FALLS IRRIGATION DISTRICT

Pump Station SCADA and Automation Upgrades for Water and Energy Savings

U.S. Bureau of Reclamation
WaterSMART Water and Energy Efficiency Grant Proposal
Funding Opportunity No. R23AS00008
Funding Group III

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TECHNICAL PROPOSAL

EXECUTIVE SUMMARY

Date: July 28, 2022
Applicant: Falls Irrigation District
City/County/State: American Falls, Power County, Idaho

The Falls Irrigation District (Category A applicant), located in American Falls, Power County, Idaho, supplies the majority of its water to the 12,621 irrigated acres in the District via a 3700 horsepower pump station that pumps water from the American Falls Reservoir into the District's canals. Currently, the lack of automation and inability to adjust the speed of the large, constant speed motors in the pump station results in over-pumping and water spills at the end of the conveyance canals, leading to substantial water and energy waste. The solution to this problem is to automate the pump station by adding an industrial control panel, variable speed motors, pumps and drives, flowmeters, and a SCADA system. These improvements will enable the District to match supply to demand and reduce over-pumping, thereby conserving water by 1,684 acre-feet/year (AF/year) and energy by over 386,000 kWh/year. This project will begin engineering design in August 2022. Due to the lead times required for obtaining the equipment, the project will begin construction in August of 2024 and be completed by May 2025. This project is located on a Federal facility, the American Falls Reservoir grounds, which is owned and operated by the Bureau of Reclamation (Reclamation). Reclamation owns title to the District (contract No. 14-06-100-851). The District has already conducted an engineering level analysis of the project, and is committed to implementing the much needed improvements.

PROJECT LOCATION

The Falls Irrigation District pump station is located in the City of American Falls in Power County, Idaho (Lat. 42°46'43.29"N; Long. 112°52'26.19"W). The pump station is located directly beneath the American Falls Dam, and pumps water uphill through a 60-inch buried pipeline under the town of American Falls to the head of two canals, the East Canal and West Canal. The two canals then provide water via gravity to 12,621 irrigated acres. Figure 1 shows the project location and District service area.

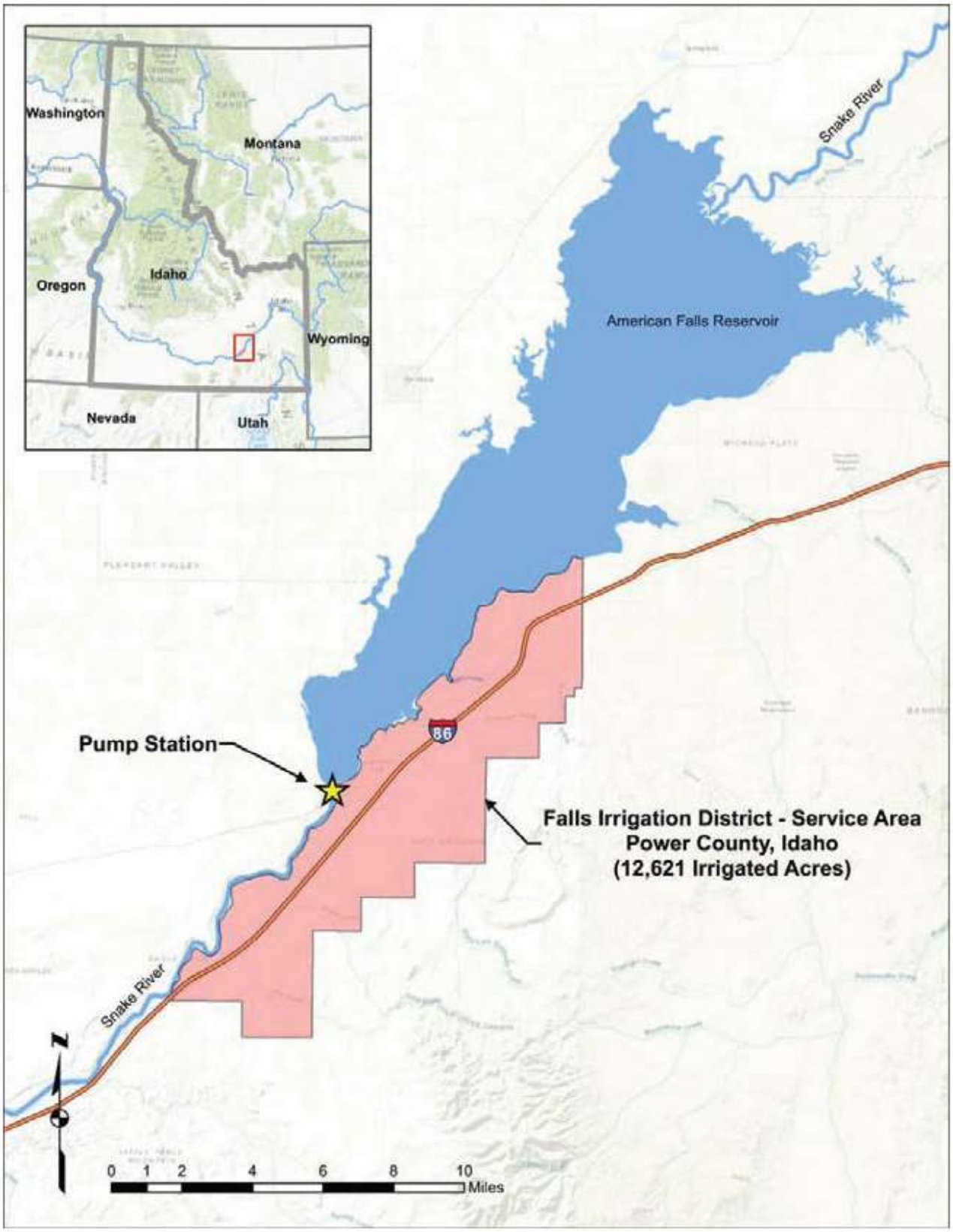

Figure 1 Map of project location

TECHNICAL PROJECT DESCRIPTION

The proposed project entails automating the existing pump station by modifying it for flow control. To enable this mode of operation, the following improvements are required.

The desired flow control operation cannot be done efficiently without replacing the synchronous motors and drives with induction motors and variable speed controllers. The flow control operation will be implemented by installing new flowmeters on each pump discharge, a control panel and SCADA system, induction motors, pumps, and speed controllers to be able to operate the pumps at variable speeds. They are therefore an integral part of this project. A new 3750 kVA station service transformer will be installed to provide the 4160 volts necessary to operate the new induction motors. New intake and discharge valves on the pumps will be required to enable slow and controlled starting and stopping of the pumps. An air conditioning system will be required to keep the variable speed drives and motors cool for prolonged life-span and efficiency, and a water line installed for pump bearing cooling. An electrical hoist will be included to enable servicing the motors.

The control panel will have a touch-screen user interface (or Human Machine Interface, HMI) that the pump station Operator can use to enter a desired pump station flow rate (aka “flow set point”). The controller will automatically select the preferred combination of pumps and pump speeds to best meet the flow set point while maintaining a high efficiency of the pumps and motors. The controller will send a signal to the variable speed drives to either speed up or slow down the pumps. Electronic flowmeters on the discharge of each of the four pumps will provide the controller with a real-time flow rate measurement for each pump. The controller will then speed up or slow down the pumps via a feedback control loop until the pump station flow rate matches the flow set point.

The SCADA system will enable the Operator to connect to the pump station controller remotely to observe the status of the pumps, alarm conditions, and set or adjust the flow set point. This ability will eliminate many physical trips to the pump station, thereby substantially reducing the operations and maintenance costs of the station.

A new low voltage motor control center (MCC) will be required to provide low voltage power to operate the control panel, valves, hoist, and air conditioner.

The pump station can only be modified during the off-season when the pumps are not in service. Due to the limited 6-month construction window, the project will be designed and bid ahead of time, and components with the longest lead times will be selected and purchased directly by the District via a preselection and prepurchase process. The project will be bid in January of February of 2024, and contractor mobilization will begin in August of 2024, with full time construction beginning in October of 2024.

The existing pump station constant speed motors and drives are shown in Figure 2 and Figure 3 below. As can be seen in the photos, there are no flowmeters or control panels to enable automation and speed control in the pump station.

Figure 2 Existing 3700 Hp pump station (top) and 1250 Hp pump (bottom)

Figure 3 Existing pump station drives do not allow variable speed operation

EVALUATION CRITERIA

Evaluation Criterion A – Quantifiable Water Savings

1) Describe the amount of estimated water savings

The pump station automation improvements project will save 1,684 acre-feet of water per year by reducing spills at the end of the canals. The return flows from the over-pumped water is not credited to the District by the state.

2) Decribe current losses

a. *Explain where current losses are going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground)?*

Some of the spilled water seeps into the aquifer, some is lost to evaporation, and some of it drains back to the Snake River.

b. *If known, please explain how current losses are being used. For example, are current losses returning to the system for use by others? Are current losses entering an impaired groundwater table becoming unsuitable for future use?*

There is one farm located along the drain that occasionally pumps from the drain for irrigation.

c. *Are there any known benefits associated with where the current losses are going? For example, is seepage water providing additional habitat for fish or animal species?*

There are no known benefitis associated with the losses. The water qualify of the return flows is worse than the raw water source, due to the chemical treatment of the canal for aquatic weed and algae control.

3) Describe the support/documentation of estimated water savings

The Falls Irrigation District pump station, built in the late 1960's, consists of four large pumps (referred to as M1, M2, M3, and M4) that can each only run at a constant speed. Because of the constant speed operation, the flow rates the pump station is able to provide are limited to large steps based on which combination of the four pumps are running simultaneously.

The District delivers water with an "on-call" delivery system, whereby the water users call the ditch rider a day before their planned irrigation to request a water delivery. To meet the combined on-call deliveries, the pump station flow rate must either meet or exceed the demand. Figure 4 shows the available flow rates, based on different pump combinations. Any flow demand between one of these values requires that the pump station operate at the next highest value.

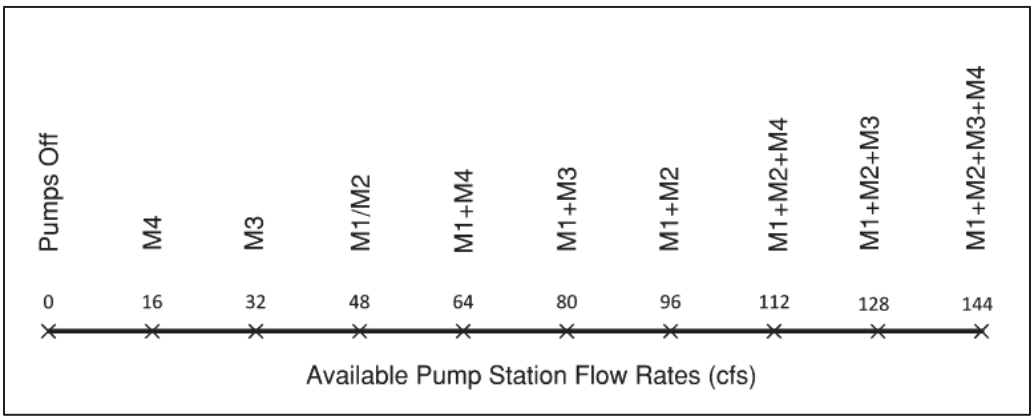

Figure 4 Available Pump Station Flow Rates

Because of the limited available flow rates due to the constant speed pumps, the vast majority of the time the pump station flow rate exceeds the demand, resulting in an over-pumping scenario. The excess water from the over-pumping spills out the end of the two main canals (the East and West Canals) into drainage ditches and is lost to the District's water users. Figure 5 shows a schematic-level water balance for the pump station and canals.

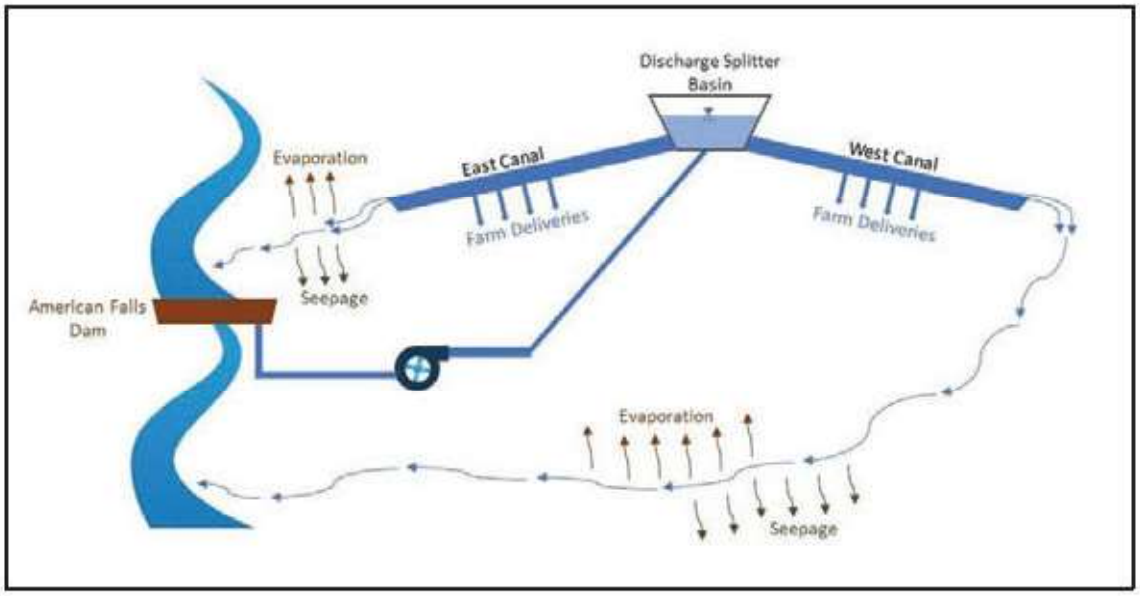

Figure 5 Pump station and canal schematic

The volume of water currently pumped by the pump station is measured with a broad crested weir at the head of the canal splitting basin. The actual flow rate of each pump is not measured; only the total pump station flow rate is known. The volume pumped shown in Figure 7 and Table 1 is measured at this broad crested weir.

There are four spillways along the East and West canals. District staff record the flow rate over the spillway weirs twice daily. To provide sufficient water to the final deliveries on the canal, the District Manager states that each spill must maintain a minimum flow of 0.5 cfs, for a combined minimum spill of 4 acre-feet/day. Figure 6 shows two of the spillways with excessive water losses. Figure 7 and Table 1 show the monthly and annual water savings that would have occurred in 2021 by reducing over-pumping through automation. 2021 was an average year of spills, with annual spills totaling 2,540 acre-feet. Table 2 shows annual spills from the last four years.

Figure 6 Spillways on East (left) and West (right) canals

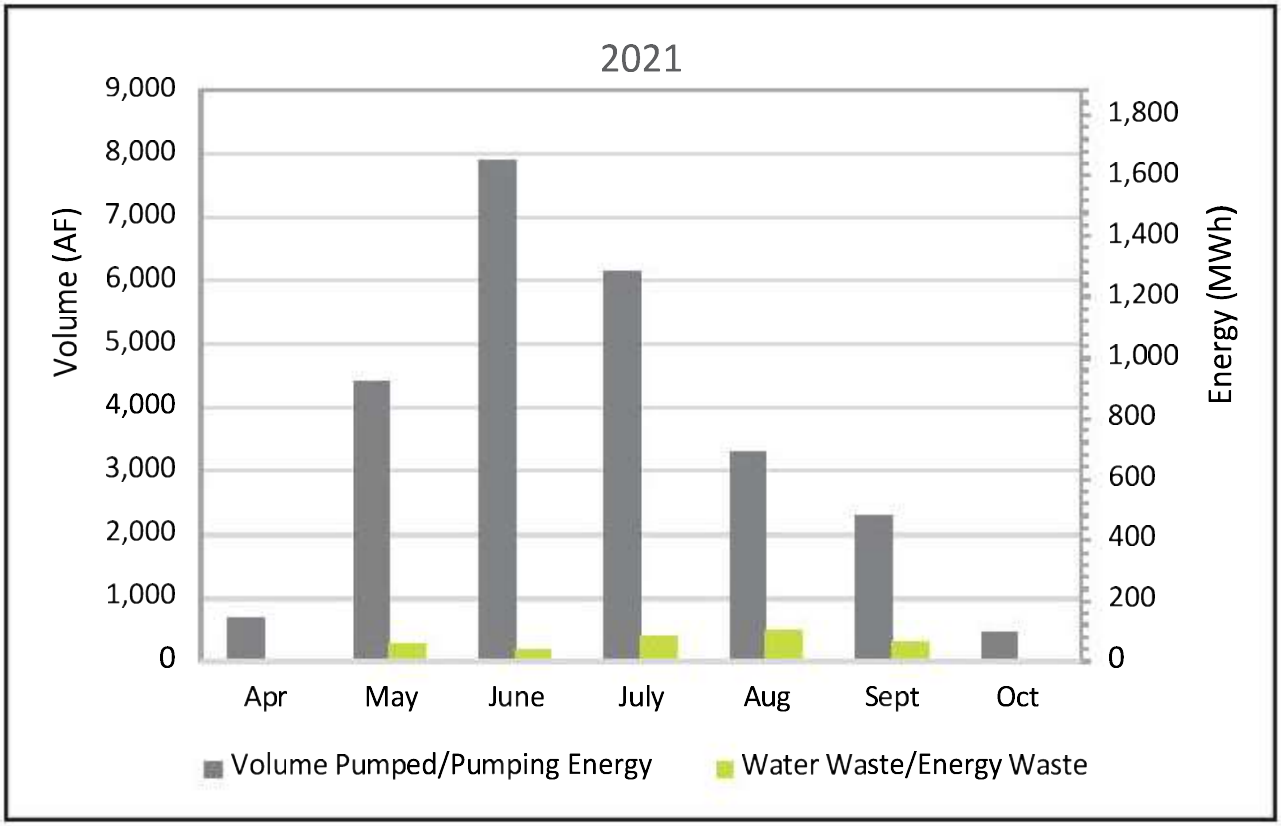

Figure 7 Water and Energy Waste

Table 1 Data from 2021 Showing Water and Energy Waste

	Apr	May	June	July	Aug	Sept	Oct	Total
Volume Pumped (AF)	691	4,425	7,896	6,147	3,292	2,311	440	25,202
East Canal Total Spill (AF)	87	300	238	395	422	313	94	1,849
West Canal Total Spill (AF)	54	87	67	141	200	101	41	691
Minimum Required Spill* (AF)	120	124	120	124	124	120	124	856
Water Waste (AF)	21	263	185	412	498	294	11	1,684
Water Waste/Volume Pumped (%)	3.0%	5.9%	2.3%	6.7%	15.1%	12.7%	2.5%	6.7%
Pumping Energy (MWh)	136	896	1,648	1,468	808	528	104	5,588
Energy Waste (MWh)	4	53	39	98	122	67	3	386

*the minimum required spill is 4 acre-feet/day, which is the operational spill required to convey water to the end of the canal.

Table 2 Spills from the past four years

	2018	2019	2020	2021	Avg.
Annual Spills (acre-ft)	2,665	2,173	2,789	2,540	2,542

4) Please address the following questions according to the type of infrastructure improvement you are proposing for funding

(1) Canal Lining/Piping

Not applicable

(2) Municipal Metering

Not applicable

(3) Irrigation Flow Measurement

a. *How have average annual water savings estimates been determined? Please provide all relevant calculations, assumptions, and supporting data.*

The total water savings were calculated from monthly records of pump station volumes and spills kept by the District. The spreadsheets are included in Attachment A. The total annual water saved is the sum of the monthly water

savings from April through October for the East and West canals, as shown in Table 1.

b. *Have current operational losses been determined? If water savings are based on a reduction of spills, please provide support for the amount of water currently being lost to spills.*

The minimum required spill of 4 acre-feet/day is considered the unavoidable because it is the minimum spill necessary to convey water to the final deliveries along the canals. The 1,684 acre-feet/year of water waste does not include the minimum required spill of 4 acre-feet/day.

c. *Are flows currently measured at proposed sites and if so, what is the accuracy of existing devices? How has the existing measurement accuracy been established?*

The accuracy of the Cipolleti weirs that measure the spills is +/- 5%, per the Bureau of Reclamation Water Measurement Manual.

d. *Provide detailed descriptions of all proposed flow measurement devices, including accuracy and the basis for the accuracy.*

The electronic insertion flowmeters that will be used in automating the pump station have an accuracy of +/- 0.5%.

e. *Will annual farm delivery volumes be reduced by more efficient and timely deliveries? If so, how has this reduction been estimated?*

Annual farm deliveries will remain the same. The water savings will result in reduced spills at the end of the canal resulting from over-pumping.

f. *How will actual water savings be verified upon completion of the project?*

Water savings will be measured by comparing pre-construction spill volumes with post-construction spill volumes.

Evaluation Criterion B – Renewable Energy

Subcriterion No. B.2. Increasing Energy Efficiency in Water Management

Describe any energy efficiencies that are expected to result from implementation of the water conservation or water efficiency project (e.g., reduced pumping).

If quantifiable energy savings is expected to result from the project, please provide sufficient details and supporting calculations. If quantifying energy savings, please state the estimated amount in kilowatt hours per year.

The pump station pumps an average water volume of 25,202 acre-feet/year. Therefore, the water savings of 1,684 acre-feet/year described above represents 6.7% of the total pump station delivery. As shown in Table 1 above, from monthly electric meter data recorded by the District, the pump station annual energy consumption is 5,588,000 kilowatt-hours/year (kWh/year). A simplified version of the raw data is included in Attachment A. Therefore, reducing the pump

station deliveries by 6.7% per year will reduce the energy consumption of the pump station by at least 6.7%, which equates to 386,000 kWh/year. (The actual amount of energy saved will actually be substantially greater than this, due to the pump affinity laws which state that flow is proportional to shaft speed, and power is proportional to the cube of shaft speed. But this 386,000 kWh/year is a very conservative value for energy savings).

How will the energy efficiency improvement combat/offset the impacts of climate change, including an expected reduction in greenhouse gas emissions.

Per the EPA's Greenhouse Gas Equivalencies Calculator (https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results), 386,000 kWh/year of avoided energy is equivalent to reducing annual emissions by 274 metric tons of Carbon Dioxide, the equivalent U.S. average annual electricity use of 53 houses, or removing 58.9 gasoline powered vehicles from the road.

If the project will result in reduced pumping, please describe the current pumping requirements and the types of pumps (e.g., size) currently being used. How would the proposed project impact the current pumping requirements and energy usage?

All of the water supplied by the District is pumped. The main pump station consists of two 1250 horsepower (Hp) pumps, one 800 Hp pump, and one 400 Hp pump, for a combined total of 3700 Hp. The pumps are horizontal split-case centrifugal pumps, driven by constant speed synchronous motors. The speed of the synchronous motors cannot be changed (i.e., they can only run at full speed). The proposed project would replace the synchronous motors with induction motors coupled with variable speed drives so that the speed of the motors can be changed to meet a variable flow rate. This variable flow rate will enable the Operators to match supply to demand, thereby reducing over-pumping and related energy consumption.

Please indicate whether your energy savings estimate originates from the point of diversion, or whether the estimate is based upon an alternate site of origin.

Because the energy savings are at the main pump station supplying water to the District, the energy savings originates at the point of diversion.

Does the calculation include any energy required to treat the water, if applicable?

The energy savings calculations do not include water treatment, as there is no energy required to treat the water. However, reducing over-pumping does result in less chemical use, as the pumped water is regularly treated with herbicides and algaecides to prevent aquatic weeds and algae growth in the canal.

Will the project result in reduced vehicle miles driven, in turn reducing greenhouse gas emissions? Please provide supporting details and calculations.

The automation controller and SCADA system will result in reduced vehicle miles driven by the Operators, as it will allow them the ability to remotely monitor the pump station rather than physically visit it every time they feel the need to check its status. The remote monitoring will reduce approximately one 5-mile trip to the pump station per day, which equates to savings of 915 vehicle miles per year (5 miles/day x 6 months x 30.5 days/month). Using a work truck fuel efficiency of 15 miles/gallon, the reduced visits represent a savings of 61 gallons of gasoline, or

0.542 metric tons of carbon dioxide emissions per year (https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results).

Describe any renewable energy components that will result in minimal energy savings/production (e.g., installing small-scale solar as part of a SCADA system).

Not applicable.

Evaluation Criterion C – Sustainability Benefits

Enhancing drought resiliency

Does the project seek to improve ecological resiliency to climate change?

Not applicable.

Will water remain in the system for longer periods of time? If so, provide details on current/future durations and any expected resulting benefits (e.g., maintaining water temperatures or water levels).

The pump station automation project will keep water in the river system longer by reducing over-pumping and leaving the saved water in the reservoirs. This will improve the region's ecological resistance to climate change by maintaining higher water levels in the American Falls reservoir, and keeping the reservoir water colder, which will benefit native species such as trout, sturgeon, amphibians, waterfowl, and aquatic invertebrates.

Will the project benefit species (e.g., federally threatened or endangered, a federally recognized candidate species, a state listed species, or a species of particular recreational, or economic importance)? Please describe the relationship of the species to the water supply, and whether the species is adversely affected by a Reclamation project or is subject to a recovery plan or conservation plan under the Endangered Species Act (ESA).

The only listed species in the project area is the Yellow-billed Cuckoo (threatened), the Ute Ladies'-tresses (threatened) and the Monarch Butterfly (candidate), none of which are anticipated to benefit from this project.

Please describe any other ecosystem benefits as a direct result of the project.

There are no known benefits other than what was described above.

Will the project directly result in more efficient management of the water supply? For example, will the project provide greater flexibility to water managers, resulting in a more efficient use of water supplies?

By minimizing over-pumping, the District diverts less of their allotted storage water at any one time, and so that storage will last longer throughout the irrigation season (increasing the farmer's resilient to drought), and giving the District manager more flexibility in meeting deliveries. When the District runs out of surface water, they turn on their groundwater wells to supply water to the canals. Pumping groundwater is more expensive than pumping the surface water, so extending

the length of time the surface water can be used results in more efficient management of water by the District.

Addressing a specific water and/or energy sustainability concern(s)

Explain and provide detail of the specific issue(s) in the area that is impacting water sustainability, such as shortages due to drought and/or climate change, increased demand, or reduced deliveries.

The recent drought in southeast Idaho has resulted in lower water availability for agriculture. Reservoir water levels are substantially lower than normal, groundwater levels are declining, and increased summer temperatures result in higher crop water requirements than normal. Improving the water use efficiency of the District will help stretch the available storage water later into the irrigation season, thereby helping address the water scarcity concern. By stretching the surface water later into the season, the District will reduce groundwater pumping, and thus utilize the less energy intensive means of diverting water.

Explain and provide detail of the specific issue(s) in the area that is impacting energy sustainability, such as reliance on fossil fuels, pollution, or interruptions in service.

The drought is also influencing the sustainability and reliability of hydropower in the region. Hydropower provides a large portion of the region's electricity, and decreasing precipitation puts that electricity supply at risk.

Please describe how the project will directly address the concern(s) stated above. For example, if experiencing shortages due to drought or climate change, how will the project directly address and confront the shortages?

By improving the energy efficiency of the pump station via a reduction in over-pumping, the projects helps address the energy sustainability of the region.

Please address where any conserved water as a result of the project will go and how itwill be used, including whether the conserved water will be used to offset groundwaterpumping, used to reduce diversions, used to address shortages that impact diversions orreduce deliveries, made available for transfer, left in the river system, or used to meetanother intended use.

The water conserved by the project will be used to reduce groundwater pumping by the District. When the District's surface water storage has been used up, the District turns on their groundwater wells which pump into the canals. Any water saved beyond what is needed to refill the District's storage can be made available to other users in the basin for ecological and economic benefits, such as aquifer recharge, flow augmentation for anadromous fishes, hydropower, etc.

Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.

Water accounting will keep track of the conserved water, thereby allowing the District to divert surface water later into the irrigation season.

Indicate the quantity of conserved water that will be used for the intended purpose(s).

The quantity of conserved water is 1,684 acre-feet/year.

Other project benefits

(1) Combating the Climate Crisis

The project will help benefit the climate crisis by reducing the District's water diversion and electrical energy consumption. This dual benefit helps mitigate the effects of climate change by improving the District's resilient to drought, but also helps mitigate climate change directly by decreasing greenhouse gas emissions by 286 for the reduced electricity consumption of the facility and 0.542 for fewer vehicle miles traveled (see Evaluation Criterion B – Renewable Energy, for these calculations).

(2) Disadvantaged or Underserved Communities

The area served by the District is classified as a underserved community. The project directly benefits the underserved community by creating and sustaining economic opportunities through agriculture (https://www.consumerfinance.gov/compliance/compliance-resources/mortgage-resources/rural-and-underserved-counties-list/).

(3) Tribal Benefits

Not Applicable

(4) Other Benefits

Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal and industrial, environmental, recreation, or others)?

Benefits to multiple sectors and/or users – The project will benefit multiple sectors including agriculture, the environment, and recreation. The agricultural sector will benefit by having surface water available later into the irrigation season. The environment will benefit by maintaining higher water levels and colder water temperatures in the reservoir system, and the recreational sector will benefit by higher water levels and improved fish habitat in the reservoir for recreational boating and fishing.

Will the project help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?

As drought conditions worsen in the region and groundwater levels continue to decline, the tension surrounding water rights and priorities in the region is increasing. By improving water use efficiency, this project helps to alleviate those tensions.

Evaluation Criterion D – Complementing On-Farm Irrigation Improvements

Describe any planned or ongoing projects by farmers/ranchers that receive water from the applicant to improve on-farm efficiencies.

Jerome Clinger Farms, a farm served by the District, is planning to submit an EQIP application for an irrigation conservation pond this year. A letters of intent from the farm is included in Attachment B.

Describe how the proposed WaterSMART project would complement any ongoing or planned on-farm improvement.

The irrigation conservation pond will allow the farmer more flexibility in their irrigation schedule and methods by increasing their onsite storage. This flexibility will in turn benefit the District by giving the District a greater window in which to deliver water to the farmer, which will enable them to fit the delivery into their operations where it best optimizes the efficiency of the pump station.

Describe the on-farm water conservation or water use efficiency benefits that are expected to result from any on-farm work.

The irrigation conservation pond will save water by capturing spills and storing them for reuse. It will also save a substantial amount of time and labor for irrigating by allowing the farmer more flexibility in his irrigation schedule, thereby reducing the trips to the field and allowing for more flexible irrigation run times.

Please provide a map of your water service area boundaries. If your project is selected for funding under this NOFO, this information will help NRCS identify the irrigated lands that may be approved for NRCS funding and technical assistance to complement funded WaterSMART projects.

The District water service area boundary is shown in Figure 8.

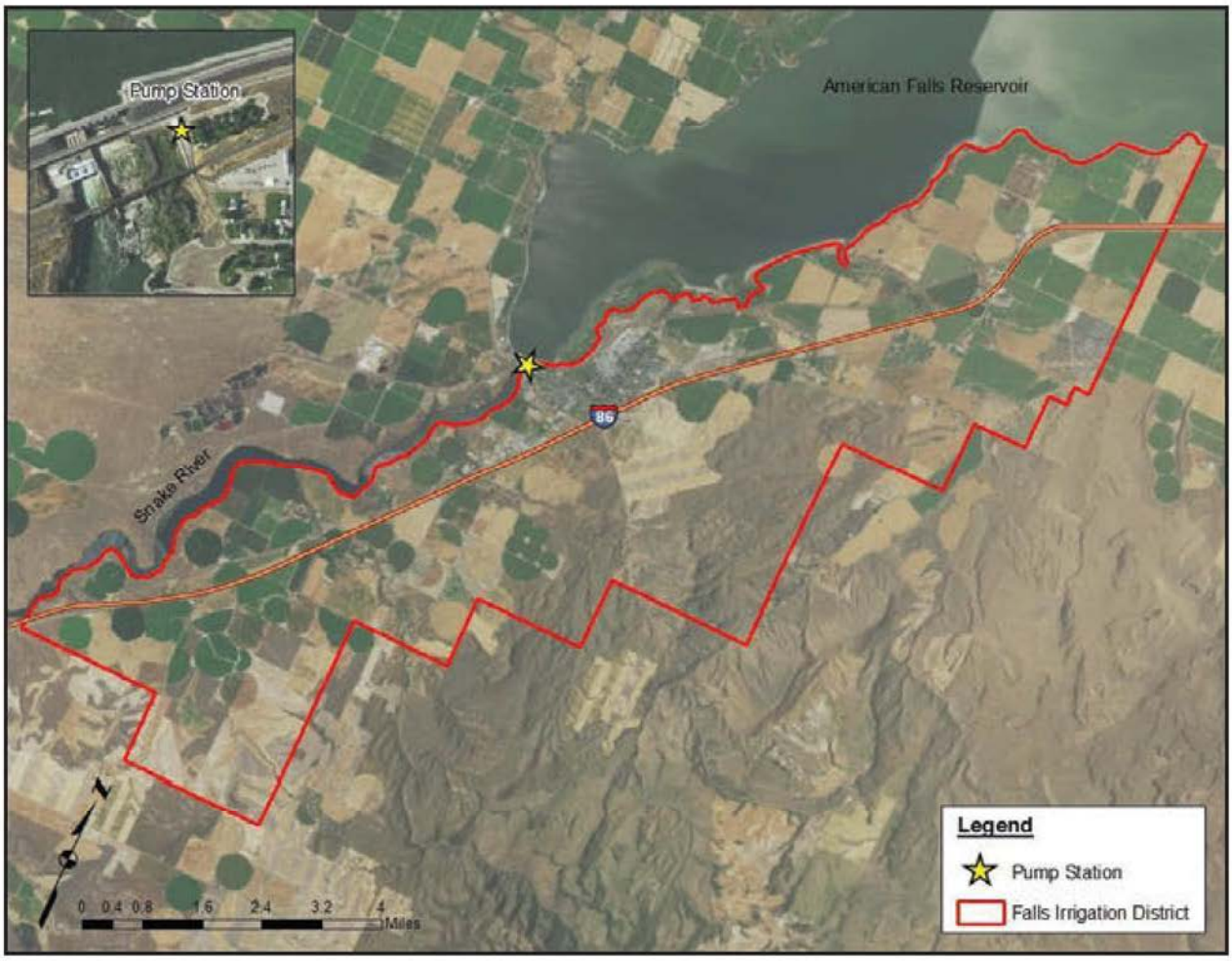

Figure 8 District Service Area Boundary

Evaluation Criterion E – Planning and Implementation

Subcriterion E.1 – Project Planning

(1) Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, SOR, Drought Contingency Plan or other planning efforts done to determine the priority of this project in relation to other potential projects.

In 2013, a Basin Study was funded by Reclamation. The resulting Columbia River Basin Impact Assessment evaluated the potential impact of future climate change on flows at more than 300 locations across the Columbia River Basin. The study projected that, due to climate change, inflows to the American Falls reservoir will increase through the spring and decrease through the summer.

(2) Describe how the project conforms to and meets the goals of any applicable planning efforts and identify any aspect of the project that implements a feature of an existing water plan(s).

See answer to No 3 below.

(3) If applicable, provide a detailed description of how a project is addressing an adaptation strategy specifically identified in a completed WaterSMART Basin Study or Water Management Options Pilot (e.g., a strategy to mitigate the impacts of water shortages resulting from climate change, drought, increased demands, or other causes)

One of the adaptation strategies identified in the study was to increase the flexibility of reservoir operations. By reducing over-pumping, this project will reduce the water loss from the reservoir, thereby increasing the volume of water remaining in the system and adding to the flexibility of reservoir operations.

Subcriterion E.2 – Readiness to Proceed

Identify and provide a summary description of the major tasks necessary to complete the project. Note: please do not repeat the more detailed technical project description provided in Section D.2.2.2. Application Content. This section should focus on a summary of the major tasks to be accomplished as part of the project.

Preliminary engineering design (30% level) is scheduled to begin in early August 2022. Once the specifications for the primary components with the longest lead times are developed, the District will hold a prepurchase bid so that these items can get ordered and manufacturing can start. Then engineering will progress into final design, which will be completed near the end of 2023. Bidding will occur in early Spring of 2023, and construction will commence in Fall of 2023 and conclude in early Summer of 2024.

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

No environmental related permits will be required, as all work takes place inside of the existing pump station facility. An electrical permit will be required from the Power County Building Administrator. The contractor will be required to obtain this permit.

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

The District hired a local engineering firm in Summer of 2021 to write a Preliminary Engineering Report (a feasibility level report) for the pump station automation improvements, from which the District selected their preferred alternative. The District then went through a state mandated Request for Qualifications (RFQ) process in early Spring of 2022 and selected an engineering firm. The District then held a vote to authorize the District to incur debt to implement the pump station automation improvements. The water users voted 100% in favor of this authorization. The District recently signed an agreement to hire the RFQ-selected firm for design, bidding, and construction services for the pump station upgrades.

Describe any administrative actions required to implement the project.

Approval of the engineering design will be required by the Bureau of Reclamation regional office. Reclamation staff have already reviewed and verbally approved of the Preliminary Engineering Report. Additionally, an Electrical Utility Impact Study will be required from Idaho Power Company

(IPC), but per correspondence with IPC utility engineers the project is anticipated to benefit the grid rather than cause negative impacts, so no roadblocks are anticipated.

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

Figure 9 shows the project schedule, consisting of preliminary design, prepurchase bidding, final design, construction bidding, and construction phases for the project.

Per numerous discussions with Reclamation staff that oversee District operations, during the NEPA screening process Reclamation will propose the project for a Categorical Exclusion (CE) because the improvements will occur within the existing footprint of the facility. A letter from Reclamation staff regarding the CE is included in Attachment B. No ground disturbing activities, construction or installation will occur until environmental review is complete and a notice to proceed has been issued.

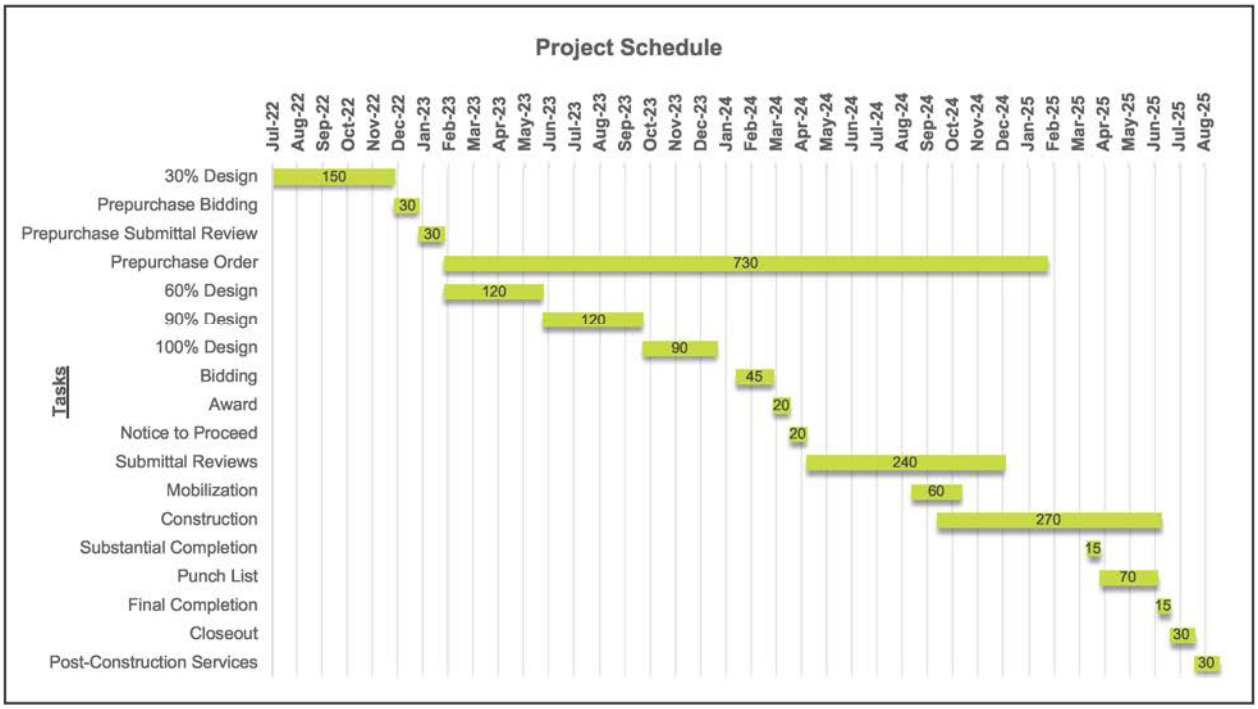

Figure 9 Project Schedule

Evaluation Criterion F – Collaboration

Is there widespread support for the project? Please provide specific details regarding any support and/or partners involved in the project. What is the extent of their involvement in the process?

The City of American Falls and the Power County Board of Commissions recognize the importance of the District's ability to conserve water and efficiently deliver water to the water users, and are in support of this project. Letters of support from these entities are included in Attachment B.

What is the significance of the collaboration/support?

This is significant as these entities are responsible for the wellbeing and economic vitality of the greater area community, and see the District as an integral part of that vitality.

Will this project increase the possibility/likelihood of future water conservation improvements by other water users?

The District Manager is on the Board of Directors of the Idaho Water Users Association and is heavily involved in irrigation advocacy, training, and education in the state. Upon completion of a successful project, the pump station will undoubtedly receive state-wide recognition and host educational and legislative tours and similar events, thereby encouraging other Districts to implement similar water and energy efficiency improvement measures.

Please attach any relevant supporting documents (e.g., letters of support or memorandum of understanding).

Letters of support from these entities are included in Attachment B.

Evaluation Criterion G – Additional Non-Federal Funding

State the percentage of non-Federal funding provided.

The District is anticipating non-federal funding of 50% of the project costs.

Evaluation Criterion H – Nexus to Reclamation

Describe the nexus between the proposed project and a Reclamation project or Reclamation activity.

The District has a direct nexus to the Bureau of Reclamation. The District was originally established as a Reclamation project in the 1955 with original contract number 14-06-100-851. Recently the District finished paying off a loan to purchase the District facilities from Reclamation, but Reclamation still holds title to the District because they own the land on which the District facilities are located.

PERFORMANCE MEASURES

The water and energy savings resulting from this project will be quantified by comparing the annual average volume of water spilled before the project to the annual average volume of water spilled following project completion. The difference in annual average volume of water spilled will be the average annual water savings, and these savings will be used to calculate the annual average energy saved by the avoided pumping costs. Depending on Reclamation's financial assistance agreement terms, the post-construction water and energy savings may be measured over the course of one to three years, with more years' worth of data being a more accurate measure.

PROJECT BUDGET

BUDGET PROPOSAL

The total project is estimated to cost $7,439,785. A summary of the non-federal and federal funding sources is provided in Table 3, and the total project costs are presented in Table 4. The project budget is included in Table 5, with a detailed budget breakdown provided in Attachment C.

Table 3 Summary of Non-Federal and Federal Funding Sources

Funding Sources	Amount
Non-Federal Entities	
Falls Irrigation District (via reserves and state or private loan)	$3,719,393
Non-Federal Subtotal	$3,719,393
Requested Reclamation Funding	$3,719,393

Table 4 Total Project Cost Table

Source	Amount
Costs to be reimbursed with the requested Federal funding	$3,719,393
Costs to be paid by the applicant	$3,719,393
Value of third-party contributions	$0
Total Project Cost	$7,438,786

Table 5 Budget Summary

Summary			
Budget Object Category	**Total Cost**	**Federal Estimated Amount**	**Non-Federal Estimated Amount**
a. Personnel	$52,545		
b. Fringe Benefits	$21,648		
c. Travel	$1,590		
d. Equipment	$4,283,956		
e. Supplies	$0		
f. Contractual	$1,458,820		
g. Construction	$1,595,847		
h. Other Direct Costs	$16,800		
i. Total Direct Costs	$7,431,206		
i. Indirect Charges	$7,578		
Total Costs	$7,438,786	$3,719,393	$3,719,392

Cost Share Percentage	50%	50%

The District began incurring costs for this project when they signed an agreement for engineering services on July 11, 2022. Therefore, pre-award costs will be the engineering design and project management costs beginning at that date. The amount of costs will depend how much time passes before an award is made. Preliminary design (30%) is scheduled to be completed by November 28, 2022. Due to the size of the project, the tight construction window, and the long lead times of equipment, it was critically important to get the process of engineering started prior to the award, so that the district is closer to bidding when the WaterSMART award is finally awarded.

BUDGET NARRATIVE

Additional explanation of the cost categories is provided in Attachment C.

Salaries and Wages/Personnel

The District expects to spend money on salaries and wages during the duration of this project for project management, design involvement and assistance, bidding assistance, development of equipment evaluation criteria and contractor prequalification documents, and construction oversite. This includes 1549 hours of time from the District Manager, and 355 hours from the administrative assistant. A breakdown of these hours is included in Attachment C.

Fringe Benefits

Fringe benefits for the District Manager and Administrative Assistant include PERSI, unemployment, HealthSavings, Health Insurance, and Workman's Comp.

Travel

There are two anticipated travel occurrences for the District Manager for this project. The first is to travel to one site within the United States for a total of 3 days (including departure and return trips) to observe a flow control pump station with comparably sized pumps and motors as the District's. This will be helpful in understanding pump and motor operation, interviewing Operator's experienced with such motors, and developing the required design criteria to be used in the bidding documents. The second trip will be a one day trip within Idaho to observe multiple switchgear makes in operation, for the same purpose as explained above.

Equipment

A detailed list of the project equipment is included in Attachment C. These values were obtained from quotes and budgetary level estimates provided by vendors, and bid tabs of similar projects. Per request of vendors, the provider of the budgetary level quotes are confidential so as not to provide an unfair advantage to others during the project competitive bidding process. Therefore, the actual quotes are not being provided with this application, due to the open source nature of the application. The quotes can be obtained from applicant per request of the reviewer.

Materials and Supplies

This project does not include any costs for supplies.

Contractual

This line item includes engineering design, services during bidding, construction phase services, SCADA integration, and construction observation services. These are very standard cost categories for engineering projects of this type.

Construction

Construction costs include costs for the following contractors: general, electrical, controls, pipe fitters, high voltage electrical, mechanical, pump installation, plumbing and HVAC. Also, costs in this category include variable speed drive startup and testing by drive manufacturer, and arcflash studies/relay settings by drive manufacturer. It also includes 10% of mobilization fees, which is typical for construction. The construction costs for each discipline are included in Attachment C.

Third-Party In-Kind Contributions

Due to the nature of the project, there will be no third-party or in-kind contributions to the project.

Environmental and Regulatory Compliance Costs

Due to the Reclamation's opinion that the project will qualify for a NEPA Categorical Exclusion (the letter is included in Attachment B), environmental and regulatory compliance costs are anticipated to be minimal. If these costs occur, the District will pay for them directly.

Other Direct Costs

Due to the fact that large equipment prepurchase is necessary to run this project in a smooth and timely manner, the District will begin receiving the prepurchased equipment up to one year prior to construction, and will therefore need to house the equipment somewhere. The District will have to rent a warehouse space with forklift and crane access for approximately 12 months.

Indirect Costs

The District will incur de minimis costs for personnel, fringe, travel, and supplies.

FUNDING PLAN AND LETTERS OF COMMITMENT

The District is committed to the financial and legal conditions associated with the WaterSMART Grants Program, and has the resources and capability to provide the funding specified in the funding plan, as outlined in the Official Resolution (included in Attachment B). The District will pay for the cost of the project via a combination of federal and state loans and grants. This *Water and Energy Efficiency Grant* (WEEG) aims to secure funding for 50% of the project costs. The total project will cost approximately $7,438,785, so the 50% request from the WEEG grant is $3,719,393. The District will obtain a loan for the 50% non-federal portion and any remaining funds through non-federal means such as a Idaho Water Resource Board loan or an Idaho Bond Bank Authority loan.

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 project will have no negative impacts to the surrounding environment. On the contrary, the project will improve water quality in the Snake River and American Falls Reservoir because the project will conserve water, thereby increasing reservoir water levels and helping maintain a lower temperature. Additionally, the water spilled at the end of the canals has been treated with herbicides and algaecides, so less water spilled at the end of the canals will mean fewer chemicals being discharged into the environment.

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?

We are not aware of any listed or proposed to be listed species in the project area. If such species are present, they would not be affected by this project, as the project will occur within the footprint of the existing pump station facility.

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.

The project will benefit CWA jurisdiction "Waters of the United States", as it will conserve water, thereby leaving more water in the river and reservoirs.

When was the water delivery system constructed?

The water deliver system was constructed in the late 1950's.

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.

The proposed project will not result in any modification to the District's canals, headgates, or flumes. However, it will result in modification to the pump station that supplies water to the canals. The pump station was constructed in the late 1950's. The project will entail replacing the pumps, motors, drives, and valves in the facility.

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.

As stated in the letter from Reclamation regarding NEPA and the National Register of Historic Places (NRHP) (see Attachment B), it is not known whether the facilities will be considered eligible for the NRHP. This will be looked at more closely once funding is secured. If it is found eligible, some form of action would be required.

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

There are no known archeological sites in the project area.

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

The project will not have an adverse impact on low income or minor populations.

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

The project will not limit access to or ceremonial use of Indian scared sites or result in other impacts to 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?

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

REQUIRED PERMITS OR APPROVALS

No environmental related permits will be required, as all work takes place inside of the existing pump station facility. An electrical permit will be required from the Power County Building Administrator. The contractor will be required to obtain this permit.

Approval of the engineering design will be required by the Bureau of Reclamation regional office. Reclamation staff have already reviewed and verbally approved of the Preliminary Engineering Report. Additionally, an Electrical Utility Impact Study will be required from Idaho Power Company (IPC), but per correspondence with IPC utility engineers the project is anticipated to benefit the grid rather than cause negative impacts, so no roadblocks are anticipated.

OVERLAP OR DUPLICATION OF EFFORT STATEMENT

The automation improvements proposed herein are a dire need of the District due to the current inefficiencies. Therefore, in order to fast track the project as much as possible, the District is pursuing grants from multiple sources including federal and state sources. Some of the components necessary for the automation improvements were submitted for consideration to NRCS's EQIP-WSI program in early July 2022. The "nexus" required for the EQIP-WSI application was a 2017 *WaterSMART Small Scale Water Efficiencies Projects* grant for installing water meters on the District's groundwater wells. The maximum amount of award funding under the EQIP-WSI grant is $900,000. NRCS staff is aware of the District's intent to submit this WaterSMART proposal, and has not made it clear whether or not NRCS is likely to award the grant, and they have not announced when the award decisions will be made. The District will also be applying for a loan and grant through the Idaho Water Resource Board and Bonneville Power Administration.

Ultimately, the *WaterSMART Water and Energy Efficiency Grant* would be the best grant for the District. If awarded this grant, the other grants, if awarded, would be declined as necessary in order to comply with the terms of the WaterSMART program. If these grants are awarded prior to a notice of award from Reclamation, the NOFO point of contact and Program Coordinator will be notified immediately.

CONFLICT OF INTEREST DISCLOSURE STATEMENT

There are no conflicts of interest in this project or grant application.

LETTERS OF SUPPORT

Letters of Support for this grant application from the following stakeholders are included in Attachment B:

- Mayor of American Falls
- Power County Board of Commissioners

OFFICIAL RESOLUTION

An official resolution from the Falls Irrigation District Board of Directors is included in Attachment B.

UNIFORM AUDIT REPORTING STATEMENT

The District was not required to submit a Single Audit Report for the current or any recent fiscal years.

CERTIFICATION REGARDING LOBBYING

The SF-LLL Disclosure of Lobbying Activities form is included with this application.

ATTACHMENT B: LETTERS AND OFFICIAL RESOLUTION

- NEPA Categorical Exclusion Letter from the Bureau of Reclamation
- Letters of Support
  - Power County Board of Commissioners
  - Mayor of City of American Falls
- Letters of Intent for NRCS EQIP funding
- Official Resolution

United States Department of the Interior

BUREAU OF RECLAMATION
Upper Snake Field Office
470 22nd Street
Heyburn, ID 83336

IN REPLY REFER TO:

USF-6300
2.1.4.17

VIA ELECTRONIC MAIL – DELIVERY RECEIPT REQUESTED

Shawn Tischendorf (fallsirr1@gmail.com)
310 Valdez St.
American Falls, Idaho 83211

Subject: Pump Station Rehabilitation Project– The Minidoka Project

Dear Mr. Tischendorf:

The Bureau of Reclamation (Reclamation) has reviewed Falls Irrigation District's plan to rehabilitate the pump station near the American Falls Reservoir. With the information that we have at this time, it does appear we can utilize a categorical exclusion for the environmental review of the project to fulfill the requirements of the National Environmental Policy Act (NEPA). As we get a further review of the project with a more complete proposal, Reclamation may have to complete an Environmental Analysis (EA), but it does not appear that would be necessary at this time.

With the age of the facilities, the review of its eligibility for the National Register of Historic Places is one of the items that will need to be further evaluated. Based on the information provided in the preliminary engineering report, without completing the recording or evaluation, we are not able to say at this point whether it is eligible for the National Register of Historic Places. If it is, there would be some form of action required.

If you have any questions or concerns, please contact Tyler Cox, Natural Resources Manager at (208) 678-0461 ext. 15, or via email at tcox@usbr.gov.

Sincerely,

TYLER COX Digitally signed by TYLER COX
Date: 2022.07.21 13:20:32 -06'00'

Tyler Cox
Natural Resource Manager

Power County Board Of Commissioners

Commission Chambers
543 Bannock Ave.
American Falls, ID 83211

Board Members:
Ron Funk, Chair (District #1) ~ riffarms@dcdi.net
Bill Lasley, (District #2) ~ blasley@co.power.id.us
Delane Anderson (District #3) ~ danderson@co.power.id.us

Website:
www.co.power.id.us
Phone: (208) 226-7610
Fax: (208) 226-7612

July 15, 2022

To Whom it May Concern;

We are happy to provide a letter of support in obtaining a grant to rehabilitate the Falls Irrigation Pump Station and building.

Power County Agriculture District depends a great deal on the efficiency of the Falls Irrigation Pump Station. The Pump Station allows water to be adequately supplied to the districts water users to help grow crops and food while conserving water.

It is imperative that the Pump Station has reliable equipment to ensure adequate delivery to the county water users. Currently Idaho is in a severe drought and it is likely to worsen in the coming months. Having proper equipment that is up to date is essential in continuing to conserve water.

In conclusion, I fully support the efforts of Falls Irrigation as they seek external funding to support the rehabilitation of the Falls Irrigation Pump Station.

Sincerely,

Ron Funk

Ron Funk
Power County Commission Chair

Rebekah K. Sorensen, Mayor

City of American Falls
550 North Oregon Trail
American Falls, ID 83211

Phone: 208-226-2569
Fax: 208-226-2548
E-mail: Mayor@cityofamericanfalls.com

July 21, 2022

To Whom It May Concern;

American Falls is a agriculturally-centered city, I am happy to provide a letter of support in obtaining a grant for improvements to the Falls Irrigation Pump Station and building.

Power County Agriculture District depends a great deal on the efficiency of the Falls Irrigation Pump Station. The Pump Station allows water to be adequately supplied to the district's water users to help grow crops and food while conserving water and energy.

It is imperative that the Pump Station has efficient and reliable equipment to ensure adequate delivery to the county water users. Currently, Idaho is in a severe drought, and it is likely to worse in the coming months. Having proper equipment that is up-to-date is essential in continuing to conserve water.

In conclusion, I fully support the efforts of Falls Irrigation as they seek external funding to support improvements to the Falls Irrigation Pump Station.

Sincerely,

Rebekah K. Sorensen
Mayor, City of American Falls

Jerome Clinger Farms

2568 Joy Lane, American Falls, ID 83211 | 208-226-5296 | jeromeclinger@gmail.com

July 21, 2022

To Whom It May Concern:

We are planning to apply for NRCS cost-share funds for on-farm improvements within the Falls Irrigation District water delivery system. We intend to build an irrigation conservation pond which would be able to catch overflow water from three ponds. This overflow water is currently wasted as it runs down the drain.

Thank you,

Jerome Clinger

OFFICIAL RESOLUTION
OF THE
FALLS IRRIGATION DISTRICT

RESOLUTION NO. 2022-01

WHEREAS, the U.S. Bureau of Reclamation is seeking proposals from irrigation districts who want to leverage their money and resources in partnership with Reclamation to conserve and use water more efficiently through the WaterSMART: Water and Energy Efficiency Grants FY23 Program;

WHEREAS, the Falls Irrigation District has a need to improve the water and energy efficiency of the District's main pump station in order to conserve limited and increasingly scarce water resources, and reduce operating expenses amidst an ongoing trend of increasing electricity costs;

WHEREAS, the Falls Irrigation District desires to apply for funding for pump station upgrades through Reclamation's WaterSMART Grant program;

NOW THEREFORE BE IT RESOLVED that the Board of Directors of the Falls Irrigation District agree and authorize the following:

1. The Board has reviewed and supports the grant application submitted;
2. The Falls Irrigation District is capable of providing the amount of funding and/or in-kind contributions as specified in the funding plan; and
3. If selected for the WaterSMART Grant, the Falls Irrigation District will work with Reclamation to meet the established deadlines by entering into a cooperative agreement.

Passed and adopted by the Board of Directors of the Falls Irrigation District during a special meeting on the 18th day of July, 2022.

Kenneth Koompin
President, Falls Irrigation District

ATTEST:

Shawn Tischendorf
Manager, Falls Irrigation District