



FY 2022



Deaver Irrigation District

D52 Lateral Piping and Shoshone River Sediment Reduction Project

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Technical Proposal and Evaluation Criteria

Executive Summary

Applicant Info

Date: December 9, 2021

Applicant Name: Deaver Irrigation District (DID or District)

City, County, State: Deaver, Big Horn, Wyoming

Project Manager:

Brian Deeter

Project Manager/Engineer, J-U-B Engineers, Inc.

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Applicant Category: Category A

Project Funding Request: \$2,000,000; *Total Project cost:* \$2,815,900

Project Summary

A one-paragraph project summary that provides the location of the project, a brief description of the work that will be carried out, any partners involved, concerns in your project area, and how this project is expected to help alleviate impacts of those conditions, and identification of any planning documents that support the project. s

Deaver Irrigation District will pipe and pressurize the D52 Lateral in order to improve water efficiency and reduce water quality impairments that pose human health risks and result in degraded aquatic habitat in the Shoshone River and its tributaries. The D52 Lateral contributes an estimated 217 tons of sediment, 435 lbs. of nitrogen, and 150 lbs. of phosphorus annually through Polecat Creek to Sage Creek, a major Shoshone River tributary. The D52 Lateral, in its existing condition, requires DID to over-divert water to provide irrigators with their entitled share. The lateral delivers water for 739 irrigated acres through a 10,000-foot section of failing, unpressurized 30-year-old Plastic Irrigation Pipe (PIP) and a 9,000-foot section of open ditch. The open ditch section of the lateral is experiencing an estimated 45 percent loss of 937 acre-feet of seepage losses in the underlying soils, and 300 acre-feet of tailwater that flows past the last turnout. The tailwater is causing significant erosion and is contributing large amounts of sediment and bacteria to Polecat Creek. Sediment related impacts to fisheries and aquatic resources have been identified as a primary concern in the Lower Shoshone River Level I Watershed Study. This project was identified in DID's 2016 Level I Study prepared for the Wyoming Water Development Commission (WWDC).

Length of Time and Estimated Completion Date

State the length of time and estimated completion date for the proposed project including the construction start date (mm/yr). Note: proposed projects should not have an estimated construction start date that is prior to September 1, 2022.

This project is ready to move forward as soon as funding is available. An environmental document will be prepared as part of the project and will take six to twelve months to complete. Assuming a contract is in place with Reclamation by Fall 2022, the environmental process will

Deaver Irrigation District – D52 Lateral Piping and Shoshone River Sediment Reduction Project

begin shortly thereafter and be completed by Fall 2023. Design will begin summer of 2023 and be completed Spring of 2024. Bidding/contracting will take place in June/July 2024. Construction is anticipated to occur outside of the irrigation season and will begin in Fall 2024 and be completed by Spring 2025. Final reporting and project close-out will be completed within the 3-year period of performance by Fall 2025.

Federal Facility

Whether or not the proposed project is located on a Federal facility.

The Deaver Irrigation District operates the Frannie Division of the Shoshone Reclamation Project that was started in 1904. The Shoshone Reclamation Project includes the Buffalo Bill Dam and storage reservoir, two diversion dams, two off-stream reservoirs, approximately 140 miles of tunnels and canals, and 564 miles of laterals and distribution ditches. DID first took over the operation of the Frannie Division of the Shoshone Project from Reclamation in 1926 and holds storage rights in the Buffalo Bill Reservoir.



Photo 1 Buffalo Bill Dam

Project Location

Provide specific information on the proposed project location or project area, including a map showing the geographic location. For example, [project name] is located in [county and state] approximately [distance] miles [direction, e.g., northeast] of [nearest town]. The project latitude is {##°##'N} and longitude is {###°##'W}.

Geographic Location

The proposed project will be within Deaver Irrigation District's service area located in Big Horn County, Wyoming, approximately 15 miles Northwest of Lovell, Wyoming. The project latitude is {44°56'N} and longitude is {108°37'W}. **See Appendix A – Project Location and Project Detail Maps.**

Technical Project Description

Provide a more comprehensive description of the technical aspects of your project, including the work to be accomplished and the approach to complete the work. This description should provide detailed information about the project including materials and equipment and the work to be conducted to complete the project. This section provides an opportunity for the applicant to provide a clear description of the technical nature of the project and to address any aspect of the project that reviewers may need additional information to understand.

DID supplies water to land near the towns of Deaver, Frannie, and Cowley, Wyoming; with water that is a direct flow water right from the Shoshone River and stored water in the Buffalo

Bill Reservoir. The District currently irrigates 15,545 acres, with 205 individual landowners receiving water. Water is released from the reservoir into the Shoshone River, where it is diverted into the Garland Canal east of Cody, Wyoming. Water is transported in the Garland and Frannie Canals to DID. Within DID, water is split between the Frannie and Deaver Canals, primarily comprised of unlined channels, and then distributed to delivery laterals.

The D52 Lateral is responsible for delivering water to 739 irrigated acres and consists of a section of 30-year old, failing PVC PIP pipe and open, earthen canal. The existing pipe has never been pressurized because it was initially installed with the sole purpose of diverting water around the city of Deaver. Downstream from the final D52 Lateral turnout is where significant erosion occurs. An estimated 300 acre-feet of tailwater flows past the final turnout annually and has created a 2,500 foot-long, 20-foot-deep, and 20-foot-wide gully. The actual water depth in this section is only about 12 inches, which shows just how much erosion has taken place! See Photo 3 to the right.



Photo 2 Existing Condition of the D52 Lateral

The proposed project will install roughly 19,000 feet or 3.6 miles of new HDPE pressurized pipe within the existing alignment of the D52 Lateral. The project will fully enclose the lateral, which will eliminate all tailwater and erosion from the D52 Lateral which currently contributes to significant erosion and associated sediment load and bacteria to Polecat Creek. Additionally, the project will significantly improve water efficiency. Polecat Creek feeds into Sage Creek, which is defined as a major Shoshone River tributary within the Lower Shoshone River Level I Watershed Study (LSRWS) completed in 2021. A new system meter will be installed at the head of the main D52 Lateral. The new, fully pressurized pipe will range in size from 12-inch HDPE DR 32.5 to 32-inch HDPE DR 41 and will



Photo 3 Significant Erosion Caused by Tailwater from the D52 Lateral

deliver water through new metered connections. These delivery system upgrades will drastically improve the District’s water management, delivery system efficiencies, and significantly reduce sediment and bacteria contributions to Polecat Creek.

Performance Measures

All applicants are required to provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project. Quantifying project benefits is an important means to determine the relative effectiveness of various water management efforts, as well as the overall effectiveness of the project. Please describe the performance measures for your project within the evaluation criteria section of your application.

Water Quality Performance Measures

In response to the 2016 sediment release from Willwood Dam and the recognized need for future repairs, the Wyoming Department of Environmental Quality (WDEQ) established three working groups to find sediment management solutions and manage future sediment releases from the dam. Previous Willwood Dam working group efforts have included collecting sediment samples in cooperation with the USGS and identifying sediment sources for specific drainage areas. Previous studies, including the Bighorn Lake Sediment Management Study (USBR 2010), have also evaluated sediment transport in the watershed. Analysis methods and the current status of working group efforts are also described in the June 21, 2021 presentation titled “Managing Sediment at Willwood Dam to Protect Downstream Fisheries (Waterstreet 2021).”

DID has a good working relationship with other water delivery and conservation entities in Big Horn County, including the Shoshone Conservation District (SCD). DID has been in communication with the SCD regarding this project and have received their support for addressing structural deficiencies and water losses as evidenced by their letter of support. DID will coordinate with SCD and other nearby conservation districts prior to construction of the proposed project to develop and implement a monitoring strategy for assessing pre-project water quality. Post project samples will then be gathered and analyzed and compared to pre-project and other historical data to determine an estimated load reduction resulting from the completion of this project. The previously collected data from the Willwood working groups will provide data levels for comparing historical sediment loads within the project area. This information will be shared with the Willwood working groups for their records and reports.

Water Savings Performance Measures

The project includes the installation of a master meter on the D52 Lateral as well as individual meters at each user turnout. Pre-project flows to the D52 Lateral will be compared with post-project measured flows as recorded with the new metering to estimate water savings resulting from the project.

Evaluation Criteria

Evaluation Criterion A – Project Benefits (35 Points)

Sub-Criterion A.1 – Benefits to Ecological Values



Photo 4 Sediment in the Shoshone River

1. Please explain how the project will **benefit ecological values that have a nexus to water resources or water resources management**, including benefits to plant and animal species, fish and wildlife habitat, riparian areas, and ecosystems that are supported by rivers, streams, and other water sources, or that are directly influenced by water resources management.

Sediment related impacts to fisheries and aquatic resources have been identified as a primary concern in the lower Shoshone River and tributaries, as outlined in the Lower Shoshone River Watershed Study (LSRWS). The sediments are degrading water quality, raising the temperature of the water, and affecting in-stream and riparian habitats.

The proposed project will reduce sediment loads in the Shoshone River and its tributaries by an estimated 217 tons annually. It is estimated that 0.75 cfs or roughly 300 acre-feet of tailwater flows past the last turnout on the D52 Lateral and enters Polecat Creek. Polecat Creek feeds into Sage Creek which then feeds into the Shoshone River. By enclosing the D52 Lateral, ecological values will benefit by improved water quality and aquatic habitat.

2. If the project will benefit multiple water uses (i.e., benefits to ecological values AND benefits to other water uses, e.g., municipal, agricultural, or tribal water uses), please explain how the project benefits other water uses.

The proposed project will result in reduced water seepage and tailwater losses by 1,237 acre-feet per year that will benefit **agricultural** irrigators by increasing water reliability

and making more water available to them later in the irrigation season. The conserved water will be held in Buffalo Bill Reservoir until it is needed later in the season, providing other water use benefits for **recreation** and **ecological values** as more water will remain in the Reservoir and within the river system for more extended periods throughout the year. Future drought and low-flow conditions will have a reduced impact on the watershed as water delivery efficiency and total available supply increase. Water managers that rely on the Buffalo Bill Reservoir water supply will benefit as a result.

Sub-Criterion A.2 – Quantification of Specific Project Benefits by Project Type

Project benefits for water efficiency projects that result in quantifiable and sustained water savings or improved water management—and which increase water supply reliability for ecological values.

- 1. Describe the amount of estimated water savings (in acre-feet per year) that are expected to result directly from the project. Please include a specific quantifiable water savings estimate; do not include a range of potential water savings. Describe the support/documentation for this estimate, including a detailed explanation of how the estimate was determined, including all supporting calculations.*

The estimated amount of water savings expected from this project is 1,237 acre-feet per year. It is anticipated that water losses through the D52 Lateral will be reduced to zero upon completion of the project.

A Water Loss Study on July 27, 2021 used a method based on the continuity equation to estimate the amount of water expected to be conserved by piping the reach of interest. The continuity equation states that assuming no change in storage, the discharge of water entering a system (inflow) must be equal to the discharge of water exiting the system (outflow). The water loss study was conducted for the entire D52 Lateral.

The water loss study was completed in July 2021. Inflow/outflow discharge measurements were collected on the D52 Lateral, which is an earth-lined canal. The following were considered during the water loss study:

- No users were taking water at the time the flow measurements were taken.
- Based on reports from the system operator, it was assumed that July 27 (the day of the study) represented an average daily flow for the season.
- The irrigation season for Deaver Irrigation District is 180 days.
- Equipment used for measurement included a StreamPro Acoustic Doppler Current Profiler (ADCP), a tape measure, and a survey rod.
- If a location had a weir, then that was used for measurement. A broad crest weir coefficient of 2.8 was assumed.
- If there was no weir present, the ADCP was used to measure flows in a ditch cross section.
- Waste flow past the last turnout was also considered a system loss.

Table 1 below summarizes the daily flows and losses, as well as annual losses.

Table 1 D52 Lateral Water Loss

Location	Method	Flow (cfs)	Length (ft)	Loss (cfs)	Loss (%)	Loss (AF/year)
D52 Head	Weir	3.46				
			2900			
52D9	ADCP	1.94		1.52	44%	543
			1300			
52D10	Weir	1.75		0.19	10%	69
			2800			
End	Weir	0.76		0.99	56%	353
Waste		0.76		0.76		272
TOTAL						1237

2. *Explain where the water that will be conserved is currently going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground) and how the water is currently being used. For example, are current losses returning to the system and being used by others? Are current losses entering an impaired groundwater table becoming unsuitable for future use? 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?*

Of the 1,237 acre-feet of water anticipated to be conserved as a result of this project, about 937 acre-feet are currently being lost to seepage and surface evaporation as it travels through the open, earthen canal. This water is lost to deep percolation and is not returned to the system. An additional 300 acre-feet is being lost as tailwater flows into Polecat Creek and eventually the Shoshone River. The tailwater results from the excessive diversions that the lateral requires to provide irrigators with their entitled share. Essentially, DID currently has to divert nearly twice as much water as is being consumed by its crops because of the inefficiency of the delivery system. It is estimated that 0.75 cfs currently enters Polecat Creek and contributes a significant amount of unnecessary sediment and dissolved solids to the creek, eventually entering the Shoshone River.

DID is unaware of any benefits associated with the seepage or tailwater losses that the D52 Lateral is experiencing.

3. *Explain in detail how water conserved as a result of the project will be used to increase water sustainability for ecological values. Will the project commit conserved water to remain instream? If so, please provide detailed support for that commitment. Will a formal mechanism (e.g., collaboration with a state agency or nonprofit organization, or other mechanisms allowable under state law) be used? Or, if a formal mechanism will not be used, please describe the arrangement proposed to contribute conserved water for ecological benefits. Please explain the roles of any partners in the process and attach any relevant supporting documents.*

Completing this project will dramatically increase DID's delivery system efficiency and result in 1,237 acre-feet of conserved water. This means that DID will be able to provide irrigators with their allotted shares while using 1,237 less acre-feet of water per year. The 1,237 acre-feet of conserved water will remain in Buffalo Bill Reservoir and within the Shoshone River system until needed later in the irrigation season or elsewhere. This will significantly improve overall water availability and sustainability to benefit ecological values in the watershed.

Although this project will not initially result in any formal commitment to dedicate water to in-stream use, the system's increased efficiency is a necessary first step toward future water conservation discussions with DID and its water rights holders.

- 4. Describe the benefits that are expected to result from increased instream flows. Will increased instream flows assist in reducing basin-wide water supply and demand imbalances or in complying with an interstate compact? Will increased instream flows result in benefits to fish and wildlife? If so, please describe the species and expected benefit of the project. Will the increased instream flows result in benefits to habitat or other ecological benefits? If so, describe these benefits. Will the flows specifically benefit federally designated critical habitat?*

This project will result in reduced seepage and tailwater losses of 1,237 acre-feet that will remain in Buffalo Bill Reservoir and the Shoshone River system for longer in the irrigation season.

In 2016, water levels in the Willwood Dam, northeast of Cody, were lowered to facilitate repairs. The release of water resulted in 96,000 cubic yards, or 6,857 dump truck loads of sediment being released below the dam. The release killed fish downstream of the dam and temporarily turned the Shoshone into a grayish slurry. In response to the 2016 sediment release and the recognized need for future repairs, the Wyoming Department of Environmental Quality (WDEQ) established three working groups to find sediment management solutions and manage future sediment releases from the dam. One solution identified to remove future sediment buildup in such an event would be to release large amounts of water from Buffalo Bill Reservoir further upstream; called flushing flows. Irrigation district water delivery system upgrades, such as the one being proposed, will result in increased total water availability, which will give water managers more flexibility during situations such as the 2016 Willwood Dam release. This project will improve water delivery efficiency, and as a result, will benefit ecological values and help reduce the impacts of high sedimentation in the future.

Project Benefits for Watershed Management Projects

- 1. If the project will result in long-term improvements to water quality (e.g., decrease sediment or nutrient pollution, improve water temperature, or mitigate impacts from floods or drought) please explain the extent of those benefits (i.e., magnitude and geographic extent). Please estimate expected project benefits to water quality and provide documentation and support for this estimate, including a detailed explanation of how the estimate was determined.*

The extensive sediment releases and fish kills (and aquatic habitat loss) from the Willwood Dam maintenance operations in 2016 prompted an inter-agency effort to

evaluate potential options for improving operation and maintenance of the dam. Project partners include DEQ, WGFD, WWDO, the U.S. Bureau of Reclamation (USBR), SEO, and other partners. The collaborative group established the three working groups mentioned above with the following objectives: cleanup and flushing flow below Willwood Dam (Working Group 1); development of alternatives for the long-term management of sediment above Willwood Dam (Working Group 2), and evaluation of water quality standards and addressing sediment sources upstream of Willwood Dam (Working Group 3). Deaver Irrigation District has been involved with the working groups and will continue to support these efforts.

The Working Groups and the Lower Shoshone River Level I Watershed Study (LSRWS) completed in 2021 have identified water quality concerns as a key issue in the watershed. E. Coli and sediment-related impacts, irrigation practices, and the ongoing operation and maintenance of the Willwood Dam, were major contributing factors to water quality degradation. **See Appendix B – Lower Shoshone River Watershed Study.**

One particular irrigation practice has been identified to accentuate the sediment-related impacts to the Shoshone River. This irrigation practice is the over-allocating or over-diverting of water into canals and laterals, spilling the excess tailwater into draws or streams that were not meant to carry these flows. The result is heavy degradation, “headcutting,” and massive amounts of sediment being flushed into the streams and rivers. This is what is happening within the D52 Lateral! A good visualization of this is shown in Photo 5 to the right where extreme degradation and headcutting has occurred at the end of the D52 Lateral where an estimated 300 acre-feet of tailwater flows past the last turnout.



Photo 2 Erosion Caused by Tailwater from the D52 Lateral

This project will reduce water quality impairments that pose human health risks and result in degraded aquatic habitat. By improving irrigation efficiency, the proposed project will mitigate fecal coliform and Escherichia coli (E. coli) impairments in accordance with

actions outlined in the December 2013 document E. coli Total Maximum Daily Loads for the Shoshone River Watershed. Improving irrigation efficiency by piping the D52 Lateral will decrease direct defecation of wildlife and livestock into Sage Creek, thereby reducing bacteria concentrations downstream on Polecat Creek, and ultimately the Shoshone River, all of which are impaired by elevated E. coli concentrations. This project will reduce E. coli loading to Sage Creek by an estimated 1.51E+13 MPN annually based on a spreadsheet tool developed by the Wyoming Department of Environmental Quality (WDEQ) to evaluate the impact of nonpoint source pollution projects.

Other annual pollutant load reductions calculated include nitrogen (453 lbs.) and phosphorus (150 lbs.). Another pollutant to the Shoshone River that degrades aquatic habitat is sediment loading, which would be reduced by approximately 217 tons annually. Nutrient and sediment load reduction estimates were calculated using Version 4.4b of the United States Environmental Protection Agency's (EPA) Spreadsheet Tool for the Estimation of Pollutant Loads (STEPL) last modified October 27, 2020. These load reduction estimates are provided for reporting purposes only. Due to the complexity of non-point source pollution, these are estimates of the benefits of piping the D52 Lateral. Pre- and post-construction site evaluations and water quality monitoring will be utilized to evaluate water quality improvements. **See Appendix C – 2013 TMDL Shoshone River Watershed and Appendix D – EPA Spreadsheet Tool for the Calculation of Pollutant Loads.**

Some spreadsheet inputs include:

- 100 cattle grazing adjacent to existing open ditch
 - 85 acres of adjacent cropland and pasture drain to open ditch
 - 2,500 feet of severe erosion (tailwater)
 - Average annual precipitation
 - Local soil types
2. *If the project will benefit aquatic or riparian ecosystems within the watershed (e.g., by reducing flood risk, reducing bank erosion, increasing biodiversity, or preserving native species), please explain the extent of those benefits (i.e., magnitude and geographic extent). Please estimate expected project benefits to ecosystems and provide documentation and support for this estimate, including a detailed explanation of how the estimate was determined.*

The Lower Shoshone River Level I Watershed Study (LSRWS) lists sedimentation and associated turbidity as major factors limiting fish production and recruitment in the Shoshone River basin. The Shoshone River is classified by Wyoming Game and Fish Department (WGFD) as a Blue-Ribbon trout stream between Buffalo Bill Dam and the Elk-Lovell Canal, meaning these are premium trout waters and fisheries of national importance. However, there is a drastic change in the fisheries quality downstream of the Elk-Lovell Canal within the project area where the Shoshone River is classified as Green-Ribbon, meaning low-production water and fisheries of local importance with trout production of fewer than 50 pounds of trout per mile.

The LSRWS found that land use and resource management are a factor that has affected the quantity and quality of instream flows in this region. The WGFD has recommended many management actions within the Lower Shoshone River Riparian Habitat areas including **reducing erosion sediment deposition in the Shoshone River**. Irrigation system improvements such as piping open canals and laterals is an identified mitigation measure to help reduce sediment wastewater returned to the Shoshone River.

This project will pipe 9,000 feet of a currently open ditch as well as eliminate flow in 2,500 feet of tailwater ditch. Runoff from cropland and pasture adjacent to the ditch are contributing nutrients and bacteria as well as some sediment to the Shoshone River System. The 2,500 feet of tailwater ditch is a significant contributor of sediment and associated bacterial to the Shoshone River System.

Annual pollutant load reductions calculated include nitrogen (453 lbs.) and phosphorus (150 lbs.). Another pollutant to the Shoshone River that degrades aquatic habitat is sediment loading, which would be reduced by approximately 217 tons annually.

3. *If the project will benefit specific species and habitats, please describe the species and/or type of habitat that will benefit and the status of the species or habitat (e.g., native species, game species, federally threatened or endangered, state listed, or designated critical habitat). Please describe the extent (i.e., magnitude and geographic extent) to which the project will benefit the species or habitat, including an estimate of expected project benefits and documentation and support for the estimate.*

WGFD has identified five fish species as Species of Greatest Conservation Need in their Basin Management Plan (BMP) for the Shoshone River Basin, listed below in Table 2.

Table 2 Species of Greatest Conservation Need

Species	Abundance	Status
Burbot	Rare	NSS3(Bb)
Yellowstone Cutthroat Trout	Rare	NSS3(Bb)
Flathead Chub	Rare	NSS4(Bc)
Plains Minnow	Rare	NSS3(Bb)
Western Silvery Minnow	Rare	NSS2(Ab)

As stated above, sediment related impacts to fisheries and aquatic resources have been identified as a primary concern in the lower Shoshone River and its tributaries. Siltation affects water quality, temperature, river channel dynamics, in-stream habitat, riparian conditions, and fisheries resources.

The proposed project will fully enclose the D52 Lateral, which contributes 300 acre-feet of sediment saturated tailwater to the Shoshone River via Polecat Creek and Sage Creek. This project will drastically improve water quality, temperature, and in-stream habitat for these listed species and others.

4. *Are there project benefits not addressed in the preceding questions? If so, what are these benefits?*

No.

Project benefits for multi-benefits projects: If applicable, please describe the extent to which the project will benefit multiple water uses. Please do not repeat information included in your prior responses.

- 1. Please describe the extent to which the project will benefit agricultural, municipal, tribal, or recreation uses? Please explain how your estimate of benefits to multiple uses was calculated and provide support for your response.*

Agriculture –

DID provides irrigation water to roughly 15,500 acres of agricultural farmland. The D52 Lateral specifically provides water to 739 acres. The proposed project will increase water reliability for those 739 acres and will provide the opportunity for irrigators to switch to pressure irrigation. The project will conserve approximately 1,237 AF of water annually for agricultural and other users within the system.

Water Quality –

The project will fully enclose the D52 Lateral and prevent an estimated 0.75 cfs of tailwater from entering Polecat Creek and Sage Creek. The existing canal has a large section of open ditch that allows agricultural wastewater to re-enter and contribute non-point source loading to Shoshone River tributaries. An estimated 217 tons of sediment, 453 lbs. of nitrogen, and 150 lbs. of phosphorus enter Polecat Creek via tailwater from the D52 Lateral.

Recreation –

The project will result in 1,237 acre-feet of conserved water that will remain in Buffalo Bill Reservoir and within the Shoshone River for longer during the irrigation season. The increased water availability will benefit recreational opportunities, from fishing the Shoshone River to kayaking and boating at the Buffalo Bill Reservoir. According to the Bureau of Economic Analysis (BEA), in 2020, outdoor recreation added \$1.25 billion to the Wyoming economy and accounted for 14,187 jobs and \$785 million in wages.

- 2. Will the project reduce water conflicts within the watershed?*

There are continual water conflicts within the watershed. As drought conditions continue to worsen throughout the western United States, efficient irrigation delivery systems are becoming even more critical in helping to avoid future water-related conflicts.

- 3. Will the project provide benefits to other water uses not mentioned above? If so, how and to what extent?*

In some instances, seepage has impacted neighboring lands. Some landowners have identified impacts of salt accumulation and flooding in seepage areas from canals and turnouts.

This piping project will eliminate these problem areas and will also reduce maintenance from clogging or erosion and generally improve DID's control of the water.

Evaluation Criterion B – Collaborative Project Planning (25 points)

1. *Was the proposed project described in your application developed as part of a collaborative process by:*

- *A watershed group, as defined in section 6001 of the Cooperative Watershed Management Act.*

OR

A water user and one or more stakeholders with diverse interests (i.e., stakeholders representing different water use sectors such as agriculture, municipal, tribal, recreational, or environmental)?

The proposed project was initially prioritized within DID's 2016 Master Plan Update Level I Study (2016 MPU). Wyoming Water Development Commission later used the 2016 MPU in the development of the 2021 Lower Shoshone River Level I Watershed Study (LSRWS). **See Appendix B – Lower Shoshone River Watershed Study and Appendix E – 2016 MPU.**

DID has been involved with WDEQ's working groups to identify water quality issues impacting the watershed and mitigation measures that can help reduce sediment loading in the Shoshone River and its tributaries. The proposed project was identified as a recommended management practice to help improve water quality. The working groups include representation from the following;

Willwood Irrigation District

Local agricultural producers

Wyoming Department of Environmental Quality

Wyoming Game and Fish Department

Bureau of Land Management

Powell Clarks Fork Conservation District

Cody Conservation District

Natural Resources Conservation Service

Wyoming Association of Conservation Districts

East Yellowstone Chapter of Trout Unlimited

University of Wyoming Extension

2. *Describe the strategy or plan that supports your proposed project.*

- *When was the plan or strategy prepared and for what purpose?*

Deaver Irrigation District, along with Sage Civil Engineers, completed the 2016 MPU with the intent to fulfill multiple DID goals, including updating inventory and canal

assessment; enhancement of the geographic information system (GIS); to note system deficiencies; prepare a rehabilitation plan; and to complete a financing plan for the proposed projects.

The LSRWS was completed in 2021 by Biota Research and Consulting, Inc. and Sunrise Engineering, Inc. for the Wyoming Water Development Commission and the Shoshone Conservation District to effectively address the land management and natural resource challenges within the Lower Shoshone River Watershed.

The large sediment releases and fish kills from Willwood Dam maintenance operations over the past several years prompted the establishment of the three working groups mentioned above with the following objectives: cleanup and flushing flow below Willwood Dam (Working Group 1); development of alternatives for the long-term management of sediment above Willwood Dam (Working Group 2), and evaluation of water quality standards and addressing sediment sources upstream of Willwood Dam (Working Group 3). Deaver Irrigation District has been involved with the working groups and will continue to support these efforts.

The Working Groups and the LSRWS have identified water quality concerns as a key issue within the watershed. Planning efforts have identified the proposed project as a mitigation measure that will increase water efficiency as well as reduce sediment and bacteria contributions to the Shoshone River.

- *What types of issues are addressed in the plan? For example, does the plan address water quality issues, and/or issues related to ecosystem health or the health of species and habitat within the watershed?*

The LSRWS addresses multiple issues within the watershed, including quantity and quality of surface water resources and riparian/upland conditions; water storage needs and opportunities to augment upland water available for livestock and wildlife; irrigation system inventory and develop a rehabilitation plan for those ditches expressing an interest to participate; natural resource issues; and proposed practical economic solutions.

- *Is one of the purposes of the strategy or plan to increase the reliability of water supply for ecological values?*

Yes.

- *Does the project address 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)?*

No.

3. *Was your strategy or plan developed collaboratively?*

- *Who was involved in preparing the plan? Was the plan prepared with input from stakeholders with diverse interests (e.g., water, land, or forest management interests; and*

agricultural, municipal, tribal, environmental, recreation uses)? What was the process used for interested stakeholders to provide input during the planning process?

DID has been involved in the working group discussions that included representation from Willwood Irrigation District, Local agricultural producers, Wyoming Department of Environmental Quality, Wyoming Game and Fish Department, Bureau of Land Management, Powell Clarks Fork Conservation District, Cody Conservation District, Natural Resources Conservation Service, Wyoming Association of Conservation Districts, East Yellowstone Chapter of Trout Unlimited, and University of Wyoming Extension.

Public outreach occurred throughout the development of the LSRWS. Project announcement mailings were sent to landowners and stakeholders early in the process to encourage community involvement. Public meetings were held to identify concerns and potential project opportunities within the watershed. Landowners, ranchers, agencies, and private citizens were invited to identify potential water development projects that would benefit and address key watershed issues. Site visits were performed for potential water development projects and assessment of watershed conditions.

- *If the plan was prepared by an entity other than the applicant, explain why it is applicable.*

The 2016 MPU was prepared by DID and Sage Civil Engineers. The LSRWS was prepared by Biota Research and Consulting, Inc. for the Wyoming Water Development Commission and the Shoshone Conservation District. Both plans are applicable because they list the proposed project as a priority project to increase water efficiency and reduce sediment and bacteria loading in the Shoshone River.

4. *Describe how the plan or strategy provides support for your proposed project.*

- *Does the proposed project implement a goal or need identified in the plan?*

Yes, the Working Groups as well as the LSRWS have both identified water quality concerns particularly related to irrigation practices and the ongoing operation and maintenance of the Willwood Dam as a key issue in the watershed. These planning efforts have identified the proposed project as a needed mitigation measure that will reduce sediment and bacteria contributions to a major tributary to the Shoshone River.

- *Describe how the proposed project is prioritized in the referenced plan or strategy.*

The 2016 MPU lists the proposed project as a priority project. The three criteria shown below were considered for the prioritization of rehabilitation needs.

1. Immediate needs for safety and continued operation: Major structures whose failure could interrupt service to the majority of the DID.
2. Immediate needs for safety, repair, and improvement of operation: Improvements that would help alleviate operational challenges and lower the risk of a canal breach, overtopping, or would otherwise improve safety.

3. Operational improvement: Non-critical, conservation-related projects will improve efficiency, delivery, and reduce maintenance costs to the DID.

The LSRWS lists potential projects organized into six general categories. The proposed project fits under the **Irrigation and Drainage System Improvements and Rehabilitation** category. This category lists improvements such as converting dirt ditch or damaged cement ditch to gated pipe as an example project type.

Evaluation Criterion C – Stakeholder Support (15 points)

1. *Please describe the level of stakeholder support for the proposed project. Are letters of support from stakeholders provided? Are any stakeholders providing support for the project through cost-share contributions, or through other types of contributions to the project?*

There is strong stakeholder support for the proposed project. Letters of support are included in Appendix F – Letters of Support and includes letters from:

- Shoshone Conservation District
- Willwood Irrigation District
- Wyoming Department of Environmental Quality
- Powell Clarks Fork Conservation District
- The Wyoming Water Development Commission has recommended this project to receive funding. The recommendation letter is included.

2. *Please explain whether the project is supported by a diverse set of stakeholders (appropriate given the types of interested stakeholders within the project area and the scale, type, and complexity of the proposed project). For example, is the project supported by entities representing agricultural, municipal, tribal, environmental, or recreation uses?*

Yes, the project is supported by diverse stakeholders, including representation from conservation districts, irrigation districts, the water development commission, and environmental quality.

3. *Is the project supported by entities responsible for the management of land, water, fish and wildlife, recreation, or forestry within the project area? Is the project consistent with the policies of those agencies?*

Yes, the project is supported by the Shoshone Conservation District, Powell Clarks Fork Conservation District, WDEQ, and WWDC.

4. *Will the proposed project complement other ongoing water management activities by state, Federal, or local government entities, non-profits, or individual landowners within the project area? Please describe other relevant efforts, including who is undertaking these efforts and whether they support the proposed project. Explain how the proposed project will avoid duplication or complication of other ongoing efforts.*

As previously stated, DEQ, WGFD, WWDO, the U.S. Bureau of Reclamation (USBR), SEO, and other partners have established three working groups with three objectives: cleanup and flushing flow below Willwood Dam (Working Group 1); development of alternatives for the long-term management of sediment above Willwood Dam (Working Group 2), and evaluation of water quality standards and addressing sediment sources

upstream of Willwood Dam (Working Group 3). Deaver Irrigation District has been involved with these working groups and the proposed project supports the objectives of these working groups.

5. *Is the project completely or partially located on Federal land or at a Federal facility? If so, explain whether the agency supports the project, whether the agency will contribute toward the project, and why the Federal agency is not completing the project.*

Yes, the Deaver Irrigation District is part of Reclamation’s Shoshone Project. DID entered into a contract with Reclamation on November 14, 1949, that transferred the responsibility for the OM&R of the irrigation works.

6. *Is there opposition to the proposed project? If so, describe the opposition and explain how it will be addressed. Opposition will not necessarily result in fewer points.*

No.

Evaluation Criterion D – Readiness to Proceed (10 Points)

1. *Describe the implementation plan for the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. This may include, but is not limited to, design, environmental and cultural resources compliance, permitting, and construction/installation.*

Milestone/Task

Sign WaterSMART contracts	Apr – Oct 2022
Environmental	Oct 2022 – Oct 2023
Final Design	Oct – May 2024
Bidding/Contracting	June – July 2024
Construction (100% Complete)	Oct 2024 – Apr 2025
Final report and project close-out	Oct 2025

2. *The project budget outlining costs for specific tasks should identify costs associated with the tasks in your project schedule, and all contractor costs should be broken out to identify the specific tasks included in those costs.*

Major tasks include: NEPA and Cultural Resource Survey; Final Design; Bidding/Contracting; Construction (100% Complete); Final report and project close-out. All costs associated with these major tasks have been itemized in Table 3 of the Budget Proposal. See Table 3 – Budget Proposal on Pages 23-24.

3. *Describe any permits and agency approvals that will be required, along with the process and timeframe for obtaining such permits or approvals.*

An evaluation of environmental resources in connection with the proposed action will be completed as part of this project. The evaluation will include completing water, biological, and cultural resources assessments of the project area, consulting with regulatory agencies, and obtaining required permits prior to construction. The precise permits needed for the project will be identified later in the process. The project may

require a stream alteration permit and/or a nationwide permit from the U.S. Army Corps of Engineers. Other permits that may be required are a stormwater permit and any general construction permits that the local jurisdictions may require. Depending on the results of the cultural resource survey, mitigation for any impacts to cultural resources may also be required.

\$94,000 has been budgeted to complete surveys, reports, agency coordination and NEPA documentation. The work is anticipated to take approximately four months for survey and reporting, four months for data gathering and agency coordination, and four months for finalizing the NEPA document and obtaining Reclamation signature on the document (twelve months total).

- 4. Identify and describe any engineering or design work performed specifically in support of the proposed project, or that will be performed as part of the project. Priority will be given to projects that are further along in the design process and ready for implementation.*

A hydraulic model has been completed for the system. Work included determining user irrigation demands and system sizing through computer modeling. Pipe sizing and resulting system pressures for sprinkler design were determined. Preliminary design was completed to the level required for establishing an Engineers Opinion of Cost.

- 5. Does the applicant have access to the land or water source where the project is located? Has the applicant obtained any easements that are required for the project?*

Yes, all easements and canals/laterals are owned by Reclamation and DID is the contracted entity responsible for the operation, maintenance, and repairs of the system. No additional easements will be required to construct the proposed project.

- 6. Identify whether the applicant has contacted the local Reclamation office to discuss the potential environmental and cultural resource compliance requirements for the project and the associated costs. Has a line item been included in the budget for costs associated with compliance? If a contractor will need to complete some of the compliance activities, separate line items should be included in the budget for Reclamation's costs and the contractor's costs. Describe any new policies or administrative actions required to implement the project.*

Yes, DID has consulted with Brad Cannon in the Wyoming Area Reclamation office to discuss the project's environmental and cultural resource compliance requirements. It was determined that based on experience with these types of projects, NEPA compliance would most likely occur through a Categorical Exclusion. A Class III, cultural resource survey, will also be required as part of this project. \$94,000 has been included in the project budget to cover all anticipated environmental and permitting costs.

Evaluation Criterion E – Performance Measures (5 points)

- 1. Please describe the performance measures that will be used to quantitatively or qualitatively define actual project benefits upon completion of the project. Include support for why the specific performance measures were chosen.*

Water Quality Performance Measures

Previous Willwood Dam working group efforts have included collecting sediment samples in collaboration with the USGS and identifying sediment sources for specific drainage areas. Previous studies, including the Bighorn Lake Sediment Management Study (USBR 2010), have also evaluated sediment transport within the watershed. Analysis methods and the current status of working group efforts is also described in the June 21, 2021 presentation titled “Managing Sediment at Willwood Dam to Protect Downstream Fisheries (Waterstreet 2021).”

This previously collected data will provide an idea of historical sediment loads within the project area. DID has consulted with the Powell Clarks Fork Conservation District (PCFCD) and the Shoshone Conservation District (SCD) about the proposed project. Plans are being made to coordinate sediment samples before and after the piping of the D52 Lateral. These samples will then be analyzed and compared to historical data to determine an estimated load reduction resulting from the completion of this project.

Water Savings Performance Measures

The project includes the installation of a master meter on the D52 Lateral as well as individual meters at each user turnout. Pre-project flows to the D52 Lateral will be compared with post-project measured flows as recorded with the new metering to estimate water savings resulting from the project.

- 2. All applicants are required to include information about plans to monitor improved streamflows, aquatic habit, or other expected project benefits. Please describe the plan to monitor the benefits over a five-year period once the project has been completed. Provide detail on the steps to be taken to carry out the plan.*

DID has a good working relationship with other water delivery and conservation entities in Big Horn County, including SCD. DID has been in communication with the Shoshone Conservation District regarding this project and have received their support for addressing structural deficiencies and water losses as evidenced by their letter of support. Prior to construction of the proposed project, DID will coordinate with SCD or other nearby conservation districts to develop and implement a monitoring strategy for assessing water quality improvements resulting from this project. It has been recommended that a good monitoring plan will include collecting a set of 5 samples (if possible) before and after construction during the primary contact recreation season (May 1-September 30) for a 5-year period. This would enable SCD and DID to calculate a geomean for the site to determine whether the project assisted in getting the waters closer to meeting the state standard for E. coli bacteria which is 126 MPN/100mL. The sampling would be done in accordance with WY's manual of standard of operating procedures and a sampling analysis plan.

Evaluation Criterion F – Presidential and Department of the Interior Priorities (10 points)

Climate Change: E.O. 14008 emphasizes the need to prioritize and take robust actions to reduce climate pollution; increase resilience to the impacts of climate change; protect public health; and conserve our lands, waters, oceans, and biodiversity.

1. *How will the project build long-term resilience to drought? How many years will the project continue to provide benefits? Please estimate the extent to which the project will build resilience to drought and provide support for your estimate.*

As drought continues to plague the western states, increased irrigation efficiency becomes even more crucial to the sustainability of resources dependent upon water supply. Many western states are being affected by ongoing drought conditions and will continue to struggle with water availability as populations grow. One way to mitigate the effects of drought is to increase delivery system efficiencies. The proposed project will significantly reduce the amount of water DID will need to divert to the D52 Lateral to provide irrigators with their allotted flows. This delivery system improvement will allow more water to remain in the Buffalo Bill Reservoir and in the river system and will help to increase drought resiliency for the entire watershed.

2. *In addition to drought resiliency measures, does the proposed project include other natural hazard risk reductions for hazards such as wildfires or floods?*

Yes, the proposed project will protect the D52 Lateral from potential flood and wildfire events that could cause significant damage to the open lateral.

3. *Will the proposed project establish and use a renewable energy source?*

No.

4. *Will the proposed project reduce greenhouse gas emissions by sequestering carbon in soils, grasses, trees, and other vegetation?*

No.

5. *Does the proposed project include green or sustainable infrastructure to improve community climate resilience such as reducing the urban heat island effect, lowering building energy demands, or reducing the energy needed to manage water? Does this infrastructure complement other green solutions being implemented throughout the region or watershed?*

No.

6. *Does the proposed project seek to reduce or mitigate climate pollutions such as air or water pollution?*

No.

7. *Does the proposed project have a conservation or management component that will promote healthy lands and soils or serve to protect water supplies and its associated uses?*

No.

8. *Does the proposed project contribute to climate change resiliency in other ways not described above?*

No.

Disadvantaged or Underserved Communities: E.O. 14008 and E.O. 13985 affirm the advancement of environmental justice and equity for all through the development and funding of programs to invest in disadvantaged or underserved communities.

1. *Will the proposed project serve or benefit a disadvantaged or historically underserved community? Benefits can include, but are not limited to, public health and safety through water quality improvements, new water supplies, or economic growth opportunities.*

The project will benefit residents of Deaver, Wyoming and surrounding areas in Big Horn County, which are rural communities with limited access to healthcare and other essential services. The principal industries in the area are gas and oil development, bentonite mining, farming, ranching, and tourism.

2. *If the proposed project is providing benefits to a disadvantaged community, provide sufficient information to demonstrate that the community meets the applicable state criteria or meets the definition in Section 1015 of the Cooperative Watershed Act, (i.e., defined as a community with an annual median household income that is less than 100 percent of the statewide annual median household income for the state).*

The project will benefit a rural and predominately agricultural community. The 2019 U.S. Census estimates that the Median Household Income for the City of Deaver is \$51,563, versus \$64,049 for the State of Wyoming. 12.2 percent of the population in Deaver are Veterans compared to just 10 percent of the total population of Wyoming.

The economy of Deaver employs 70 people. The largest industries in Deaver, Wyoming are accommodation and food services. These industries are low paying. Increased agricultural production within the area will provide a much-needed boost to the local economy in these unstable times.

3. *If the proposed project is providing benefits to an underserved community, provide sufficient information to demonstrate that the community meets the underserved definition in E.O. 13985, which includes populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life.*

N/A.

Tribal Benefits: *The Department of the Interior is committed to strengthening tribal sovereignty and the fulfillment of Federal Tribal trust responsibilities. The President’s memorandum, Tribal Consultation and Strengthening Nation-to Nation Relationships asserts the importance of honoring the Federal government’s commitments to Tribal Nations.*

The proposed project does not have any known tribal benefits.

Project Budget

Funding Plan and Letters of Commitment

Describe how the non-Federal share of project costs will be obtained.

Deaver Irrigation District (DID) was awarded a grant from the Wyoming Water Development Commission (WWDC) for the matching portion of the project costs (\$815,900).

Identify the sources of the non-Federal cost-share contribution for the project, including:

- *Any monetary contributions by the applicant towards the cost-share requirement and source of funds (e.g., reserve account, tax revenue, and/or assessments).*

Deaver Irrigation District – D52 Lateral Piping and Shoshone River Sediment Reduction Project

The applicant will contribute 29 percent of the total project costs or \$815,900 grant awarded through WWDC.

- *Any costs that will be contributed by the applicant.*

DID has spent significant time planning for the project, and they will continue to do so in management oversight and record keeping. DID will also pay for the 5 years of water quality monitoring required to demonstrate the require performance measures.

- *Any third-party in-kind costs (i.e., goods and services provided by a third party).*

There are no incurred in-kind costs included in this project.

- *Any cash requested or received from other non-Federal entities.*

\$815,900 award from WWDC.

- *Any pending funding requests (i.e., grants or loans) that have not yet been approved and explain how the project will be affected if such funding is denied.*

The grant from WWDC has been approved and will be formally announced following the 2022 Legislative Session in January. Funds become available upon execution of a contract anticipated in July 2022.

In addition, identify whether the budget proposal includes any project costs that have been or may be incurred prior to award. For each cost, describe:

- *The project expenditure and amount.*

N/A.

- *The date of cost incurrence.*

N/A.

- *How the expenditure benefits the Project.*

N/A.

Budget Proposal

Table 1 – Total Project Cost Table

Source	Amount
Costs to be reimbursed with the requested Federal funding	\$2,000,000
Costs to be paid by the applicant	\$815,900
Value of third-party contributions	\$0
Total Project Cost	\$2,815,900

Table 2 – Summary of Non-Federal and Federal Funding Sources

Funding Sources	Amount
Non-Federal Entities	

BOR WaterSMART Grants: Environmental Water Resources for FY22 – R22AS00026

1. Grant from Wyoming Water Development Commission	\$815,900
Non-Federal Subtotal	\$815,900
Requested Reclamation Funding	\$2,000,000

Table 3 – Budget Proposal

Budget Item Description	Computation		Quantity Type	Total Cost
	\$/Unit	Quantity		
Salaries and Wages				\$0
Fringe Benefits				\$0
Travel				\$0
Equipment				\$0
Supplies and Materials				\$0
Contractual / Construction				\$2,815,900
NEPA Compliance	\$94,000.00	1	EA	\$94,000
Final Design	\$188,000.00	1	EA	\$188,000
Construction Management	\$188,000.00	1	EA	\$188,000
Mobilization	\$100,000.00	1	EA	\$100,000
32" HDPE DR 41 PIPE	\$86.81	5,890	LF	\$511,300
28" HDPE DR 41 PIPE	\$69.98	4,260	LF	\$298,100
20" HDPE DR 32.5 PIPE	\$46.83	1,410	LF	\$66,000
18" HDPE DR 32.5 PIPE	\$39.45	1,420	LF	\$56,000
16" HDPE DR 32.5 PIPE	\$33.68	2,800	LF	\$94,300
12" HDPE DR 32.5 PIPE	\$29.34	2,860	LF	\$83,900
Fittings	\$80,000.00	1	EA	\$80,000
Air Vents	\$8,000.00	12	EA	\$96,000
Turnout Assemblies w/Baffle Box	\$35,000.00	15	EA	\$525,000
RTU & Solar	\$16,000.00	15	EA	\$240,000
Screening Structure	\$50,000.00	1	EA	\$50,000
Energy Dissipation Chamber	\$10,000.00	1	EA	\$10,000
Meter Station	\$8,000.00	1	EA	\$8,000
System Drain	\$2,500.00	1	EA	\$2,500
Clear & Grub	\$3.50	9,000	LF	\$31,500
Remove Existing Boxes	\$3,000.00	13	EA	\$39,000

Imported Fill	\$16.00	3,000	TON	\$48,000
Furnish Foundation Type A5	\$21.00	300	TON	\$6,300
Third-Party Contributions				\$0
Other				\$0
Total Direct Costs				\$2,815,900
Indirect Costs				\$0
Total Estimated Project Costs				\$2,815,900

Budget Narrative

Salaries and Wages

No DID salaries or wages will be included. All services will be contracted. DID's staff time will be over and above the project's cost and will not be counted toward the project cost.

Fringe Benefits

No fringe benefits are required.

Travel

No travel will be required.

Equipment

Equipment will be part of the contracted portion of the project.

Materials and Supplies

Materials and supplies will be part of the contracted portion of the project and will be documented as required.

Contractual

In order to determine unit costs, which were included in the cost estimate for this project, DID relied upon contract unit prices from similar projects recently completed. DID will follow the State of Wyoming procurement process for procuring a contractor for this project. They will bid the construction portion of the project to several prequalified construction companies. The contractual costs shown are estimates for each component to furnish and install all the pipe and equipment. Generally, the low bidder will be selected based on a determination of acceptable qualifications.

Third-Party In-Kind Contributions

No third-party in-kind contributions will be included in this project.

Environmental and Regulatory Compliance Costs

The total estimated environmental and regulatory compliance costs is \$94,000. The estimate was based on communication with the local Reclamation office staff and similar projects in the

Wyoming area. The estimate includes NEPA compliance costs and costs to conduct a Class III cultural resource survey.

Other Expenses

No other expenses are included in the project.

Indirect Costs

No indirect costs will be part of the project.

Environmental and Cultural Resources Compliance

Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

Based on experience with similar projects conducted in the Wyoming area and advice given from Reclamation's Wyoming Area Office, NEPA compliance for this type of project would most likely occur through a Categorical Exclusion and construction would result in minimal and temporary environmental impacts.

An evaluation of environmental resources in connection with the proposed action will be completed as part of this project. The evaluation will include completing water, biological, and cultural resources assessments of the project area, consulting with regulatory agencies, and obtaining required permits before construction. Depending on the cultural resource survey results, mitigation for any impacts to cultural resources may also be required.

\$94,000 has been budgeted to complete surveys, reports, agency coordination and NEPA documentation. The work is anticipated to take approximately two months for survey and reporting, two months for data gathering and agency coordination, and 2 months for finalizing the NEPA document and obtaining Reclamation's signature on the document (six months total).

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?

Grizzly Bear (*Ursus arctos horribilis*) and Ute Ladies'-tresses (*Spiranthes diluvialis*) listed as threatened, and Monarch Butterfly (*Danaus plexippus*) listed as a candidate, habitat is present in proximity to the planning area, based on: IPaC Report 11/24/21. Practices are not likely to adversely affect federally listed or proposed species because avoidance and minimization measures will be used. Critical habitat is not known to occur in the project area. Concurrence from USFWS for critical habitat and species will be completed during NEPA process.

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.

DID is unaware of any known wetlands in or near the project area.

When was the water delivery system constructed?

The Deaver Irrigation District is part of the Shoshone Reclamation Project started in 1904 and includes Buffalo Bill Reservoir, two diversion dams, two small off-stream reservoirs,

Deaver Irrigation District – D52 Lateral Piping and Shoshone River Sediment Reduction Project

approximately 140 miles of tunnels and canals, and 564 miles of laterals and distribution ditches. DID first took over operation of the Frannie Division of the Shoshone Project in 1926.

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.

DID has had ongoing maintenance and minor improvements to the delivery system since they first took over operation in 1926. The proposed project will install new HDPE pipe in place of the existing, aged PIP pipe. A new system meter will be installed at the head of the main D52 Lateral. The new pipe will be fully pressurized and will deliver water through new metered connections. The new turnouts will include energy dissipation boxes to allow irrigators to continue flood irrigation until they are ready to convert to sprinklers. The bottom segment of the Lateral is currently open and will also be piped.

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.

DID is unaware of any buildings or structures listed on the National Register of Historic Places within the project area. A Class III, cultural resource survey, will be completed during the environmental process, and no adverse effects to cultural resources or historic properties is anticipated.

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

DID is unaware of any archeological sites within the project area. A Class III, cultural resource survey, will be completed during the environmental process.

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

No, this project will not have any disproportionately high or adverse impacts on low-income or minority populations. These populations could continue to be adversely impacted if this project is not built due to the fact that a large percentage of low-income and minority populations are employed in the agricultural industry of this area, and water losses are having an impact on the production of agriculture lands.

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

No.

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

No.

Required Permits or Approvals

Applicants must state in the application whether any permits or approvals are required and explain the plan for obtaining such permits or approvals.

An evaluation of environmental resources in connection with the proposed action will be completed as part of this project. The evaluation will include completing water, biological, and cultural resources assessments of the project area, consulting with regulatory agencies, and obtaining required permits before construction. The precise permits needed for the construction of the project will be identified later on in the process. The project may require a stream alteration permit and/or a nationwide permit from the U.S. Army Corps of Engineers. Other permits that may be needed are a stormwater permit and any general construction permits that the local jurisdictions may require. Depending on the cultural resource survey results, mitigation for any impacts to cultural resources may also be required.

\$94,000 has been budgeted to complete surveys, reports, agency coordination and NEPA documentation. The work is anticipated to take approximately two months for survey and reporting, two months for data gathering and agency coordination, and 2 months for finalizing the NEPA document and obtaining Reclamation's signature on the document (six months total).

Letters of Support and Letters of Partnership

Include letters from interested stakeholders supporting the proposed project.

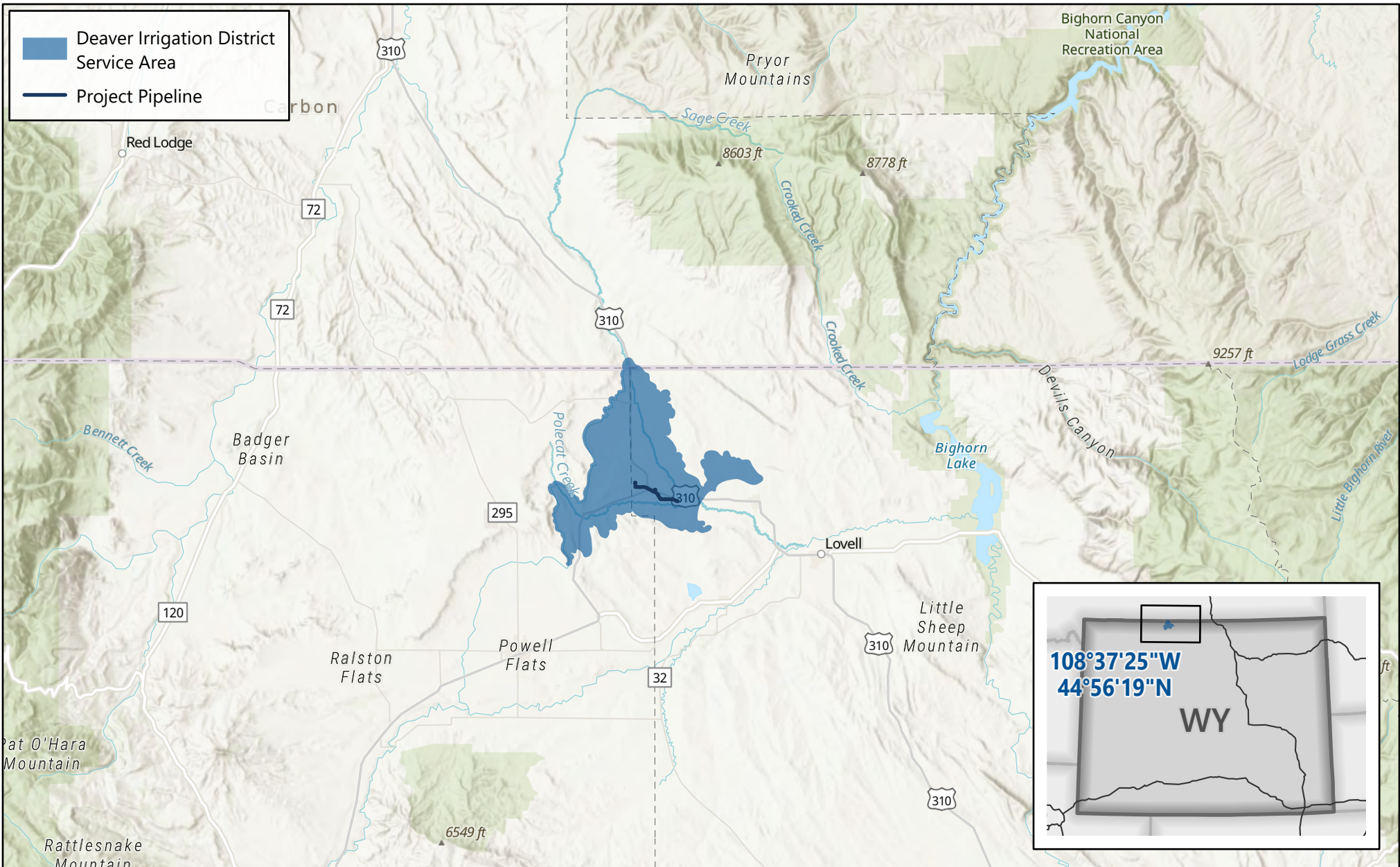
Letters of support from the following entities can be found in **Appendix F – Letters of Support:**

- Shoshone Conservation District
- Powell Clarks Fork Conservation District
- Willwood Irrigation District
- Wyoming Department of Environmental Quality
- Wyoming Water Development Commission

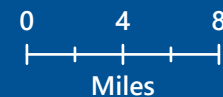
Official Resolution

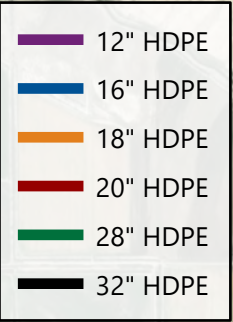
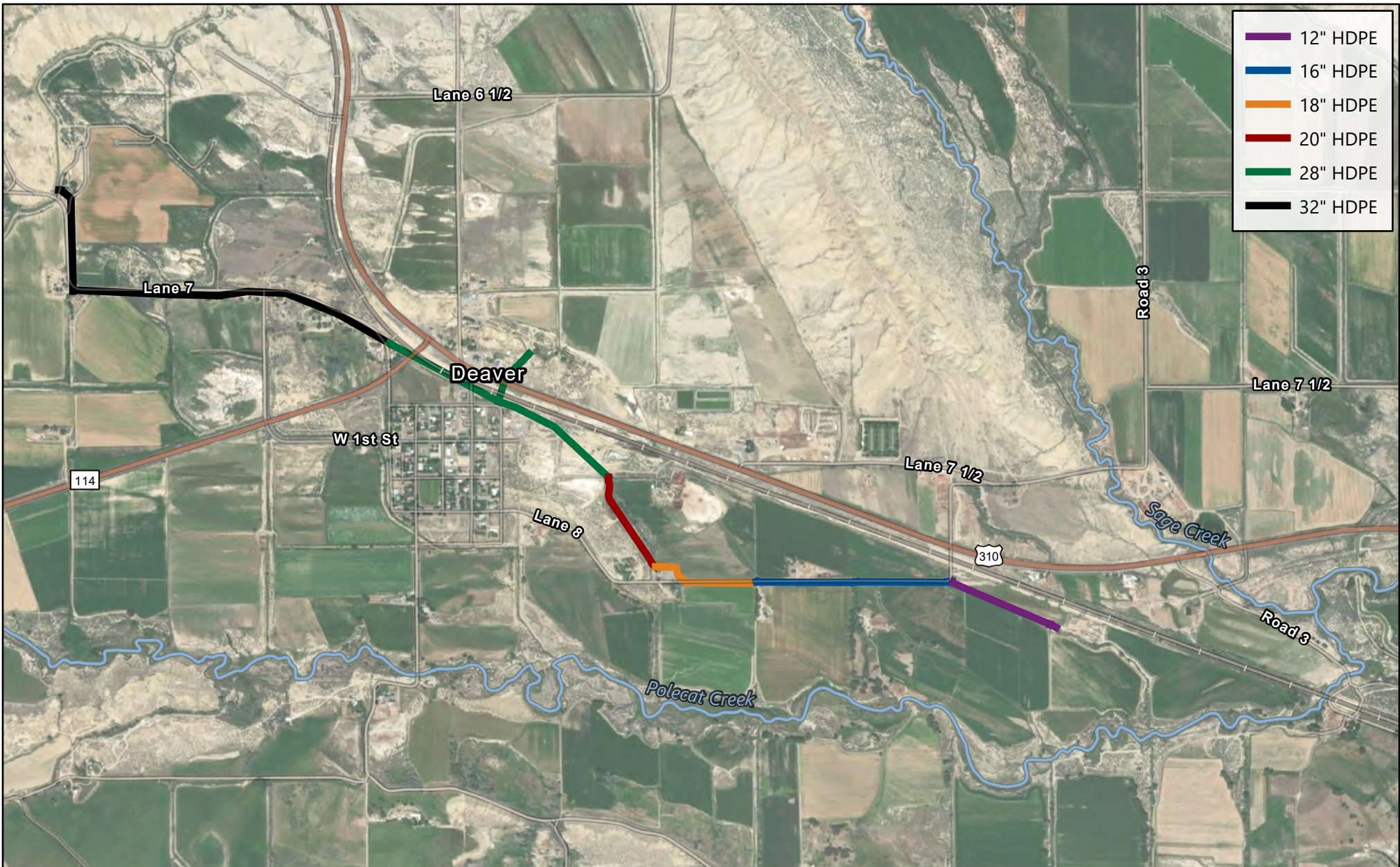
Include an official resolution adopted by the applicant's board of directors or governing body, or, for State government entities, an official authorized to commit the applicant to the financial and legal obligations associated with receipt of a financial assistance award under this NOFO. The official resolution may be submitted to bor-sha-fafoa@usbr.gov up to 30 days after the application deadline.

See Appendix G – DID Official Resolution.

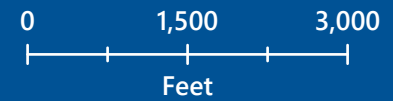


DEAVER IRRIGATION DISTRICT PROJECT LOCATION





DEAVER IRRIGATION DISTRICT PROJECT DETAIL





Shoshone Conservation District

359 Nevada Avenue • Lovell, Wyoming 82431 • (307) 548-7422

November 19, 2021

Jerry Dart, District Manager
Deaver Irrigation District
PO BOX 205
Deaver, Wyoming 82421

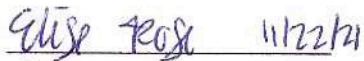
Dear Jerry,

Shoshone Conservation District is pleased to support your effort to develop a canal enclosure project under the Bureau of Reclamation's WaterSMART Environmental Water Resources Grant Program. We recognize the positive impact this project will have in helping reduce sedimentation and bacteria contributions to Sage Creek and the Shoshone River. This type of project is important because it will help reduce further water quality degradation by preventing primary nonpoint source contributions of bacteria such as agricultural runoff, wildlife contributions and human sources from entering Pole Cat Creek and Sage Creek which are major Shoshone River tributaries.

The health and improvements of watersheds and water quality are of great importance to those living in this area, and as an entity within the Shoshone Conservation District, any efforts you make to enclose canals will also help meet the goals of the conservation district.

We strongly support your grant application and appreciate the benefits it will have in reducing sediment and bacteria for the Shoshone River, as well as its tributaries.

Sincerely,

 11/22/21

Elise Rose
District Manager
Shoshone Conservation District

 11/22/21

Brad Tippetts
Chairman, Board of Supervisors
Shoshone Conservation District



Willwood Irrigation District

1306 Road 9, Powell, WY 82435 • 307-754-3831 • widoffice@tctwest.net

December 01, 2021

Jerry Dart, District Manager
Deaver Irrigation District
P.O. Box 205
Deaver, Wyoming 82421

Dear Jerry,

Willwood Irrigation District is pleased to support your effort to develop a canal enclosure project under the Bureau of Reclamation's WaterSMART Environmental Water Resources Grant Program. We appreciate the importance of this project as it will help reduce sedimentation and bacteria contributions to Sage Creek and the Shoshone River. This type of project is important as it will help reduce further water quality degradation by preventing primary nonpoint source contributions of bacteria such as agricultural runoff, wildlife contributions and human sources from entering Pole Cat Creek and Sage Creek which are major Shoshone River tributaries.

Willwood Irrigation District is one of the 4 Irrigation Districts that were put together on the Shoshone River with Deaver being included. We have a strong working relationship with Deaver along with Heart Mountain and Shoshone Irrigation Districts. I have had many conversations with Jerry over the years. We also have a Joint Powers Board that includes the same 4 irrigation districts that allow us to work together on projects. If we need assistance from Deaver to bring equipment to help they usually assist us in any manner possible.

Willwood Irrigation District strongly supports any projects that help reduce sedimentation on the Shoshone River. We, Willwood Irrigation have the same problems with sedimentation and bacteria with our system. If we can provide support to see this river system benefit from projects. Then, we will stand behind any possible thing to make improvements to help for generations to come.

We strongly support your grant application and appreciate the advancements the proposed project will make in sediment and bacterial reduction for the Shoshone River and its tributaries.

Sincerely,

Travis Moger
District Manager
Willwood Irrigation District

Tyson Cunningham

From: Jennifer Zygmunt <jennifer.zygmunt@wyo.gov>
Sent: Tuesday, November 30, 2021 2:04 PM
To: Tyson Cunningham
Cc: Brian Deeter; did@tctwest.net; Alexandria Jeffers; Ron Steg
Subject: [EXTERNAL] Re: Shoshone River Sediment Reduction Project

External Email - This Message originated from outside J-U-B ENGINEERS, Inc.

Hi Tyson,
thanks for reaching out. There continue to be ongoing efforts to reduce sediment to the Shoshone River, so it's great to hear about a new project that could help with those efforts. The person I'd recommend you contact for a letter of support is Carmen McIntyre. Carmen took over leadership of the inter-agency/organization group working to identify and implement sediment projects in the watershed. DEQ is a participant on that workgroup.

Carmen McIntyre

Crook County Natural Resource District Program Coordinator
Powell Clarks Fork Conservation District Watershed Coordinator
Phone: [828.674.8541](tel:828.674.8541)
Email: chmcintyre.ccnrd@gmail.com

Carmen would also be a good resource to see if there's any assistance this group could provide to the irrigation district and overall water quality goals in the area. Sage Creek was selected as a priority watershed for NRCS funding, so there may be some unique opportunities there.

I've cc'd Alex Jeffers on this email. Alex is the Nonpoint Source Program Coordinator here at DEQ/WQD and works closely with Carmen on the workgroup. She would also be a good resource as your project moves forward.

I've also cc'd Ron Steg on this email. Ron is the DEQ/WQD TMDL Program Coordinator and can help provide information about TMDLs in the Shoshone River watershed. Ron--can you reach out to Tyson regarding his TMDL questions?

Thanks,

Jennifer

On Tue, Nov 30, 2021 at 9:33 AM Tyson Cunningham <tcunningham@jub.com> wrote:

Jennifer,

I am working with the Deaver Irrigation District on a grant application through the Bureau of Reclamation for a project to pipe and pressurize the D52 lateral. We estimate that this lateral contributes a large amount of sediment via tailwater that flows past the last turnout to Polecat Creek which feeds into Sage Creek. We have seen that there have been some significant efforts to find ways to reduce sediment in the Shoshone River and we are hoping WDEQ would be willing to provide a letter of support for this project? I have attached a brief project description and map and a sample letter of support as well as a picture showing a gully created by the tailwater from the D52 lateral.

Also, we understand that you track the TMDLs in Sage Creek and the Shoshone River, can you explain how that works or the frequency?



Powell Clarks Fork Conservation District

1017 Hwy 14A

Powell, WY 82435

Email: ann.trosper@wy.nacdnet.net

<https://www.pcfcd.org/>

December 3, 2021

Jerry Dart, District Manager
Deaver Irrigation District
PO BOX 205
Deaver, Wyoming 82421

Dear Jerry,

The Powell Clarks Fork Conservation District is pleased to support your effort to develop a canal enclosure project under the Bureau of Reclamation's WaterSMART Environmental Water Resources Grant Program. We appreciate the importance of this project as it will help reduce sediment, nutrient, and bacteria contributions to Sage Creek, Polecat Creek, and the Shoshone River. This project will help reduce further water quality degradation by preventing nonpoint source bacteria contributions from agricultural runoff, wildlife contributions and human sources from entering Pole Cat Creek and Sage Creek which are major Shoshone River tributaries.

As you know, Deaver Irrigation District and the Powell Clarks Fork Conservation District (PCFCD) have maintained a very good working relationship, particularly as relates to watershed management issues and outreach with shared constituents.

With this in mind, the PCFCD recognizes the mutual interest in enclosing the D52 Lateral. From improving water delivery, increasing water efficiency, preventing water losses, and reducing nonpoint source pollution into impaired waters, this project will positively impact the Shoshone River Watershed. Specifically, this project compliments efforts further upstream to reduce sediment loading to the Shoshone River and ultimately the Yellowtail Reservoir.

We strongly support your grant application and appreciate the advancements the proposed project will make in sediment, nutrient, and bacteria load reductions for the Shoshone River and its tributaries.

Sincerely,

Ann Trosper, District Manager
Powell Clarks Fork Conservation District

Carmen Horne-McIntyre, Watershed Coordinator
Powell Clarks Fork Conservation District

CC: Regan Smith, Chairman
Powell Clarks Fork Conservation District

Board of Supervisors

Chairman: Regan Smith Vice Chairman: Anthony Spiering Secretary/Treasurer: Abby Shuler Member: Neil Christofferson Member: Vacant

2022 RECOMMENDATION-CONSTRUCTION PROJECTS

Project Name: Deaver ID Rehabilitation 2022

Program: Rehabilitation

Project Type: Agricultural Irrigation

County: Big Horn

Sponsor: Deaver Irrigation District

WWDO Recommendation: Level III

Proposed Budget: \$817,000

WWDC Grant ¹ (30%)	\$ 817,000
<u>Sponsor² (70%)</u>	<u>\$ 1,905,700</u>
Total	\$ 2,722,700

¹ Not to exceed 30% of project eligible Construction costs, Engineering covered by WEEG.

² The matching funds will be paid with a Bureau of Reclamation Water and Energy Efficiency Grant (WEEG) and District funds

Project Manager: William Brewer

Project Description: Replacement the D52 and D52-11 Laterals Phase 1. Portions of both of these laterals were piped (but not pressurized) over 30 years ago. This project would replace the old pipe with new pressurized pipe and would also pipe and pressurize currently open canal sections of both laterals. This project will save water lost to seepage, evaporation and flowing past the end of the ditch back into drainages. It will also allow for more efficient application of water on the farms once pressurized.

1. Describe existing status in the program and previous appropriations.

Prior Legislation

<u>Year</u>	<u>Project</u>	<u>Appropriation</u>
2015	Level I, Deaver Master Plan	\$ 162,000
2017	Level III, Flume Replacement/Laterals 2017	\$ 91,000
2018	Level II, Deaver Irrigation District Rehab 2018	\$ 230,000
2019	Level III, Deaver Irrigation District Rehab 2019	\$ 424,000
2020	Level III, Frannie Canal Drop Chute #1 2020	\$ 166,200

2. Describe existing water supply using information in the application.

The Deaver Irrigation District has a direct flow water right from the Shoshone River and stored water from Buffalo Bill Reservoir, all delivered through the Frannie Canal. The District currently irrigates 15,545 acres, with 205 individual landowners receiving water.

3. Summarize the request.

The sponsor is requesting 30% grant funds to replace Phase 1 of the D52 and D52-11 laterals with pipe.

4. Summarize the reasons for the request.

Replacing the old pipe and open canal part of D52 and D52-11 lateral will improve efficiency, reliability and reduce water loss from seepage.



WYOMING WATER DEVELOPMENT OFFICE

6920 Yellowtail Road
Cheyenne, WY 82002

Phone: (307) 777-7626
wwdc.state.wy.us

Mark Gordon
Governor

Commissioners

Liisa Anselmi-Dalton	Mark Kot
Robert R. Choma	John H. Lawson
Lee Craig	Sheridan Little
Clinton W. Glick	Larry Suchor
Ronald E. Kailey, Jr.	Bill Yankee

Brandon L. Gebhart, P.E.
Director

December 7, 2021

Mr. Jerry Dart
Deaver Irrigation District
P.O. Box 205
Deaver, WY 82421

RE: Deaver ID Rehabilitation 2022 Project

Dear Mr. Dart,

This letter is being provided on behalf of the Wyoming Water Development Commission (WWDC) to supplement your application for Bureau of Reclamation grant funding. We have received your application for WWDC Level III Construction Funding for the project listed above. Your Application included a WWDC request of \$817,000 in grant funding to be matched with \$1,905,700 in other grant funds for a total project cost of \$2,722,700. The WWDO's preliminary recommendation is to fund this project through Water Development Account II as part of the 2022 Omnibus Water Bill - Construction.

WWDC funding is contingent upon approval of the Recommendation at the November 2021 and January 2022 joint meetings of the WWDC and Legislative Select Water Committee (LSWC), the Legislature and Governor approval. The WWDC and LSWC reviewed the Recommendation at the November 2021 joint meeting and approved moving the project forward to the January meeting. Your request will now be taken up by both bodies at their respective January 2022 meetings for inclusion in the 2022 Omnibus Water Bill - Construction and for subsequent consideration by the Legislature and approval by the Governor. Should these contingencies be met, the funds would likely be available in May 2022 and at that time the WWDO would begin developing a Five-Year Project Agreement between the WWDC and the Deaver Irrigation District.

We will plan to provide you with updates on the status of the Deaver ID Recommendation after the January meeting. If you need additional information to support your grant Application please feel free to contact me or my staff.

Sincerely,

A blue ink signature of William Brewer, P.E., P.G.

William Brewer, P.E., P.G.
Deputy Director, Wyoming Water Development Office

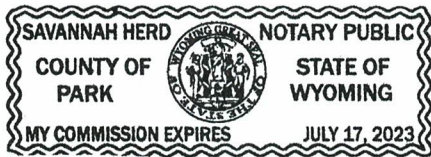
Resolution

Deaver Irrigation District D52 Lateral Piping and Shoshone River Sediment Reduction Project.

As per motion and unanimous vote by the Deaver Irrigation District Board of Commissioners at a Regular Meeting of the Board of Commissioners of the Deaver Irrigation District held on December 6th, 2021, the Board, by formal resolution, does hereby approve submitting an application to the U.S. Bureau of Reclamation, to apply for WaterSMART Grant funding for the rehabilitation of District Agricultural projects during 2022-2023. Through this resolution of the Board of Commissioners of the Deaver Irrigation District, the Board sets the following project funding request: Replacement of Lateral D52. This project is listed within the Deaver Irrigation District Level 1 Master Plan Study. This project and funding request was set by unanimous vote by the Board of Commissioners at a Regular Meeting held on December 6th, 2021 and made part of this resolution.

Through this resolution, the Board of Commissioners of the Deaver Irrigation District authorize David Winnerger, Deaver Irrigation District Board President, to sign all necessary documents for the participation in the proposed WaterSMART Grant program. The Board of Commissioners of the Deaver Irrigation District authorize Jerry Dart, Deaver Irrigation District Manager, to negotiate schedules for work completion and required meetings, order of projects, and funding reconciliation and reporting.

(Seal)



Deaver Irrigation District

David Winnerger

David Winnerger, Board President

The foregoing was acknowledged before me by, David Winnerger this 6th day of December, 2021.

Savannah Herd

Notary Public

My commission expires: July 17, 2023