBR. A consultant will be contracted to complete the archeological/historical investigation and submit the report for

USBR review and approval. The cost for archeological/historical review will be included as part of the budget for the proposed project and will be bid to local consultants. The project does not include or require any easement or right-of-way acquisition as the flow measurement stations will be installed in the existing canal right-of-way. The HPID has worked to make sure that the project is shovel ready upon completion of the funding package.

The successful implementation of District Flow Measurement Project – Phase I will include the following major tasks:

- **Task 1 –USBR Grant Awards.** It is anticipated that the grant awards will be released in July 2019.
- **Task 2 – Measurement Station Design.** HPID will contract with a licensed professional engineer to develop the measurement station design, conduct inspections, and provide construction administration, as necessary. This task will be completed by December 2019.
- **Task 3 – Regulatory Compliance.** The Engineer will assist HPID in obtaining the required permits, clearing environmental and arch/historical permitting and ensure that all other regulatory requirements are achieved. This task will run concurrently with Task 2 and be completed by October 2019.
- **Task 4 – Project Review.** The Engineer will submit the measurement station design and specifications for review by the HPID and the USBR. All comments and concerns will be addressed and the plans and specifications will be finalized. This task will be completed by November 2019.
- **Task 5 – Contractor Procurement.** The HPID will put the project out for public bid by advertising the project on state contractor project exchange boards and local papers. The District will select a contractor for the project based on qualifications and competitive bid. The lowest responsive bidder will be contracted by the District to complete the project. This task will be completed in December 2019.
- **Task 6 – Measurement Station Construction.** The HPID and PE will oversee the contractor completing inspections and construction documentation throughout the project. The contractor will complete the construction and installation of the

stations. It is estimated that construction will take two months to install. This task will be completed by April 2020.

- **Task 7 – Construction Closeout.** HPID, in coordination with the Engineer, will work to assure that all issues with installation have been addressed. The Engineer will also develop a set of as-built plans to document any changes in the field. This task will be completed by May 2020.
- **Task 8 – Funding Closeout.** HPID will work with the Engineer to assure that proper documentation including invoices, reports, etc. have been submitted and the grant will be closed. This task will be completed by June 2020.
- **Task 9 – Project Completion.** The estimated project completion is June 2020 with construction having been completed prior to the 2020 irrigation season.

Coordination of the project will take place between all agencies involved. The majority of project coordination will occur between the HPID, USBR, contractor, and the contracted engineering firm. District Manager Ed Grube will be responsible for facilitation of communication and cooperation between the agencies and organizations involved in the project.

The project will include quarterly progress reports to be submitted by the HPID to the USBR during design and monthly progress reports during construction by the contracted engineering firm. The progress reports will keep the various agencies and organizations up-to-date on the project progress, schedule, and budget. Should any changes or problems arise during the design or construction phases of the project, all involved parties will be notified immediately. The construction phase of the project will include monthly updates to the HPID from the District Manager and contracted construction inspector on progress made. The HPID District Manager and grant coordinator will be responsible for the completion and submittal of all necessary documentation and billing to the USBR and HPID board. The contracted engineer's responsibilities include progress reporting and assistance with grant reporting. HPID District Manager Ed Grube will be the final authority on all payments, reports, and contracts for the project.

5.4 Reclamation Nexus

HPID is a UBSR irrigation project, built by the USBR with the operation and maintenance of the facility contracted to HPID. USBR owns the Yellowstone River Diversion Dam and delivery infrastructure, however since 1927 HPID has been contracted to run and operate the District. The water right for the HPID is held in joint with the USBR, making all diverted water used for irrigation in part water of the United States. The HPID project is one of four USBR irrigation districts located on the Yellowstone River. Buffalo Rapids Districts 1 and 2 as well as the Lower Yellowstone Irrigation District are all located downstream of the HPID. Improved instream flows could benefit the USBR facilities located downstream of the HPID, with a focus on the Lower Yellowstone facilities and current Endangered Species Act issues revolving around the Pallid Sturgeon. HPID is directly tied to the UBSR in all its operations and has developed an excellent working relationship with the USBR and continues to build upon that. The District is motivated to continue implementing water conservation measures to benefit not only the HPID irrigators but downstream users including the USBR in the future.

5.5 Department of Interior Priorities

The HPID set its primary goals for the District Flow Measurement Project to conserve water and improve water management. Conservation of the water resource along with improved management of the water resource are consistent with the primary goals set forth by the USBR to utilize best practices and science to adapt to changing environmental conditions. A secondary goal of the project is the preservation of water quantity and quality within the Yellowstone River through minimization of irrigation return flows. The goals outlined above not only benefit the District and local irrigators but also have a positive impact on local residents, recreationists, and fish and wildlife habitat in the area.

The continued working relationship between the HPID and USBR has helped to restore trust with the local region. HPID and the USBR will be forever linked but the continued implementation of successful projects accentuate the important roles each entity play for the local and regional economy.



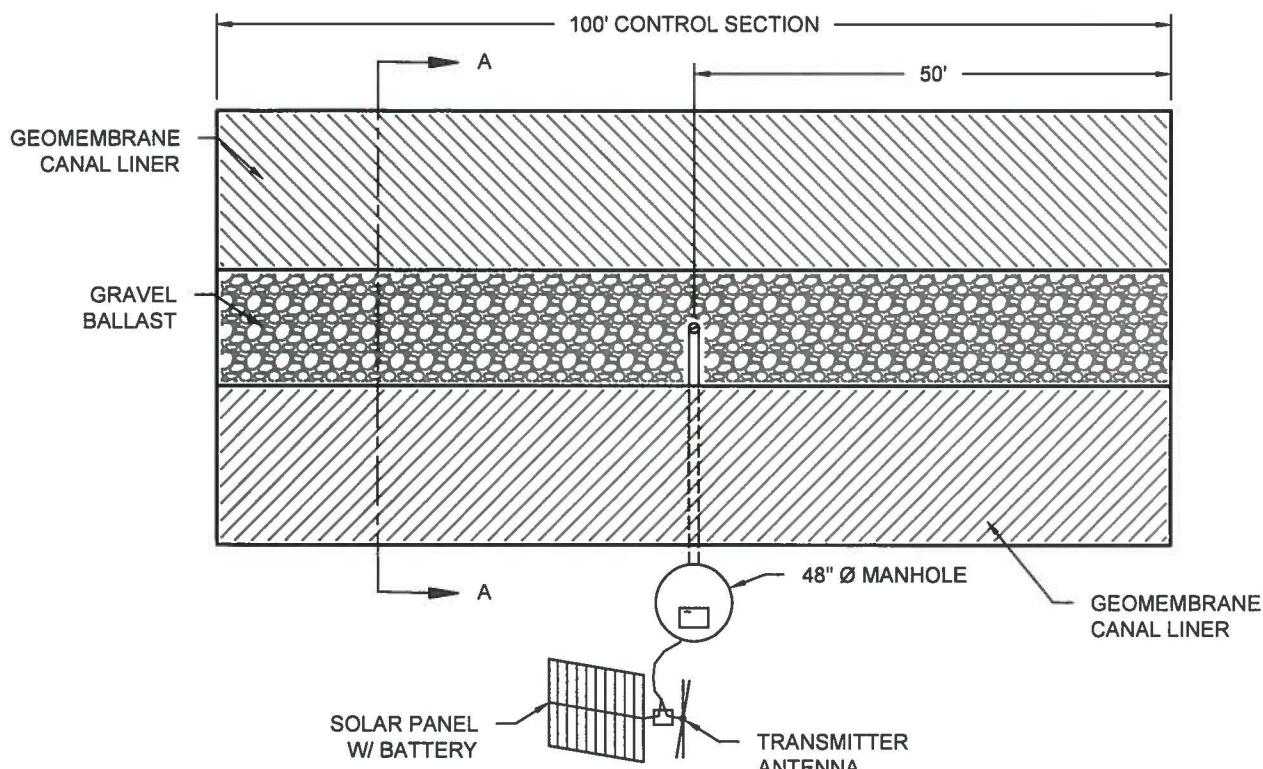
PROJECT TITLE	DRAWN BY
HPID FLOW MEASUREMENT STATIONS	JAS
SHEET TITLE	DATE
LOCATION MAP	Apr-19

CLIENT
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IRRIGATION DISTRICT
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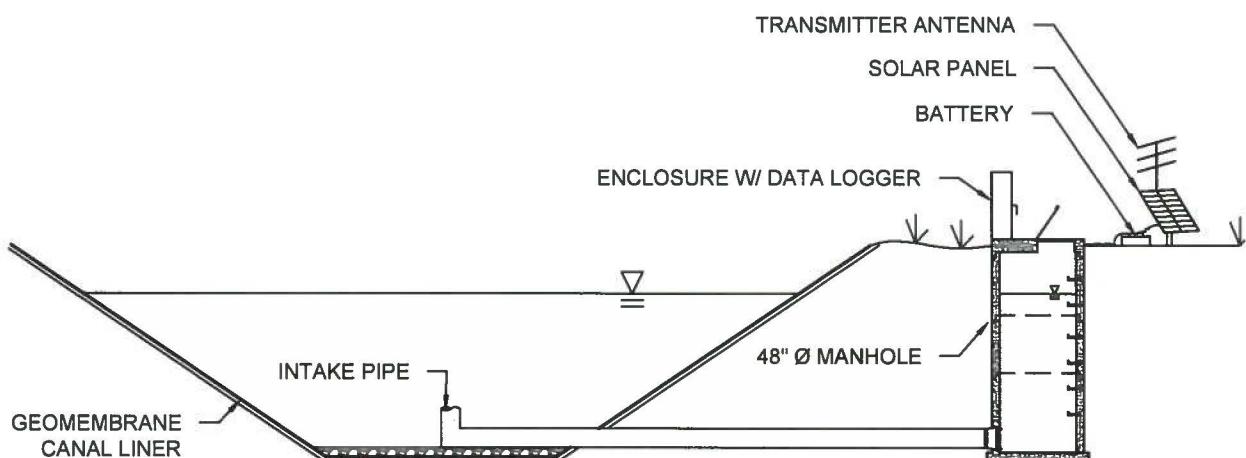
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TYPICAL PLAN VIEW

NOT TO SCALE



SECTION A-A

NOT TO SCALE

PROJECT TITLE HPID FLOW MEASUREMENT STATIONS	DRAWN BY JAS
DATE Apr-19	CLIENT
CHECKED BY SAA	

CONTROL SECTION

**HUNTLEY PROJECT
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District Flow Measurement Project - Phase I

Construction Budget

Huntley Project Irrigation District

April 23, 2019

Budget Item Description	Computation				USBR WaterSMART Funding	Applicant Cash/Loan Funding	Applicant In-Kind Funding
	Quantity	Unit	Unit Cost	Total Cost			
Salaries & Wages							
District Manager	200	HR	\$37.02	\$7,404.00	—	—	\$7,404.00
Office Administrator	100	HR	\$17.00	\$1,700.00	—	—	\$1,700.00
			Subtotal	\$9,104.00	\$0.00	\$0.00	\$9,104.00
Fringe Benefits							
District Manager	200	HR	\$7.61	\$1,522.00	—	—	\$1,522.00
Office Administrator	100	HR	\$5.61	\$561.00	—	—	\$561.00
			Subtotal	\$1,522.00	\$0.00	\$0.00	\$1,522.00
Equipment							
Manager's Truck	200	MILE	\$18.25	\$3,650.00	—	—	\$3,650.00
			Subtotal	\$3,650.00	\$0.00	\$0.00	\$3,650.00
Construction Items							
Mobilization/Demobilization	1	LS	\$ 5,000.00	\$5,000.00	—	\$5,000.00	—
Insurance,Bond, Permits	1	LS	\$ 2,000.00	\$2,000.00	—	\$2,000.00	—
Demo/Site Prep. (Main & Lower)	2	EA	\$ 2,000.00	\$4,000.00	—	\$4,000.00	—
Demo/Site Prep. (Highline)	1	EA	\$ 4,000.00	\$4,000.00	—	\$4,000.00	—
48-in Diameter Manhole	3	EA	\$ 7,500.00	\$22,500.00	\$22,500.00	—	—
6-In PIP	75	LF	\$ 30.00	\$2,250.00	—	\$2,250.00	—
3-in Minus Gravel Bedding (MH)	10	CY	\$ 45.00	\$450.00	—	\$450.00	—
Bentonite Trench Plug	3	EA	\$ 1,000.00	\$3,000.00	—	\$3,000.00	—
Monitor Equipment (per Station)	3	EA	\$ 7,500.00	\$22,500.00	\$22,500.00	—	—
Repeater Tower	1	LS	\$ 10,000.00	\$10,000.00	—	\$10,000.00	—
Geomembrane Canal Liner	300	LF	\$ 100.00	\$30,000.00	\$30,000.00	—	—
Canal Liner Gravel Ballast (D50-6")	55	CY	\$ 60.00	\$3,300.00	—	\$3,300.00	—
Office Software	1	LS	\$ 1,000.00	\$1,000.00	—	\$1,000.00	—
			Subtotal	\$110,000.00	\$75,000.00	\$35,000.00	\$0.00
Construction Contingency							
7% Contingency	1	LS	\$7,700.00	\$7,700.00	—	\$7,700.00	—
			Subtotal	\$7,700.00	\$0.00	\$7,700.00	\$0.00
Consultant Fees							
Engineering/Permitting	1	LS	\$30,000.00	\$30,000.00	—	\$30,000.00	—
			Subtotal	\$30,000.00	\$0.00	\$30,000.00	\$0.00
Indirect Costs							
Indirect Costs	0	LS	\$0.00	—	—	—	—
			Subtotal	\$0.00	\$0.00	\$0.00	\$0.00
				Total Construction Cost	USBR WaterSMART Funding	Applicant Cash/Loan Funding	Applicant In-Kind Funding
Total Project Cost				\$161,976.00	\$75,000.00	\$72,700.00	\$14,276.00

FINANCIAL NARATIVE

DISTRICT FLOW MEASERMENT PROJECT – PHASE I

HUNTLEY PROJECT IRRIGATION DISTRICT

Funding Opportunity Announcement No.

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1.0 DIRECT COST BUDGET ELEMENTS

The following subsections under Section 1.0 – Direct Cost Budget Elements, will outline the HPID's process in the development of cost data for the proposed budget. Further estimate clarification or documentation regarding personnel costs, staff wages, and benefits can be provided upon request but is only summarized in this document for employee privacy rights.

1.1 Personnel Costs

The personnel costs presented in the proposed project budget are actual salary costs and benefits paid by the District. The District maintains a full-time crew which completes construction projects during non-irrigation months. Those costs are hard costs and well documented by the District through their financial budgets. Projected costs are reasonable for the area and fit within the budgetary limits of the District. Salaries projected are anticipated to have a slight increase from the time of this application through implementation of the project. Any increase that should occur between the time of application and construction will be absorbed by the District. The per hour wages for the employees listed in the budget are as presented in Table 1.

Table 1. Employee Title and Wage Data

Position	Wage	Units
Project Manager	\$37.02	HR
Office Administrator	\$17.00	HR

Fringe benefits associated with the above listed employees include social security, State Fund worker's comp, retirement, unemployment, and healthcare. These categories are presented in an hourly rate and are included in the employee compensation package for District employees. Table 2 presents the fringe benefits applied in the project budget.

Table 2. Fringe Benefits

Position	Benefit	Units
Project Manager	\$7.61	HR
Office Administrator	\$5.61	HR

1.2 Equipment Costs

All of the equipment proposed for use in the construction of the District Flow Measurement Project is owned by the HPID. The hourly rates have been developed using the USCOE rate tables for equipment in the region. No equipment will be leased or purchased as a result of this project. HPID will be soliciting a licensed contractor to complete the work for installation of the measurement stations. The only equipment used to support the project will be the District Manager's truck to travel back and forth from the site for management of the project. Equipment and rates used in the Project Budget are presented in Table 3.

Table 3. Equipment Rates

Equipment	Rate	Units
Manager's Truck	\$18.25	HR

1.3 Construction Items

It is the intent of the HPID to advertise for construction bid the work associated with the project. The construction item list used in the Project Budget was derived from the preliminary engineering completed by Performance Engineering as well as the District's experience. Major components such as the measurement equipment were priced through a regional supplier or pulled from recent bid tabulations on public infrastructure construction to gain conservative budget numbers. All items were adjusted for inflation through construction to account for any market price adjustments of that manner. Construction item prices are presented in Table 4.

Table 4. Construction Item Prices

Item	Rate	Units
Mobilization/Demobilization	\$5,000.00	LS
Insurance, Bond, Permits	\$2,000.00	LS
Demo/Site Prep (Main & Lower)	\$2,000.00	EA
Demo/Site Prep (Highline)	\$5,000.00	EA
48-In Diameter Manhole	\$7,500.00	EA
6-In PIP	\$30.00	LF
3-In Minus Gravel Bedding	\$45.00	CY
Bentonite Trench Plug	\$1,000.00	EA
Monitor Equipment (per Station)	\$7,500.00	EA
Repeater Tower	\$10,000.00	LS
Geomembrane Canal Liner	\$100.00	LF
Canal Liner Gravel Ballast (D50-6")	\$60.00	CY
Office Software	\$1,000.00	LS

1.4 Environmental & Regulatory Compliance Costs

Because this is a USBR facility it is understood that a NEPA and historical preservation review will be completed by a consultant and submitted to the USBR for review. Those funds are included in the Consultant Fee. Because the project is located within the active canal right-of-way few state permits will be required. The contractor will be responsible for obtaining a SWPPP permit from the Montana DEQ to regulate stormwater runoff. The District will obtain a 310 Permit from the Yellowstone Conservation District. Both permits will be obtained at the time of construction. The costs associated with obtaining those permits are included in the engineering and construction budget from the contracted engineer.

1.5 Travel Costs

District travel costs were included in the proposed budget as the “manager’s pickup” as seen in Table 3. These costs were only included through the District in-kind construction portion of the project. These costs are incorporated into the general operating budget of the District and will be identified and calculated as contributions to the project.

1.6 Contingencies

A 7% contingency was included in the proposed budget to protect against unforeseen costs, overruns, or dramatic price increases. Using the HPID’s recent experience in construction they have shown that they have an ability keep projects within the projected budget with minimal overruns. Additionally, based on PE’s recent experience in irrigation facility construction on USBR facilities a 7% contingency is standard and necessary. Due to the ease of the proposed construction this will provide a buffer for the HPID. The contingency was developed using 7% of the construction costs only, excluding administration, engineering, and permitting costs. The budget includes \$7,700 for a 7% construction contingency for this project. The District believes that this will satisfy and cover any unforeseen costs which may arise.

2.0 INDIRECT COSTS

All indirect costs associated with the project will be covered by the HPID. No indirect costs were included in the development of the budget and none are foreseen for the project

that haven't already been accounted for in the annual O&M budget for the District.

3.0 COST SHARE BREAKDOWN

There are two proposed partners/sponsors in the District Flow Measurement Project – Phase I. Reclamation and the applicant are included in the proposed budget for the project. The budget proposal proposes splitting a portion of the construction costs between Reclamation and Applicant as those items are easy to track. The remaining components will be covered through construction cash reserves assessed by the District. Reclamation's entire budget will be used for construction activities and contractor reimbursements for the project making the USBR contribution to \$75,000.00. The salaries/wages will be covered by the HPID along with fringe benefits, and the equipment costs for the project. This approach aimed to easily track the matching amounts and show the funding match was made. The cost share summary for the project is as shown in Table 5.

Table 5. Cost Share Summary

Construction Component	Reclamation	HPID Loan/Cash	HPID In-Kind	Total Cost
Salaries & Wages	\$0.00	\$0.00	\$9,104.00	\$9,104.00
Fringe Benefits	\$0.00	\$0.00	\$1,522.00	\$1,522.00
Equipment	\$0.00	\$0.00	\$3,650.00	\$3,650.00
Construction Items	\$75,000.00	\$35,000.00	\$0.00	\$110,000.00
Construction Contingency	\$0.00	\$7,700.00	\$0.00	\$7,700.00
Consultant Fees	\$0.00	\$30,000.00	\$0.00	\$30,000.00
Indirect Costs	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$75,000.00	\$72,700.00	\$14,276.00	\$161,976.00

Reclamation funds are the only uncommitted dollars associated with the project at this time. HPID has committed to funding the match through funds on hand from the construction reserve funds. The HPID has approved the in-kind construction budget for project and can easily fit the costs presented in the budget above in their operational and special projects budgets.

Huntley Project Irrigation District Environmental Compliance District Flow Measurement Project – Phase I

The District Flow Measurement Project – Phase I improvements will improve water management practices and abilities within the District and have a positive impact on the water quality in the Yellowstone River.

Environmental Resources Present & Detailed Effects

Installation of the three permanent monitoring stations will include minimal ground disturbances which will be confined to the existing canals and canal banks. The locations will be accessed by existing access roads which will not be disturbed. Outside of materials and equipment staging, all construction activity will be done within the existing canal and canal right-of-way which serves as active irrigation infrastructure. Any material or debris removed from the site will be disposed of either in a permitted landfill or within the District's storage yard. All of the area has been previously disturbed and is actively used for irrigation activities. Dust could become a concern at different points through construction, however the area is typically damp due to irrigation practices. Should dust become of concern the HPID will take measures to ensure dust abatement such as water applications in the area. Construction staging areas will be contained within the HPID storage yard thus not disturbing any adjacent lands. This should help to minimize the impacts on wildlife and safety in the area. Construction noise will be present but only temporary in nature. Construction activities will take place within the interior of the District in places well away from the public or local residences in the area.

Wildlife is present within the boundaries of the HPID but little activity is present in the proposed project areas due to BNSF traffic and Interstate 94/Lower Canal Road vehicular traffic. Within Yellowstone County there is one species listed as Endangered by the US Fish and Wildlife Service, the Whooping Crane. There is also one species listed as species at risk due to limited to extremely limited and/or potentially to rapid declining population numbers, range, and/or habitat making them vulnerable to extinction. The species listed as threatened is the Red Knot. Because the work associate with the District Flow Measurement Project is being conducted within the existing right-of-way and away

from the river and riparian areas no focus will be placed on the invertebrates and fish. As previously noted, water conservation and improved water management provided by the project will benefit both.

The Whooping Crane and Red Knot are typically found in terrain outside of the proposed project area. The project area is located directly adjacent to the BNSF main line and Interstate 94. Access in and out is regularly used by the District to operate and maintain the canal creating regular activity in the area. It is highly unlikely that either species occupy the specific project area or adjacent areas. Both species are likely to see marginal benefit as a result of improving water management within the District and the Yellowstone River watershed. This project helps bring additional flows back to the river through the use of best management practices for water management and delivery.

Wetlands

An inventory of the wetlands within the project area was conducted by Performance Engineering & Consulting (PE) staff. There were no classified wetlands within the proposed project area identified by staff during field investigations. Seepage from the discharge line has created isolated areas which contain water at times during the irrigation season and dry out once the canal system is shut down. Regardless, all work associated with the project will be either within the canals or on the canal banks away from any areas that could be considered wetlands, artificial or natural. It is NRCS national policy, as stated in the NRCS General Manual, Part 190-410, that mitigation is not required for artificial wetlands created by seepage from leaking canal systems. The District intends to follow the referenced NRCS national guidance in design and construction of the District Flow Measurement Project within the canal corridors.

Historical and Cultural Resources

The HPID infrastructure was constructed in the 1900s and put into operation in 1908. There have been numerous changes made to the delivery system since it was first constructed. To this point there has not been any components of the HPID infrastructure nominated or listed as having historical significance. Additionally, work has been done within the project area and within the Main Canal, Lower Canal, and Highline Canal within the last 30 years. The current structures and canals are considered working irrigation

infrastructure and are subject to change based on operations and improvement required to maintain operation of the HPID system.

There are no known Native American sacred sites or burial grounds within the identified project area. Additionally, there is no tribal or trust lands located within or adjacent to the project. Therefore no detrimental impact will result to tribal or Native American sites as result of the project.

There are no unique natural features, wilderness or public lands within the proposed project area. All District facilities, canals, and irrigated infrastructure within the immediate project area are located outside the Yellowstone River floodplain. No construction, excavation, or fill activities associated with the project will occur within a designated floodplain area.

Demographics & Social Structure

The District Flow Measurement Project is located in Yellowstone County and includes the towns of Huntley, Worden, Ballantine, and Pompey's Pillar, Montana in a historically rural agricultural area. The project is likely to create short-term construction work for local contractors during construction of the project. Additionally, completion of the proposed improvements will ensure the continued operation of the HPID for future generations which is a critical component to the local economy.

C E R T I F I C A T E

The undersigned, Cody Kuntz and Liz Freeman, hereby certify that they are the President and Secretary, respectively of the Board of Commissioners (Board) of the Huntley Project Irrigation District (HPID) and that at a monthly meeting of the Board, held in Ballantine, MT on April 10, 2019, a quorum of the Board was present and the following Resolution was regularly moved, seconded, and adopted by a majority vote.

R E S O L U T I O N

- WHEREAS**, the Board is the governing body Huntley Project Irrigation District by the authority of its Bylaws; **AND**
- WHEREAS**, the Board has legal authority and desire to enter into the Bureau of Reclamation's WaterSMART program for FY2019; **AND**
- WHEREAS**, a grant proposal entitled "Main Canal Flow Measurement Project" has been reviewed by the Board; **AND**
- WHEREAS**, the Board understands that a grant of up to 50 percent of the total cost of the grant proposal will be paid by the Bureau of Reclamation to the HPID as satisfactory progression of the project is made; **AND**
- WHEREAS**, the HPID expects to enter into an agreement with the Bureau of Reclamation if the grant is awarded, for the purpose of, among other items, scheduling the completion of the project; **NOW THEREFORE BE IT**
- RESOLVED**, that the Board supports "Main Canal Flow Measurement Project" and that an application be made to Bureau of Reclamation for assistance under the WaterSMART Program; **NOW THEREFORE BE IT FURTHER**
- RESOLVED**, that the Board verifies the HPID has the capability to provide the funding and in-kind contributions specified in the funding plan; **NOW THEREFORE BE IT FURTHER**
- RESOLVED**, that the Board authorizes its District Manager, Ed Grube, to enter into an agreement with the Bureau of Reclamation to perform the activities described in HPID's "Main Canal Flow Measurement Project" WaterSMART Program application.

Dated this 10th day of April, 2019.



President

ATTEST:



Secretary