

Bureau of Reclamation
WaterSMART Grants: Small-Scale Water
Efficiency Projects for Fiscal Year 2020
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Submitted:
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Project Title:
Shoshone-Bannock Tribes'
Water Measurement Telemetry Network Project



FY2020 Solicitation

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Technical Proposal and Evaluation Criteria

I. Executive Summary

Date: January 30, 2020

Applicant: Shoshone-Bannock Tribes

Address: P.O. Box 306, Pima Drive, Fort Hall, Bannock County, ID 83203

The project presented in this proposal is for the installation of 7 flow meters with wireless telemetry data transfer capability on surface water pumps located in the Michaud Unit of the Fort Hall Irrigation Project (FHIP). In addition this project will allow for the installation of an additional 5 telemetry data transfer relay sites needed to accommodate the growing size of the network. The purpose of the project is to improve water measurement within the FHIP, such that better accounting of water use can take place. The additional telemetry data transfer relay sites will also assist with ensuring the network will continue to be reliable in collecting accurate water accounting data. Currently, the Tribal Water Resources Department (TWRD) visits each metered site individually to collect flow data and perform needed maintenance. This task is time consuming and does not immediately catch loss of functionality issues associated with flow meters (dead batteries, broken wires, weather related issues, etc.), which can result in lost data and inaccurate water accounting. The TWRD has been working with the United States Bureau of Reclamation (USBR) over the last approximately 5 years to improve TWRD's monitoring and telemetry capabilities. TWRD is seeking financial assistance from the USBR under this funding opportunity to purchase and install 7 flow meters with telemetry radio equipment and also the purchase and installation of 5 telemetry data transfer relay sites. The new telemetry sites will collect real-time flow data on the 7 meters and send the data to the TWRD facility through the network's relay sites. The additional data transfer relay sites are necessary to improve the reliability of data communication from a total of 85 existing or proposed flow meters with telemetry.

The TWRD has obtained separate funding from the USBR for the development of a computational demand forecasting tool that uses data from the metered sites to calculate and meet projected demand of the Michaud Unit. The additional reliability of real-time flow data will greatly assist in realizing the full functionality of this effort. Integrating data from the telemetry system directly into the computational demand forecasting tool will result in improved management of water distribution and delivery systems and thus, more efficient use of Tribal water resources. Better water management of surface water use will in turn result in significant water conservation.

The TWRD is requesting cost-share funds for this project because the department currently does not have funds to cover the capital costs of acquiring and installing the telemetry equipment. Procurement, installation, and setup of the telemetry system will be undertaken by the TWRD and is expected to take approximately one year, finishing in September 2021. Once installed, the TWRD will operate the flow meters and telemetry system as part of its existing monitoring program, without funding from the Federal Government. This project aims to serve the entire Tribal membership on the Reservation, estimated at 3,500 Tribal members based on 2010 Census data.

II. Background Information

The FHIP is operated by the Fort Hall Agency of the Bureau of Indian Affairs (BIA). The FHIP was first constructed around 1891 and contains a total of approximately 70,000 acres divided into the following units: Upper and Lower Fort Hall Unit, Michaud Unit, and the minor units of Little Indian, Bannock Creek, Ross Fork Creek, and Lincoln Creek. Potatoes and grain make up the majority of crops grown on the Reservation.

The Michaud Flats area of the Reservation was first considered for inclusion in the Fort Hall Irrigation Project in 1922, with an original proposal to enlarge the Reservation Canal to service the lands. It was first authorized for construction in 1931. A lack of water supply from the Snake River suspended progress on the project until the U.S. Bureau of Reclamation proposed the use of storage water from their Federal reservoirs in the Upper Snake River system. The Michaud Unit was re-authorized for construction in 1954 (P.L. 83-741). The 1954 Act provided for the construction, operation, and maintenance of the Michaud Unit in exchange for a waiver by the U.S. and Tribes to all water rights arising out of the Fort Hall Bottoms area. Construction of the project began in 1957 and was completed in 1977. The project area was limited to 21,000 acres under the Act. At the time, the source of water supply for the project was unknown, but some of the sources that were considered included groundwater, the Palisades Reservoir, and the American Falls Reservoir.

At the present time, the Michaud Unit services 20,992 acres of land. This land is divided by Interstate 86 into a northern portion served exclusively from groundwater wells and a southern portion served mostly from the Portneuf River through a series of canals and nine supplemental groundwater wells. In the northern portion, approximately 7,107 acres are actively served, of which 7,005 acres are Tribal lands (either trust or allotments). In the southern portion, approximately 13,885 acres are actively served, of which 13,634 are Tribal lands. The Portneuf Pumping Station, located within the boundaries of the Reservation on the Portneuf River, provides water to the South Main Canal, which is the primary source for irrigation in the southern half of the Michaud Unit of the FHIP. In addition, there are 1,430 acres in the southern portion which are served from private groundwater wells and these lands would be considered to be outside of the Michaud Unit project.

The water delivery system in the southern portion of the Michaud unit contains approximately 47 total miles of earthen canals, laterals, and closed pipelines, along with 11 miles of drains (BIA, 1969). The South Main Canal extends southwest from the Portneuf Pumping Station for approximately 9.4 miles. At its outlet, the South Main Canal supplies water to two major laterals. From this point, Owl Canal extends approximately 4.2 miles to the West and supplies several laterals to the north, while the Bannock Canal extends about 4.4 miles south. To date, there has been no canal lining performed in the Michaud Unit.

Water Rights of the Michaud Unit

A Memorandum of Agreement was signed between the USBR and BIA in 1957 to provide certainty as to the water supply for the authorized Michaud Unit project. The USBR was to provide roughly 2.8% of the storage capacity in American Falls Reservoir (47,700 acre-feet) and roughly 7% of the capacity in Palisades Reservoir (83,900 acre-feet). These water supplies reserved for the Michaud Unit were incorporated (as percentages of storage capacity) into the Tribes' reserved water rights claims under the 1990 Fort Hall Indian Water Rights Agreement with slight adjustments in the volume amounts to 46,931 acre-feet in American Falls Reservoir and 83,900 acre-feet in Palisades Reservoir. This water is allowed to be diverted from the Portneuf River through exchange as provided by the 1957 Memorandum of Agreement. The Tribes may identify the reservoir storage space to be used for the exchange. If none is specified, allotted storage space from Palisades Reservoir is exchanged.

Up to 22,400 acre-feet per year of groundwater may also be pumped and used for irrigation purposes in the Michaud Unit. Surface irrigation water in the Michaud Unit is supplemented by 8 groundwater pumps along Owl Canal, and 1 groundwater pump along Owl Lateral No. 1. The capacity of each pump varies, ranging from 60 to 100 hp. During an average year, Pumps 1 through 8 are estimated to operate for approximately one-third of the growing season. However, Pump 9 located on Owl Lateral No. 1

operates continuously throughout the entire season. The average annual groundwater pumping at these sites from 2016 through 2019 was 3,330 acre-feet per year. Over this four-year period, groundwater pumped ranged from 2,570 to 3,750 acre-feet per year. These pumping rates are based on records from magnetic flow meters installed on the groundwater pumps in 2015.

Current and Projected Water Demand

Figure 1 shows the historic annual diversion from the Portneuf River by the South Main Canal from 1978 to 2017 with a linear trend line shown in green. If water diversions continue to increase at this rate over the next few decades, average annual diversion requirements could reach upwards of 45,000 acre-feet by the year 2040, which is an increase of almost 50% from the 30,000 acre-feet reported for the year 2017.

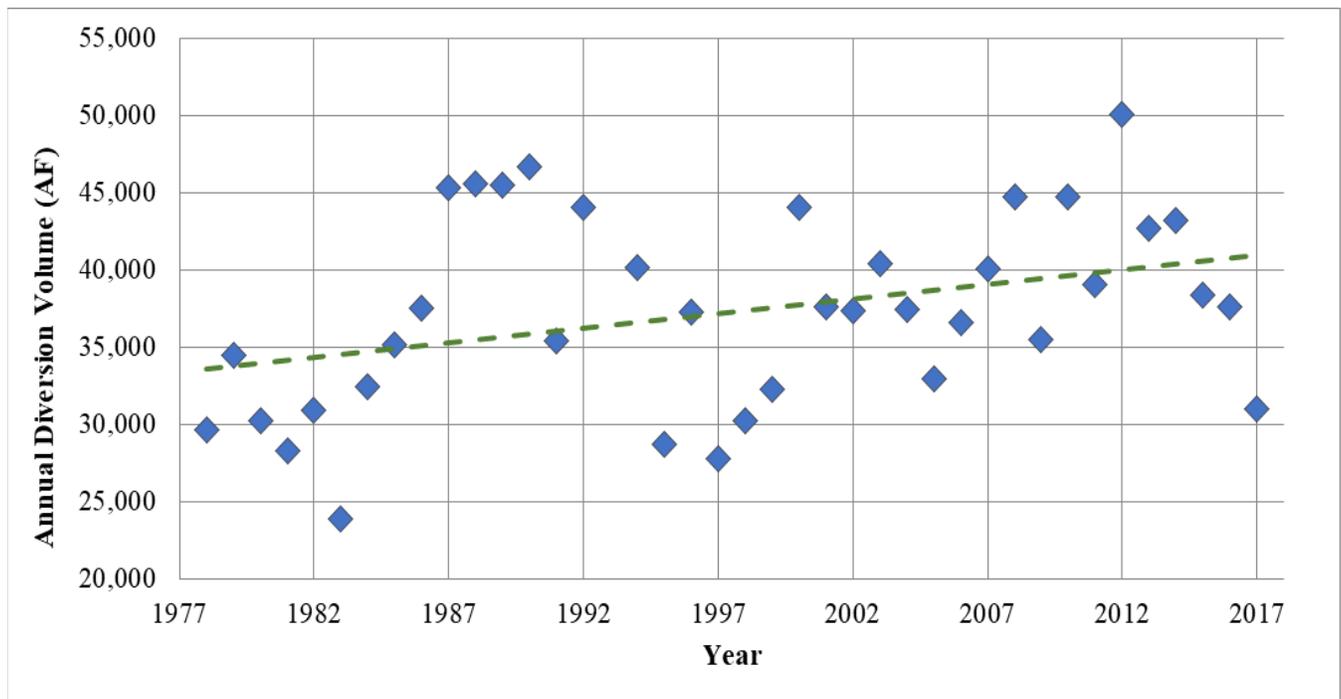


Figure 1: Annual diversion from the Portneuf River by the South Main Canal from 1978 to 2017 with a linear trend line shown in green

The following factors were found to be possible causes of the observed increase over the last 40 years: (1) changing climate conditions have caused irrigation water demands have increased about 12% over this time period, based on the five year moving average; (2) crop acreage has increased by about 5% over this time period; and (3) overall irrigation efficiency has decreased by about 10%, based on a five year moving average. Because a significant percentage of the increase in water diversions was caused by irrigation system inefficiencies, the most proactive approach to minimizing water use would be to identify and correct these inefficiencies. This will be achieved in part through the installation of 7 magnetic flow meters equipped with telemetry radio equipment and 5 telemetry data transfer relay stations, which will ultimately improve water measurement practices in the Michaud Unit. The data transfer relay stations are necessary to improve the reliability of data communication from the proposed and existing flow measurement sites. In addition, real-time data from these meters will be available to the TWRD’s computational demand projection tool, providing improved management for irrigation water delivery and improvements in water conservation.

Past working relationship with USBR

The TWRD has an excellent working relationship with Reclamation's Boise, ID office. Reclamation has been, and continues to be, a proactive trustee of Tribal water resources. As an example, Reclamation has aided with technical and legal investigations related to a water accounting dispute in the Water District 01 Rental Pool Program, and ultimately helped the Tribes in reaching a settlement near the end of July 2015. More recently, Reclamation has provided assistance to the Tribes in resolving a conflict on reservoir storage accounting procedures of the Idaho Department of Water Resources.

In 2017 the TWRD completed a WaterSMART Drought Resiliency grant to study and simulate drought scenarios. A significant finding from this project's literature review was that better management of water storage significantly mitigated drought impacts. The WaterSMART drought resiliency effort also specifically studied water efficiency improvements to the Michaud Unit as a way to better manage the Tribes' federally reserved storage rights in American Falls and Palisades Reservoirs.

The TWRD received funds from the Reclamation's Development, Management, and Protection of Indian Tribal Water Resources program to continue their previous monitoring and management efforts by installing approximately 78 new flow meters on 74 large surface water pumps within the Reservation boundaries on the Michaud Project for FY 2016-FY 2018. Data from the flow meters were utilized by the TWRD to conduct accurate water accounting for the Michaud Unit and to quantify the efficiency of water use by surface water user leading to water conservation and better water management within the Reservation.

The TWRD will be awarded funds from Reclamation's FY2019 WaterSMART Small Scale Water Efficiency Projects grant in early 2020 for the installation of telemetry equipment at the 78 flow meters on the Michaud Project. Real-time data from these flow meters will be available to the TWRD's computational demand forecasting tool. This will enable improved management for irrigation water delivery and improvements in water conservation.

The TWRD also received funds from the Reclamation's Native American Affairs Technical Assistance to Tribes program for the 2018 fiscal year for efforts to improve management of surface water diversions for the Michaud Unit of the FHIP. The two objectives were first to develop an irrigation water management plan for control of Portneuf River diversions and water delivery and second to develop a computational demand forecasting tool for optimal plan implementation and water delivery control.

III. Project Location

The southern part of the Michaud Unit of the FHIP utilizes surface water from the Portneuf River to service its irrigated land. Currently, water measurement on the Michaud Unit is accomplished by flow meters on 74 surface water pumps within the Reservation boundaries on the Michaud Project. The metered sites in the southern part of the Michaud Unit are located in Power County Idaho, approximately 17 miles southwest of Fort Hall, Idaho at roughly 42°50' N and 112°40' W. A map of the metered sites and the southern part of the Michaud Unit is shown in Figure 2.

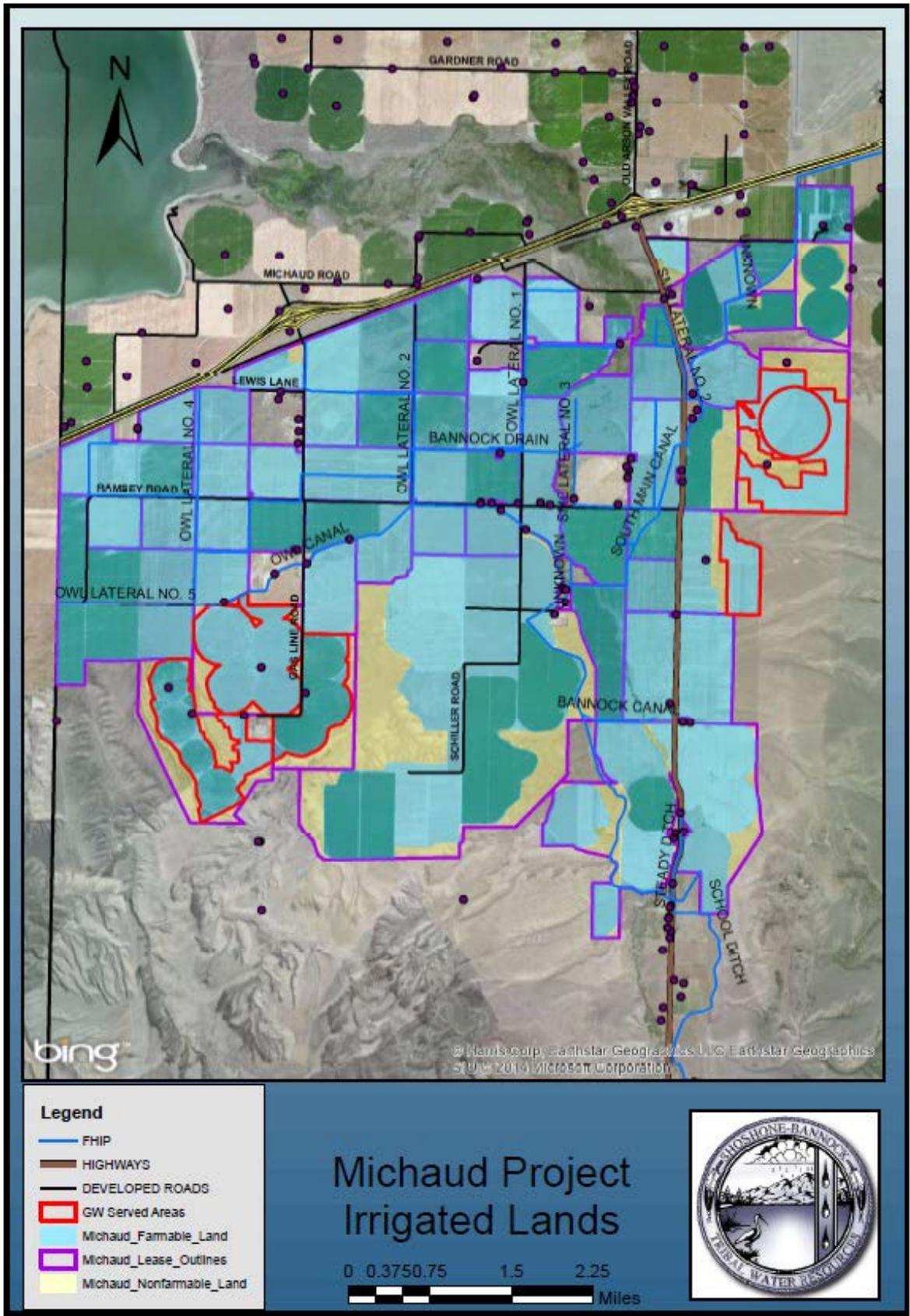


Figure 2: Southern Michaud Unit Irrigated Lands

IV. Technical Project Description

Project Objective

A total of seven surface water pumps in the Michaud Unit do not currently have flow measurement. These include three pumps that divert water from Bannock Creek into the South Main Canal, and four booster pumps in an area known as Wheatgrass. The installation of flow meters and telemetry at these sites will fill in gaps of flow measurement which are currently estimated by BIA staff. Real-time flow data from these sites will improve TWRD's ability to immediately spot leaks or faulty equipment within the irrigation system or overuse of water by any one individual, ultimately resulting in wasted or inefficient water use. Furthermore, the proposed five data transfer relay stations will improve the reliability of data communication from these proposed seven sites as well as the existing 78 existing flow measurement sites.

The outcome of this effort will be reduced response times to problem areas allowing critical, time sensitive water management decisions to be made faster. These improvements will ultimately support a water system that will deliver water more accurately and more efficiently. The TWRD plans on taking full advantage of this new system by integrating these real-time data into a separately-funded computational tool that will forecast Michaud Unit diversion demand, ultimately resulting in a significantly more efficient distribution system and a better water management program.

Work Plan

To achieve the project objective and improve water accounting practices, the TWRD is proposing to implement a telemetry system by wiring the 4-20mA output of 7 new flow meter sites to a datalogger that will keep a real-time record of flow (GPM) and total flow (KUGAL). The spread spectrum radio will then be connected to the datalogger to relay the data to the TWRD office through the telemetry data transfer sites. The TWRD can then proceed with plans to implement improved irrigation management and water conservation practices. The work plan entails the following tasks presented in Table 1.

Table 1: Description and schedule of project milestones for FY 2020-2021

Task	Description	Approach	Evaluation	Timeline
1.0	Identify & select surface water pump sites on which flow meters and telemetry will be installed. Also select locations for 5 relay sites	Determine which sites would benefit the most from having flow meters with telemetry, and also relay site locations	Difficult to reach sites will be selected with the best telemetry line of site within network	June – July 2020
2.0	Procure telemetry/meter equipment and supplies, this is the only task for which the Tribes are requesting federal assistance; the purchase of the equipment	Radios and Dataloggers from Campbell Scientific have been selected as the standard telemetry setup, paired with Seametrics flow meters for the Tribe	Finalized and approved meters will be selected along with telemetry installation and relay sites	July – Aug 2020
3.0	Installation of flow meters and telemetry equipment, TWRD is responsible for all work on this task	Physically install flow meters and telemetry equipment on the selected sites	Installation will begin after the 2020 irrigation season	Sep 2020 – Sep 2021

The Deputy Tribal Water Engineer employed by the TWRD will oversee this project and will carry out all manual labor with assistance from Water and Telemetry Technicians employed by the TWRD. The

TWRD will be responsible for purchasing and the installation of flow meters and telemetry equipment. The installation process is not part of the proposal, it is only mentioned in the narrative to describe the ultimate goal of the project. After the project's completion, annual operation and maintenance of the sites will be conducted by the TWRD.

V. Evaluation Criteria

Evaluation Criterion A – Project Benefits

What are the expected benefits and outcomes of implementing the proposed project?

Using real time data collected from the flow meters and telemetry system proposed for this project and integrating it into TWRD's computational demand forecasting tool, diversion accounting and water supply calculations can be carried out in real-time to implement the most efficient management of water resources. Benefits also include:

- *Improve Surface Water Use Quantification*
The 7 sites proposed for flow meter installation currently do not have any flow measurement. Three of these sites are at surface water pumps that divert water from Bannock Creek. Currently, diversions from Bannock Creek are estimated by BIA staff by monitoring pump operation time. Accurate water accounting for Bannock Creek diversions is very important to the Tribes as it impacts their American Falls and Palisades storage accounts. Installation of flow meters at these 3 sites will greatly improve the Tribes' confidence in the accuracy of water accounting from Bannock Creek.
Four of the proposed flow metering sites are at booster pumps on a portion of the Michaud Unit known as Wheatgrass. These sites currently have no flow measurement. Flow measurement data from these sites will enable more effective use of the computational demand forecasting tool being developed for the Michaud Unit.
- *Telemetry Network Expansion*
The addition of 78 flow metering sites through the FY2019 WaterSMART SWEP grant, and the 7 additional sites proposed in this project require for the telemetry network to be divided into 3 separate networks. The installation of 5 telemetry data transfer relay stations will enable this. This is necessary to improve data communication reliability and to enable the successful real-time use of flow meter data.
- *Reduce Flow Meter Down Time*
Telemetry at the proposed flow meters will enable real-time data monitoring. Without real-time data, TWRD is required to visit each metered site physically to collect flow data and perform maintenance if necessary. This process does not readily catch any issues with flow meters such as dead batteries, broken wires, or other weather-related issues. The telemetry system will provide the TWRD with direct access to data output at each meter. This allows the TWRD to monitor each meter on a real-time basis, making it significantly easier to observe faulty or inconsistent data indicating that a meter is not operating properly. With the telemetry system in place, the TWRD will be able to quickly locate and repair inoperable meters in a more timely manner than previous operations allowed. With the ability to quickly locate and repair an inoperable meter, the down time at the meter, and therefore lost data, will be reduced. Having the ability to verify that all meters within the system are operating properly will yield a higher quality water use dataset for the TWRD to work with when making water resource management decisions.
- *Reduce Labor Costs Required for Operation and Maintenance of Meters*
As stated previously, when flow meters lack telemetry the TWRD must visit each metered site to collect flow data. The implementation of the telemetry system as part of the proposed project

will provide the TWRD with real-time flow data at each meter; therefore, the meters will only require an actual field visit when one is found to be malfunctioning or inoperable, or to verify flow with a portable flow meter. The ability to receive flow data without the need for the TWRD to be physically present to collect flow data at each meter will drastically reduce labor requirements.

- *Improve the Quality of the Data Received*

One of the most significant benefits of a telemetry system is its ability to provide the user with real-time flow measurement, allowing the user time to react to any changes as necessary. Regular and accurate monitoring of flow data is essential to maintaining an efficient and operable water supply system. Constant access to flow data at the proposed sites will allow the TWRD to spot any inconsistencies within the system that might require attention. It also provides the user with the ability to spot any unusual or unexpected fluctuations in flow that might be a result of a problem within the system. Having the ability to promptly fix any issues will drastically improve the efficiency of the system, as well as the quality of flow data received. Furthermore, real-time data collection eliminates user error associated with individual data collection at each meter. Each of these benefits related to the implementation of a telemetry system will drastically improve the quality of the flow dataset received.

- *Identify Areas of Excess Water Use*

Whether intentionally or unintentionally, all water users in an irrigation system have the potential to overuse water. Real-time flow data from booster pumps on Wheatgrass will assist the TWRD in identifying areas where overuse of water is occurring and address the problem immediately. In some cases, overuse of water may be caused by leaks or breaks within the distribution system. In other cases, the overuse may be attributed to a user's inability to properly monitor their water use. The telemetry system proposed by this project will provide the TWRD with the necessary data to address these issues as soon as possible, thereby improving the over efficiency of the irrigation system.

What is the extent to which the proposed project improves overall water supply reliability?

The project has significant potential to improve water supply reliability. The real-time flow data available through the proposed and existing flow measurement sites, as well as the proposed expansion of the telemetry network will help to accurately determine amounts of water necessary to divert and charge to water rights. This will enable more efficient and reliable delivery of water.. Secondly, the Tribes' computational demand forecasting tool will utilize the real-time data made available through this project to optimize Michaud Unit water diversions and, therefore, conserve water in the Tribes' American Falls and Palisades storage accounts. Finally, additional reliable data will help identify water use trends for future water conservation projects.

What is the expected geographic scope of benefits from the proposed project?

The benefits from the proposed project will extend throughout the Reservation. Through exchange, conserved Michaud Unit water diversions will remain in the Tribes' Snake River reservoir storage accounts where they can be used for water marketing or drought mitigation.

What is the extent to which the proposed project will increase collaboration and information sharing among water managers in the region?

The proposed project will allow for more thorough and accurate accounting of water use within the FHIP. This will be valuable data that can be shared with other water managers to aid in future decision-making regarding water resources or water rights.

Are there any anticipated benefits to local sectors and economies?

The local agricultural economic sector is expected to benefit from the proposed project. Implementation of real-time measurement will enhance the reliability of water delivery in Michaud Unit to address irrigation needs. More reliably addressing irrigation needs can help ensure good yields in FHIP farmland, which will help to support an important sector in the local economy.

What is the extent to which the project will complement work done in coordination with NRCS in the area?

In the future the Tribes will use the water use data resulting from this project to identify and select on-farm NRCS improvements and quantify their expected benefit.

Evaluation Criterion B – Planning Efforts to Support the Project

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

The proposed project will support TWRD's water supply and water use monitoring programs that have been implemented over the past 13 years to provide better water management across the Reservation. A water conservation study was completed in 2006 with recommendations aimed at improving water use efficiency within the Reservation's irrigated lands. One of the main recommendations of this study was to improve water measurement on the Reservation, such that better accounting of water can take place. The need for increased water measurement and accounting capacity was clearly identified in the Tribes' 2006 Water Conservation Reconnaissance Study. This study states that:

“One of the most pressing needs of the Reservation is improved water measurement and accounting capabilities. At the present time, only flows entering the FHIP are known and the accuracy of these measurements is questionable. Flows distributed throughout the FHIP are known only intermittently at best. Without proper water measurements, the data are not available to account for water use and loss on the Reservation's agricultural lands.”

TWRD has made significant progress in attaining the goals identified in this study by installing 78 new flow meters on surface water pumps within the Michaud Unit. Each of these flow meters will have telemetry installed in the near future. These flow measurement sites have provided the Tribes with accurate, real-time distributed flow data within the water delivery system and allow for better water accounting and quantification of water use efficiency. The proposed project would expand the flow measurement network to include diversions from Bannock Creek and surface water distributions on Wheatgrass. Additionally, the telemetry data transfer relay sites are required to ensure reliable data communication from the existing and proposed sites. Another goal determined by the study was to improve water management:

“Improvements could be made in management of the FHIP diversions. A water management model is currently being developed by the Tribes which will provide flow requirements at different points in the

system. Water level control is also useful to provide steady canal flows despite fluctuating supply flows. At this time, water level control is recommended only at the major canal headings.”

The proposed flow measurement sites and telemetry network expansion will provide the additional data, and communication reliability, needed for the computational demand forecasting tool to estimate and then automate control of surface water diversions into the Michaud Unit delivery system to meet projected demand. This will help TWRD reach their goal of better water accounting through measurement and management.

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

As stated in the above sub-criterion, measurement was deemed to be “One of the most pressing needs of the Reservation” with regard to water conservation and efficiency efforts. The proposed project includes the installation of 7 new flow measurement sites equipped with telemetry and the installation of 5 new data transfer relay sites to improve the communication reliability of all Michaud Unit flow measurement sites. The 2006 Water Conservation Reconnaissance study also establishes installation of pressure transducer equipment as a priority in the Tribes’ measurement program in FHIP structures. The report notes:

“Monitoring with pressure transducer equipment can minimize human error and, coupled with a consistent calibration schedule, provides a much better record of daily flow rates than current BIA monitoring practices. By using pressure transducer gages with dataloggers, the number of locations monitored can be increased substantially with a minimal increase in monitoring staff.”

This language as well as the tribes’ activities in installing measurement equipment show the importance of water measurement to the TWRD plans for water efficiency and conservation.

Evaluation Criterion C – Project Implementation

Describe the implementation plan for the proposed project.

The proposed project will be carried out by TWRD staff, mainly in the irrigation offseason following the 2020 irrigation season. Important dates and details of project implementation are provided in Table 1.

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

No permits will be necessary for the completion of the proposed project.

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

No engineering design work will be necessary for the proposed project. The TWRD has prior experience with installation of the same types of telemetry equipment at other locations throughout the FHIP.

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

No new policies or administrative actions will be necessary to implement the proposed project.

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

The Tribes do not anticipate environmental compliance costs to be incurred by this project. The Tribes have carried out these activities before, and the installation of measurement equipment occurs on existing conveyance structures and is not invasive.

Evaluation Criterion D – Nexus to Reclamation

How is the proposed project connected to a Reclamation project or activity?

The Tribes' storage rights in American Falls and Palisades reservoirs are Federal contract storage rights. They provide for a fixed percentage of storage accrual plus carryover in the Federal reservoir projects. The Palisades Dam was constructed in 1957 as principal features of the Bureau of Reclamation's Palisades Project. The American Falls Dam was originally built in 1928 and then reconstructed in 1978 by the Bureau of Reclamation.

Does the applicant receive Reclamation project water?

The Tribes' storage rights in American Falls and Palisades reservoirs are Federal contract storage rights. The Tribes may divert this water directly to the Fort Hall unit or exchange a portion of these storage rights for the ability to pump water from the Portneuf River into the Michaud Canal for use by the Michaud Unit in the FHIP.

Is the project on Reclamation project lands or involving Reclamation facilities? Is the project in the same basin as a Reclamation project or activity?

This effort may provide better monitoring of Reclamation project water resources and deliveries.

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

If greater irrigation efficiency is achieved as a result of implementation of the proposed project, the water savings will contribute water to the Snake River Basin, most significantly as the Tribes are able to build reliability in their water supplies available for leasing.

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

The United States holds in trust federal contract storage rights for water that accrues up to 2.8059% of the storage space in American Falls Reservoir and 6.9917% of the storage space in Palisades Reservoir for the benefit of the Tribes. This project will install flow measurement and telemetry devices which can be used to increase efficiency in irrigation water delivery. Through better informed irrigation water delivery practices, more water will be retained in the Upper Snake River reservoir system and, therefore, additional lower priority reservoir storage accrual, directly benefiting federally reserved Tribal storage water in Palisades Reservoir. This will build storage water reliability and increase Reclamation's ability to provide trust water to the Tribe.

Evaluation Criterion E – Department of the Interior Priorities

Describe how proposed project relates to the priorities of the Department of the Interior.

The proposed project supports the Department of Interior priorities of conservation stewardship legacy, utilizing our natural resources, restoring trust with local communities, and modernizing our infrastructure. The Tribes' measurement network will provide data necessary for more efficient and transparent utilization of water resources and water rights in the FHIP. The data provided from implementation of this project can be used in the Tribe's computational demand forecasting tool developed to calculate pumping rates and other surface water diversion into the Michaud Unit delivery system. Infrastructure maintenance needs will also be more evident with access to real-time flow measurement data provided by the telemetry system, allowing the water delivery infrastructure to be better maintained in the future.

The proposed project also supports the Department of Interior priorities to modernize U.S. infrastructure through the installation of flow meters and telemetry at the proposed sites, as well as the expansion of the telemetry network to enable greater reliability in data communication.

VI. Expected Results

The objective of the TWRD is to promote and achieve better water management practices within the Michaud Unit of the FHIP. Advanced water management technologies such as flow measurement and telemetry systems would help moderate the complexities involved with fair and equitable water distribution and water conservation practices. Data collected will be flow data recorded in cubic feet per second (CFS) and gallons per minute (GPM) in addition to a total volumetric quantity in acre-feet (ac-ft). Based on the real time data collected, the TWRD will be able to better understand the irrigation system and know how to achieve peak efficiency. Data will also be compiled in a report at the conclusion of each irrigation season to track surface water use through the irrigation system. Finally, these data will be utilized by the Tribes' computational demand forecasting tool to conserve water used by the Michaud Unit.

VII. Contacts for Further Information

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Company: Shoshone-Bannock Tribes Water Resources Department

Phone: (208)239-4580

Email: sward@sbtribes.com

Project Budget

Funding Plan and Letters of Commitment

How will you make your contribution to the cost-share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant?

The Tribes will contribute our entire cost-share requirement as a monetary contribution of \$23,996.54 from the Tribal Water Resources General Fund. This fund is generated from Tribal water marketing income.

Describe any in-kind costs incurred before the anticipated project start date that you seek to include as project costs.

There will be no in-kind costs incurred before the anticipated project start date for this project.

Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment.

There is no funding to be provided by funding partners for this project. Accordingly, letters of commitment are not required.

Describe any funding requested or received from other Federal partners.

There is no funding requested or received from other Federal partners for this project.

Describe any pending funding requests that have not yet been approved, and explain how the project will be affected if such funding is denied.

There are no pending funding requests for this project.

Please include the following chart to summarize your non-Federal and other Federal funding sources.

See Table 3 below.

Table 2: Summary of Non-Federal and Federal Funding Sources.

Funding Sources	Funding Amount
Non-Federal Entities	
1. Shoshone-Bannock Tribes	\$23,996.54
Non-Federal Subtotal	\$23,996.54
Other Federal Entities	
Other Federal Subtotal	\$0.00
Requested Reclamation Funding	\$23,996.53
Total Project Funding	\$47,993.07

Budget Narrative

Travel

Travel costs will not be incurred as part of this project.

Equipment

A majority of the costs associated with this project is the equipment at \$47,218.07

Shipping/Freight

\$775.00.00

Contractual

No contractual costs will be incurred as part of the project budget.

Environmental and Regulatory Compliance Costs

There are no environmental or regulatory compliance costs as part of this project.

Other Expenses

There are no other expenses, which may include additional travel and mileage, as part of this project.

Indirect Costs

This project does not include any indirect costs.

Total Costs

The total cost of this project will be \$47,993.07.

Budget Form

The completed SF-424C, Budget Information – Construction Programs is attached in Appendix B.

Budget Proposal

The following table represents the Budget Narrative. The budget narrative was developed assuming that 7 flow meter sites with 4-20mA radio setups at the metered sites and other necessary equipment needed to be purchased and installed. In addition the 5 telemetry relay sites for the network will be purchased and installed. The USBR and TWRD will participate in a cost share program, presented in Table 3.

Table 3: Proposed budget for project.

Budget Item Description	Quantity	Price Each	Recipient Share	Reclamation Share	Total
Equipment					
<i>RF451: Spread-Spectrum Radio</i>	12	\$744.00		\$8,928.00	\$8,928.00
<i>15966: Wall Charger</i>	2	\$18.75		\$37.50	\$37.50
<i>SPC-ACC: Field Power Cable</i>	10	\$8.75		\$87.50	\$87.50
<i>CR300: Data Logger</i>	7	\$695.00		\$4,865.00	\$4,865.00
<i>CR1000: Data Logger</i>	1	\$1,530.00		\$1,530.00	\$1,530.00
<i>31314: Surge Suppressor</i>	12	\$171.43		\$2,057.16	\$2,057.16
<i>COAXNTN-L: Antenna Cable10'</i>	7	\$54.30		\$380.10	\$380.10
<i>COAXNTN-L: Antenna Cable100'</i>	2	\$225.00	\$450.00		\$450.00
<i>COAXNTN-L: Antenna Cable30'</i>	2	\$97.93		\$195.86	\$195.86
<i>COAXNTN-L:AntennaCable 200'</i>	1	\$1,493.33	\$1,493.33		\$1,493.33
<i>14201: Yagi Antenna</i>	7	\$140.80		\$985.60	\$985.60
<i>18663: Null Modem Cable</i>	7	\$4.80		\$33.60	\$33.60
<i>14221: Omni Antenna</i>	3	\$122.92		\$368.76	\$368.76
<i>ENC 14/16: Enclosure</i>	12	\$376.65		\$4,519.80	\$4,519.80
<i>Large Omni Antenna</i>	1	\$1,275.00	\$1,267.35	\$7.65	\$1,275.00
<i>FT440W: Seametrics Totalizer</i>	7	\$732.38	\$5,126.66		\$5,126.66
<i>EX250: Seametrics Flow Meter</i>	7	\$1,517.25	\$10,620.75		\$10,620.75
<i>Seametrics Meter Cover</i>	7	\$62.13	\$434.91		\$434.91
<i>SLAA-12-55: 55 AmpHR Battery</i>	12	\$134.95	\$1,619.40		\$1,619.40
<i>SS-10L-12V: Voltage Regulator</i>	12	\$65.10	\$781.20		\$781.20
<i>SLP030-12U: Solar Panel</i>	12	\$80.00	\$960.00		\$960.00
<i>SLB-0112: Solar Panel Mount</i>	12	\$30.00	\$360.00		\$360.00
<i>18-2-TC: Solar Panel Cable ft.</i>	100	\$0.50	\$50.00		\$50.00
<i>ANXFM2Antenna mount for Omni</i>	2	\$28.97	\$57.94		\$57.94
<i>Shipping/Freight</i>			\$775.00		
TOTAL DIRECT COSTS			\$23,996.54	\$23,996.53	\$47,993.07

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.

The flow meters and telemetry system within the Michaud Unit will be installed within the area of disturbance of existing ditches and not within any natural watercourses. Therefore, the Tribes have determined that the environmental impacts from implementation of the proposed project are considered to be either minimal or non-existent and would fall under a Categorical Exclusion NEPA classification. Consequently, the Tribes have not solicited input from the U.S. Fish and Wildlife Service, U.S. Army Corp of Engineers, or other state or federal regulatory agencies. However, if during the implementation of this project any environmental or regulatory compliance issues are uncovered, the Tribes would take action to contact the appropriate agency to file any required notices, acquire or review environmental impact statements, obtain required legal permits, or take whatever action is deemed necessary.

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?

Species listed or proposed to be listed as a Federal threatened or endangered species will not be affected by any activities associate with the proposed project. Designated critical habitat in the project area will also be unaffected by the proposed project.

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 wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as “Waters of the United States” will be impacted by the proposed project.

When was the water delivery system constructed?

Development of the water delivery system began around 1894.

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.

There will be no modifications to the individual features of the irrigations system.

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 site of the original Fort Hall (National Register of Historic Places Reference Number 66000306) is located 11 miles west of Fort Hall, Idaho on the Fort Hall Indian Reservation.

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

No archeological sites will be disturbed with this project.

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

The proposed project will not have a disproportionately high and adverse effect on low income or minority populations. It will add benefit to all water users in the region.

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

The proposed project will not limit access to or ceremonial use of Indian sacred sites or result in other impacts on tribal lands.

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

This project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area

Required Permits or Approvals

No permits or approvals will be necessary in order to implement the proposed project.

Official Resolution

The official resolution from the Tribes' governing body for the proposed project is attached in Appendix A.

Appendices

Appendix A: Tribal Resolution

Appendix B: Federal Forms

Appendix A: Tribal Resolution

Appendix B: Federal Forms

RESOLUTION

WHEREAS, the Fort Hall Business Council has the ultimate responsibility for budget approvals and overseeing the administration of all Tribal funds, as well as those funds awarded to the Shoshone-Bannock Tribes through contracts, grants and cooperative agreements, regardless of the source; and

WHEREAS, the Tribal Water Resources Department (TWRD) is in the process of implementing the “1990 Fort Hall Water Rights Agreement”; and

WHEREAS, to effectively administer water resources, a surface water telemetry/measurement program was developed that will assist the TWRD in quantifying surface water; and

WHEREAS, the TWRD is seeking funds from the U.S. Bureau of Reclamation’s (BOR) WaterSMART Grants: Small-Scale Water Efficiency Projects for Fiscal Year 2020 cost share program solicitation to enable the TWRD to promote and achieve good water management practices within the Fort Hall Irrigation Project (FHIP) with the objective of installation of 7 flow meters with wireless telemetry data transfer capability on surface water pumps in the Michaud Unit of the FHIP, in addition this project will allow for the installation of an additional 5 telemetry data transfer relay sites needed to accommodate the growing size of the network; now

THEREFORE, BE IT RESOLVED BY THE BUSINESS COUNCIL OF THE SHOSHONE-BANNOCK TRIBES, that the Tribal Water Resources Department is hereby approved to apply for funding to the BOR’s WaterSMART Grants: Small-Scale Water Efficiency Projects for Fiscal Year 2020 cost share program, \$23,996.53 from the BOR, and \$23,996.54 from the TWRD Line Item No. 1000-32-650 for a total project amount of \$47,993.07 to continue the development of the surface water /telemetry measurement program; and

BE IT FURTHER RESOLVED, that the Tribal Chairman or official designee is authorized to sign the application and all other appropriate documents required for submission of the application.

Authority for the foregoing resolution is found in the Indian Reorganization Act of June 18, 1934 (48 Stat., 984), as amended, and in the Shoshone-Bannock Tribes Constitution and Bylaws of the Fort Hall Reservation, as amended, including, but not limited to the authority found in the Constitution, Article VI.

Dated this 4th day of February 2020



Ladd R. Edmo, Tribal Chairman
Fort Hall Business Council

S E A L

CERTIFICATION

I HEREBY CERTIFY, that the foregoing resolution was passed while a quorum of the Business Council was present by a vote of 5 in favor, 1 absent (TB), and 1 not voting (LRE) on the date this bears.



Donna K. Thompson, Tribal Secretary
Fort Hall Business Council

CTRT-2020-0077