Lower Wilson Ditch Piping Project

WaterSMART Water and Energy Efficiency Grants

Technical Proposal

The High Desert Conservation District, acting as fiscal agent for the Lower Wilson Ditch Association, LLC, seeks $1.68 million in project funding to cover one-half of the cost of piping a 1.6-mile section of the Lower Wilson Ditch, an open, earthen irrigation ditch that services 48 member-irrigators, one of which is the Ute Mountain Ute Tribe, in Montezuma County, Colorado.

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Executive Summary

Application Date:	February 19, 2024
Applicant:	High Desert Conservation District, as fiscal agent for the Lower Wilson Ditch Association, LLC
Location:	Unincorporated Montezuma County, Colorado

Applicant Eligibility

This is a "Category B" application. The High Desert Conservation District ("HDCD") is a special district working in partnership with, and with the agreement and cooperation of, the Lower Wilson Ditch Association, LLC ("LWDA"), a non-profit mutual ditch company having water delivery authority.

HDCD/LWDA's eligibility as a qualified applicant under this WaterSMART Water and Energy Efficiency Grants NOFO has previously been determined by Nickie McCann of the Bureau of Reclamation's Water Resources and Planning Office, and by Michelle de Leon, Chair of the Denver Office and Washington Office, Special Emphasis Program, Bureau of Reclamation, in correspondence to HDCD/LWDA dated November 27, 2023 and December 5, 2023, respectively.

Project Summary

In order to address seepage, surface evaporation, and evapotranspiration losses and related issues, HDCD, acting as fiscal agent for the LWDA, seeks $1.68 million in project funding to cover one-half the cost of piping a 1.6-mile section of the Lower Wilson Ditch, an open, earthen irrigation ditch that services 48 of the LWDA's member-irrigators, one of which is the Ute Mountain Ute Tribe, in Montezuma County, Colorado.

Project commencement and completion are proposed to occur between January 1, 2025 and June 30, 2025. The proposed project is not located on a Federal facility, although a portion of the project will run through Ute Mountain Ute Tribal land, but within the existing ditch right-of-

way which predates Tribal ownership.

Project Location

The project is situated in McElmo Canyon (37.3214*N, 109.0273*W), in southwestern Montezuma County, Colorado, which is within Division 7 of the Colorado Division of Water Resources (San Juan and Dolores River Basins.) For a precise interactive map of the Lower Wilson Ditch (in blue), including the proposed piping project area (in red), see (Ctrl-click):

Interactive Map With Legend

(Note: To access the map's Legend, click the icon at the top-left corner of the map.)

Project Description

Summary: The LWDA is a non-profit mutual ditch company, tax-exempt under IRC section 501(c)(12), tasked with managing, maintaining, and improving the Lower Wilson Ditch in order to deliver irrigation water to the LWDA's 48 members, including the Ute Mountain Ute Tribe, in accordance with their decreed water rights.

The primary purpose of the Lower Wilson Ditch Piping Project is to conserve and use the LWDA's adjudicated irrigation water more efficiently. Secondary purposes include limiting disruption of water delivery during the irrigation season, mitigating risks associated with ditch overtopping and failure that threaten both private and public property, contributing to water supply sustainability in connection with the Dolores Project/McPhee Reservoir, reducing salinity in the Colorado River, and slowing the proliferation of non-native plant species along the ditch right of way.

Note that HDCD/LWDA is concurrently seeking to fund the balance of the project cost (i.e., $1.68 million of the $3.36 million total) by means of a Local Match Program Grant from the Colorado Department of Local Affairs, as well as other state and local funding sources.

Ditch Narrative: McElmo Canyon runs for some 24 miles through unincorporated Montezuma County, south and west of the City of Cortez, in the southwestern portion of the State of Colorado, in an area commonly described as the Four Corners region. McElmo Canyon extends all the way to the Utah border along the southern boundary of the Canyons of the Ancients National Monument, and McElmo Creek, which runs through the canyon, is the natural drainage into which virtually all water, whether naturally occurring or diverted from the Dolores River into the Montezuma Valley, collects.

Irrigators in McElmo Canyon, over a hundred in number, hold some of the oldest adjudicated water rights in the Montezuma Valley, with appropriations dating to 1888. When work on the diversion of irrigation water from the Dolores River to the Montezuma Valley first began in 1885, the McElmo Canyon irrigators were central to that effort. John Wilson, for example -- a McElmo Canyon farmer -- served on the original board of directors of the Montezuma Valley Irrigation District, the immediate predecessor of the Montezuma Valley Irrigation Company ("MVIC"). For over 135 years, the McElmo Canyon irrigators have continuously utilized this "developed water" – water they themselves helped to develop – from the Dolores River (now via the Bureau of Reclamation's Dolores Project/McPhee Reservoir) to irrigate the farms, ranches, orchards, hayfields, and vineyards of McElmo Canyon.

McElmo Canyon, thanks to its temperate climate, is one of Colorado's historic breadbaskets. Fruit from the Canyon's Gold Medal Orchard, for example, took first place at the St. Louis World's Fair in 1904. Today McElmo Canyon hosts not only individual farmers and ranchers but also a variety of commercial enterprises including bed & breakfast inns, vineyards, orchards, and wineries. All are naturally dependent on a secure and consistent source of irrigation water. Since 1889, that source has included diversions from the Dolores River, either directly into McElmo Creek or, in later years, via MVIC return flows entering the tributary streams of McElmo Creek.

In 1962, in a water court proceeding entitled "In the Matter of the Adjudication of Priorities of Water Rights for the Use of Water for Irrigation and Other Beneficial Uses in Water District No. 32 of the State of Colorado (McElmo Canyon and Tributaries)," the District Court issued its final adjudication of all water rights and priorities in McElmo Canyon and its various tributaries. The court's Decree of Adjudication dated August 14, 1962 expressly states that as long as seepage and return flows from upstream users, including MVIC shareholders, enter the tributary streams of McElmo Creek, those flows are subject to the decree's adjudicated priorities.

The 1962 Decree represented the culmination of 27 years of litigation. It adjudicated the priorities of 97 different irrigation ditches with appropriation dates ranging from March of 1888 to February of 1951. In reliance upon the District Court's "final and conclusive" decree, and in reliance upon the Division of Water Resources' continuous and consistent administration of that decree by its terms, the residents of McElmo Canyon have purchased homes and lands, drilled wells, purchased livestock, constructed improvements, and started and continued businesses, including vineyards, orchards, wineries, and hay farms**.**

Many McElmo Canyon residents – 48 in number – take their irrigation water from the Lower Wilson Ditch ("the Ditch"), which is operated and maintained by the LWDA. This includes the Ute Mountain Ute Tribe, which owns 83 shares (at .0125 cfs/share), or roughly one-tenth of the

Ditch's adjudicated flow. Irrigation tail water leaving the Ditch at its western terminus flows into McElmo Creek, then into the San Juan River, then into the Colorado River at Lake Powell.

The adjudicated priorities that the Ditch carries, and the acreage they service, are as follows:
Priority 5: 160 acres
Priority 21: 294.7 acres
Priority 23: 26 acres (Ute Mountain Ute Tribe)
TOTAL: 480.7 acres.

The Ditch has existed in its present location and configuration since 1904. The Ditch roughly parallels Montezuma County Road G, both passing under and looming over it, and Road G is the sole means of ingress to and egress from McElmo Canyon. From its eastern headgate at the intersection of Road G and County Road 21 to its western terminus (into McElmo Creek) at the intersection of Road G and County Road J (see interactive map, in blue), the Ditch is approximately 5.2 miles in length and carries an average flow during irrigation season (May through October) of approximately 7.5 cfs.

The proposed project seeks to pipe a 1.6-mile section of the Ditch. The section in question (see interactive map, in red) has been the source of recurring maintenance headaches over the years, owing to its steep or inaccessible terrain. The LWDA has had to contend with numerous slides, washouts, and rockfalls, excessive vegetative growth, several outright breaches, and the ongoing difficulty of access for mechanized cleaning.

Piping the section in question will, among other benefits, eliminate seepage, surface evaporation, and evapotranspiration losses over its 1.6 mile length, prevent mid-season shutdowns due to slides and rockfalls, diminish the likelihood of disruptive calls on the river by the LWDA's downstream neighbors of higher priority, obviate breaches that threaten traffic and public safety on Road G, eliminate excessive vegetative growth of invasive species that cause periodic overtopping, and help lighten the salt load on both the San Juan and Colorado Rivers.

With specific reference to the 2023 Colorado Water Plan, the proposed project will upgrade and improve conveyance infrastructure, helping to manage water supplies in the face of changing hydrology, help keep agricultural lands in production by aiding producers in more efficiently diverting water for beneficial uses, and further the specific Southwest Basin goal of efficiently utilizing often-limited water supplies from the Bureau of Reclamation's Dolores Project/McPhee Reservoir, upon which the McElmo Canyon irrigators rely.

Project Narrative: With reference to the interactive map, the proposed project (in red) will place 8,600 linear feet of the Ditch (in blue) in a combination of 26" and 24" PVC (80 psi) PIP, stretching from a point just east of the present "Point Sluice" to a point on the Ditch's upper branch west of the present "High-Low" diversion structure. The present "Point Sluice"

structure and the present “High-Low” diversion structure will be demolished and a new sluice structure will be constructed at the eastern entrance to the pipeline, the “High-Low Diversion Box” turnout structure will be replaced, and the pipeline will connect to an existing County-constructed culvert and pipe under Road G (depicted in yellow) just west of the Point Sluice.

As the pipeline will be laid in the existing Ditch and ditch right-of-way (expressly authorized by Colorado law, at CRS 37-86-103), environmental and cultural impacts will be virtually nil.

The pipeline will be bedded in gravel and backfilled to a cover depth of 30 inches, all in compliance with NRCS specifications.

Here is a chart summarizing the project elements and their anticipated costs. For more detail, please see the accompanying Budget Information for Construction Projects (SF-424C) and Budget Narrative.

	Quantity	Unit	Unit Cost	Labor		Total
Engineering	1	Lump Sum	$264,000.00			$264,000.00
Surveying	1	Lump Sum	$18,000.00			$18,000.00
Geotechnical Engineer	1	Lump Sum	$27,500.00			$27,500.00
Course of Construction Insurance	1	Lump Sum	$2,000.00			$2,000.00
Site Supervision	1	Lump Sum	$28,800.00			$28,800.00
Site Prep and Material Storage	1	Lump Sum	$15,000.00			$15,000.00
Mobilization/Demobilization	1	Lump Sum	$30,000.00			$30,000.00
30" 80 PSI PVC (PIP) Installed	300	Linear Ft	$99.55	$70.00		$50,865.00
24" 80 PSI PVC (PIP) Installed	8450	Linear Ft	$79.72	$65.00		$1,222,884.00
21" 80 PSI PVC (PIP) Installed	120	Linear Ft	$69.00	$60.00		$15,480.00
PVC Pipe Fittings	102	Each	$1,945.00	$250.00		$223,890.00
Misc. Steel Grates and Covers	1	Each	$14,500.00	$3,500.00		$18,000.00
6" Air Valve Assemblies	6	Each	$3,750.00	$1,100.00		$29,100.00
Point Sluice Structure Demo	1	Each	$6,200.00			$6,200.00
Hi-Low Split Structure Demo	1	Each	$4,500.00			$4,500.00
Concrete Inlet Structure	1	Each	$26,000.00			$26,000.00
Concrete Point Sluice Structure	1	Each	$44,000.00			$44,000.00
Concrete Hi/Low Split Structure	1	Each	$42,000.00			$42,000.00
Concrete Outlet Structure	1	Each	$26,000.00			$26,000.00
Concrete Pumping	4	Each	$6,000.00			$24,000.00
Bedding, 1/4" fine	520	CY	$75.00	$95.00		$88,400.00
Backfill, 1" minus clean	3650	CY	$71.00	$90.00		$587,650.00
Road Bore County Road G, 21"	1	Lump Sum	$47,000.00			$47,000.00
Traffic Control	4	Each	$3,160.00			$12,640.00
Hydro Seeding (Native Species)	15	Acres	$3,750.00			$56,250.00
				Sub-Total		$2,910,159.00
				Sales Tax		$142,597.79
Contingency Fee	1		10.00%			$305,275.68
				Total		$3,358,032.47

The total project cost is estimated at $3.36 million, one-half of which ($1.68 million) HDCD/LWDA seeks by this application.

Evaluation Criteria

A. *Quantifiable Water Savings:*

a. This is a ditch piping project whose primary purpose and benefit is to decrease or eliminate canal water seepage, surface evaporation, and evapotranspiration.

b. LWDA, however, is a small, rural ditch company that has not previously undertaken any of the exemplar testing methods described in the NOFO, and cannot now do so because the Ditch runs only during LWDA's irrigation season, which generally extends from mid-May through mid-October.

c. That said, publicly available data allows seepage loss in the open, earthen Ditch to be calculated with a high degree of accuracy, as follows:

Seepage Loss:

$$q_s = k * y_n * F_s$$

where q_s is the seepage discharge per unit length of canal/ditch (m^2/s); k the hydraulic conductivity (m/s); y_n the canal normal flow depth (m); and F_s is the seepage function (dimensionless), which is a function of channel geometry.

Seepage function:

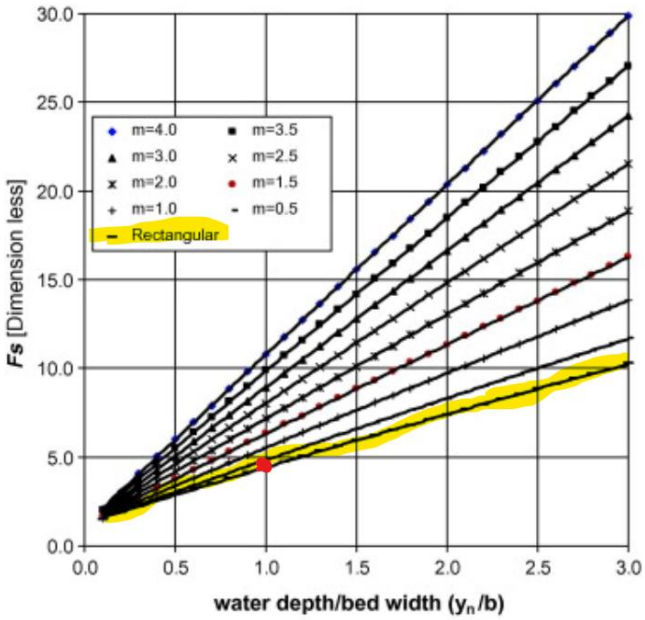
$$F_s = \left[\left(\{4\pi - \pi^2\}^{1.3} + \{2m\}^{1.3} \right)^{\frac{0.77+0.462m}{1.3+0.6m}} + \left\{ \frac{b}{y_n} \right\}^{\frac{1+0.6m}{1.3+0.6m}} \right]^{\frac{1.3+0.6m}{1+0.6m}}$$

where m is the side slope; and b is the bed width of the section.

Assumptions:

- Rectangular ditch
- Average depth: 2.5 ft (**y_n=4.0 ft = 0.762 m**)
- Average width: 2.5 ft

The following is a graphical representation of the seepage function:



Using a water depth/bed width ratio for a rectangular ditch of 2.5/2.5 = 1, it is estimated that the seepage function (F_s) is 4.5

F_s=4.5

Hydraulic Conductivity:

Utilizing the USDA NRCS Web Soil Survey Data (https://websoilsurvey.nrcs.usda.gov/app/), it is determined that stretch of ditch in the area of interest within McElmo Canyon is a soil unit of *Ramper Clay Loam.* The provided hydraulic conductivity for this unit approximately 2.82 micrometers per second.

K = 2.82 um/s = 2.82*10^{-6} m/s

Seepage Loss Rate:

$$q_s = k * y_n * F_s$$

where:

y_n= 2.5 ft = 0.762 m

F_s=4.5

K = 2.82 um/s = 2.82*10^{-6} m/s

Therefore: q_s = 2.82*10^{-6} m/s * 0.762 m * 4.5

q_s = 9.67*10^{-6} m^2/s = 1.04*10^{-4} ft^2/s

Where q_s is the seepage discharge per unit length of canal/ditch.

Total seepage loss:

8,660 feet of open ditch with the representative soil characteristics.

Total seepage loss = q_s * ditch length of interest * irrigation season (seconds)

Total seepage loss = **$1.04*10^{-4}$ ft^2/s * 8660 feet * $1.296*10^7$ s**

Total calculated seepage loss per irrigation season= 11,681,273 cubic ft = 268.2 ac-ft

Reference: Design and analysis of a canal section for minimum water loss - ScienceDirect

d. In addition to these quantifiable baseline seepage loss savings, the proposed project will also eliminate evaporation, evapotranspiration, and persistent overtopping along the project length caused by slides, rockfalls, and excessive vegetative growth that currently plague ditch operations and necessitate occasional ditch shut-downs. We conservatively estimate that another two acre-feet are currently lost annually to these causes. As such, we estimate overall water savings of approximately 270 acre-feet per year once the project is completed.

e. The water to be conserved is currently evaporating or seeping into the soil, or in the case of overtopping events, onto surrounding property, and as such is not being beneficially used.

f. Authority: 20240212_19032907230_1_Saturated_Hydraulic_Conductivity_Ksat.pdf

B. *Increased Energy Efficiency:*

a. Although the piping project does not increase the use of renewable energy, it will result in some overall energy efficiency and savings by reducing fossil fuels currently employed annually in both manual and mechanical ditch clearance and maintenance.

b. At present, LWDA employs a contractor's crew each spring, prior to irrigation season, to remove vegetative growth within the Ditch. The annual expense associated with this effort is around $15K, and represents LWDA's largest single annual expenditure. In addition, where vegetative growth has slowed the flow of water and deposited silt within the Ditch, or where cattails – too robust for manual removal – have proliferated within the Ditch, LWDA employs a backhoe operator to

mechanically clear the affected portion(s) of the Ditch as needed.

c. Both the gas-powered trimmers used for manual Ditch maintenance and the track hoe used for mechanical ditch clearance burn fossil fuels, and piping the Ditch will eliminate the use of both, resulting in some modest energy savings, and a significant cost saving for LWDA, each year.

C. *Other Project Benefits*:

a. Resilience and Sustainability: The Four Corners region generally, and the McElmo Canyon project area in particular, are extremely arid, with historical annual rainfall of less than 13 inches. See: CORTEZ, COLORADO - Climate Summary (dri.edu). Moreover, the area has been in the throes of a historic "mega-drought" since the year 2000. See, Anthropogenic Climate Change Negatively Impacts Vegetation and Forage Conditions in the Greater Four Corners Region - Williams - 2023 - Earth's Future - Wiley Online Library. As such, efficient water management is at a premium in the Four Corners region and will remain so for the foreseeable future. The proposed project, which will eliminate evaporation, evapotranspiration, and seepage over its 1.6-mile length and prevent overtopping and ditch failure events, will help husband these increasingly precious water resources, and the conserved water will find its way from the Ditch to McElmo Creek, to the San Juan River, and ultimately to drought-stricken Lake Powell on the Colorado River, for the ultimate benefit of the interstate Colorado River Compact.

b. Ecological Benefits: As the Ditch becomes more efficient, more water will be returned to McElmo Creek, which is home to at least one known endangered species, the Southwest Willow Flycatcher. Moreover, the open, earthen Ditch presently invites invasive, non-native riparian plant species, including Tamarisk and Russian Olive, to proliferate along its length – a phenomenon that the buried pipeline will eliminate.

c. Public Safety and Liability: As described above, the open Ditch within the project area runs parallel with, and uphill of, Montezuma County Road G, the sole route for ingress to and egress from McElmo Canyon. Ditch overtopping and/or failure pose a constant threat to public safety that piping the Ditch will eliminate.

d. Disruption of Farm Operations: Both excessive vegetative growth within the Ditch and rockfalls and slides into the Ditch within the project area have necessitated manual mitigation during each of the past several irrigation seasons. In each

instance the Ditch had to be shut down for repairs, disrupting irrigation and, in some cases, threatening newly planted crops. Piping the ditch will, again, eliminate these problems. Piping, and the attendant efficiency of water delivery, will also lessen the risk of disruptions resulting from calls on the river by LWDA's downstream neighbor, the Rock Creek Ditch, which holds a higher priority under the terms of the 1962 adjudication.

e. Salinity Control: The Ditch lies within the McElmo Creek Unit of the Colorado River Basin Salinity Control Program Area. The average salt load contributed by the McElmo Creek basin is estimated at 119,000 tons per year as MVIC diverts water from the Dolores River via the Dolores Project/McPhee Reservoir to serve irrigators in the Montezuma Valley. The salinity of these diversions averages 130 mg/L, and return flows from agriculture increase the salinity in McElmo Creek to about 2,600 mg/L at the Colorado-Utah state line. See: CRBSCP - McElmo Creek Unit - Title II (usbr.gov). Piping the Ditch will help mitigate the amount of salt entering McElmo Creek, the San Juan River, and ultimately the Colorado River at Lake Powell.

D. *Disadvantaged Communities and Tribal Benefits:*

a. Tribal Benefits: As indicated above, the Ute Mountain Ute Tribe is an LWDA member owning roughly ten percent (10%) of the irrigation water carried by the Ditch (83 shares of the 853 total shares), and is authorized, under the 1962 water court adjudication, to irrigate 26 acres in McElmo Canyon. As such, all of the project benefits described in sections A and C, above, will inure to the Tribe's benefit.

b. Disadvantaged Communities: Montezuma County is one of the poorest in the State of Colorado. Montezuma County generally, and McElmo Canyon in particular, even excluding Ute Mountain Ute Tribal data, qualifies as a "disadvantaged community" under the Median Household Income (40% of households at or below 200% of the federal poverty line) criterion established under Colorado law, specifically, 5 Colo. Code Regs. Section 1002-85.7. See, Montezuma County, CO | Data USA.

c. On the federal "Climate and Economic Justice Screening Tool" website, the McElmo Canyon community (Tract No. 08083941100), including the Ute Mountain Ute Tribal community, is similarly identified as "disadvantaged," with a "low income" score and an "expected population loss rate" score both in the 97th percentile, and an "energy cost" score in the 99th percentile.

E. *Complimenting On-Farm Improvements:*
Not applicable.

F. *Readiness to Proceed:*

a. The proposed project will be shovel-ready as of January 1, 2025, should it be selected for WaterSMART funding. As previously indicated, the pipeline will be laid within the existing Ditch and ditch right-of-way, as expressly authorized by Colorado law (CRS 37-86-103), which provides that "a ditch right-of-way includes the right to construct, operate, clean, maintain, repair, and replace the ditch and appurtenant structures, to improve the efficiency of the ditch, **including by lining or piping the ditch**, and to enter onto the burdened property for such purposes, with access to the ditch and ditch banks, as the exigencies then existing may require, for all reasonable and necessary purposes related to the ditch."

b. Neither the Montezuma County Land Use Code nor the Montezuma County Department of Building and Planning imposes any permitting or inspection requirements on a project of this nature. See, CHATER 1: GENERAL PROVISIONS, APPLICATION AND THRESHOLD STANDARDS (montezumacounty.org)

c. HDCD/LWDA will have obtained adequate matching funds or approval thereof from the Colorado Department of Local Affairs via their "Local Match Program (Federal Infrastructure Investment and Jobs Act)." In addition, HDCD/LWDA has already applied for, and has already received on November 7, 2023, a Technical Assistance Grant from the Colorado Water Conservation Board to pursue, and is actively pursuing, other state and local cost-share funding opportunities.

d. Project Implementation Plan:
The LWDA board of managers includes two retired civil engineers, a retired attorney, a major construction contractor, and a PhD Ethnohistorian experienced in working with federal, state, and Tribal entities in Cultural Resource Management, and the LWDA membership includes a retired Bureau of Reclamation dam safety engineer. All of which is to say that LWDA will bring a certain level of internal experience and expertise to the project's design, oversight, and management. Moreover, the LWDA has an existing, well-established relationship with a local grading and construction contractor with NRCS pipeline-construction and Davis-Bacon Act compliance experience. As such, our project implementation timeline is as follows:

January, 2025: Hire engineer, construction supervisor, and grading and construction contractor(s). Order piping, bedding gravel, backfill material, and all pipeline components (pipe segments, elbow fittings, valve assemblies, screens, weirs, lids, etc.);

February, 2025: Complete project engineering and design. Mobilize equipment. Commence right-of-way grading and site prep. Demolish existing sluice and diversion box structures. Begin fabricating new reinforced concrete structures (inlet, outlet, sluice, and diversion box);

March to mid-May, 2025: Complete right-of-way grading and structure fabrication. Commence and complete pipeline installation, including bedding, fittings, and connections, plus county road-bore for 21" diversion pipe.

Mid-May to June, 2025: Inspection, testing, and troubleshooting. Backfill and compaction. Critical area seeding and demobilization.

G. *Collaboration:*

a. This application is the result of a collaborative process that began over one year ago, when the LWDA membership first voted to explore the prospect of undertaking this piping project. That collaboration began with the LWDA's outreach to and eventual partnership with HDCD, which agreed to act as the LWDA's fiscal agent – a collaboration necessitated by the eligibility criteria of both the federal WaterSMART and state LOMA NOFOs.

b. As a next step in this collaborative process, LWDA representatives met with Paul Kehmeier, the Salinity Program Coordinator for the Colorado Department of Agriculture's Conservation Services Division; Joel Lee, the Resource Team Leader of the NRCS's Cortez Field Office; HDCD's Neva Connolly (District Manager) and David Temple (President); and Hawkins Wall and Leticia Yazzie of the Ute Mountain Ute Tribe, first on a walking tour to inspect the proposed project area, and then for a listening session at which Messrs. Kehmeier and Lee outlined the various funding opportunities and challenges associated with the project.

c. During the succeeding twelve months, LWDA representatives have met with, corresponded with, and Zoomed or spoken with a diverse cast of relevant persons and entities, including (partial list): Michael Regan and Laura Spann, both of the Colorado Water Conservation Board ("CWCB"), Kara Sobieski of the Wilson Water

Group, Michelle Krasnec of Abt Associates' Denver office, Krissy Baker of the USDA's Farm Service Agency, Kodi Johnson and Snow Staples of the Colorado Department of Local Affairs ("DOLA"), Colleen Hannon and Tiffany Brodersen of DOLA's Regional Grant Navigator Team, and Nickie McCann and Michelle de Leon of the Bureau of Reclamation. Also, as previously indicated, HDCD/LWDA applied for and received a Technical Assistance Grant from the CWCB.

d. Finally, the proposed project will benefit multiple stakeholders, including the Ute Mountain Ute Tribe, Montezuma County, the LWDA's downstream irrigators, and the diverse LWDA membership itself, which includes not only family farmers and ranchers, but also a bed & breakfast inn, a commercial orchard, two commercial vineyards, and the non-profit Montezuma Orchard Restoration Project.

H. *Nexus to Reclamation:*

a. There is a direct nexus between the proposed project and the Bureau of Reclamation's Dolores Project/McPhee Reservoir. The Dolores Project diverts an average of 203,000 acre-feet of water into the Montezuma Valley each year, of which over half (129,000 AF) is for the benefit of MVIC. See, FAQ - Dolores Water Conservancy District. As explained in greater detail above, the McElmo Canyon irrigators, including the LWDA's members, rely in part on return flows from those MVIC diversions for their irrigation water.

b. The LWDA's downstream neighbors, the Rock Creek Ditch, hold priority No. 1 on McElmo Creek, and have a contract with MVIC for the delivery of supplemental irrigation water from MVIC's Totten Reservoir storage facility, the source of which is Dolores Project/McPhee Reservoir diversions. Improved efficiency on the Ditch will inure to the benefit of the Rock Creek irrigators, lessening their need for supplemental deliveries from Totten Reservoir and diminishing the odds of a call on the river that would otherwise further disrupt the LWDA members' irrigation efforts. Stated differently, any efficiencies in the McElmo Canyon ecosystem benefit all water rights holders in the Canyon, and in the entire Montezuma Valley, relieving pressure on Totten Reservoir, relieving pressure on McPhee Reservoir, and increasing the flow of tailwater into the San Juan River and ultimately into the Colorado River at Lake Powell.

c. Lastly, the Ute Mountain Ute Tribe owns approximately ten percent (10%) of the water carried by the Ditch and to be serviced by the proposed project.

Performance Measures

See Evaluation Criterion A, above. In addition, LWDA proposes installing quantification measures of the type described in NOFO Appendix A once the 2024 irrigation season begins in mid-May. Specifically, LWDA will measure the flow rate of water flowing in and out of the Ditch. At least two tests, one early- and one late-season, will be performed, since seepage rates will vary during the irrigation season. LWDA will then compare pre-project and post-project test results to calculate actual water savings.

Miscellaneous

In accordance with NOFO Section 2.2.5, there are no known permits or other approvals required for this project.

In accordance with NOFO Section 2.2.6, there are no known overlaps or duplications of effort involved in this project.

In accordance with NOFO Section 2.2.7, there are no known conflicts of interest involved in this project.

Conclusion

HDCD/LWDA recognizes that there will be more sophisticated applicants for this Water and Energy Efficiency Grants Program, all with deeper pockets and more polished and technically comprehensive application packages. We, in contrast, are a small, rural conservation district with a single employee working in partnership with a cash-strapped ditch company managed by a volunteer board, both operating in an economically distressed county here in the desert Southwest. So please forgive the handmade quality of our submission, because we wrote it ourselves using the limited resources at our disposal.

Our needs, however, are no less urgent – indeed, are significantly more urgent – than those of the municipalities and large irrigation districts against which we're vying. Situated as we are between the Bureau's Dolores Project/McPhee Reservoir and drought-stricken Lake Powell, and with a membership that includes the Ute Mountain Ute Tribe, any resources that will help us conserve and use our irrigation water more efficiently in this challenging environment while addressing the other critical challenges described herein are desperately needed and will be greatly appreciated.

With sincere thanks for your consideration,

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Manager, HDCD

Lower Wilson Ditch Association, LLC
P.O. Box 1073
Cortez, CO 81321

February 5, 2024

Bureau of Reclamation
U.S. Department of the Interior
1849 C Street NW
Washington DC 20240-0001

Re: WaterSMART Energy and Efficiency Grant Application

To Whom It May Concern:

This letter will confirm that the Lower Wilson Ditch Association, LLC is working in partnership with the High Desert Conservation District in connection with the above-referenced grant application (R24AS00052), agrees to the submittal and content of the said application, and intends to participate in the subject project by, *inter alia*, providing input, feedback, and other support for the project.

Respectfully submitted,

Charles J. Greaves
President, Lower Wilson Ditch Association, LLC

cc: Neva Connolly
Manager, High Desert Conservation District

Budget Narrative

The board of managers of the Lower Wilson Ditch Association, LLC ("LWDA") has consulted with Plummer Associates, Inc.'s Durango office on the preliminary design of the pipeline project. Plummer Associates will provide us with a complete system design that is both efficient and reliable. Industry standard engineering fees on a project this size average 5% to 10% of project cost. Plummer Associates have quoted $264,000.00 for their services, well within that range.

A surveying firm will be engaged to assist with the efficient design of the project. Price analysis finds average fees for surveying in the Four Corners region for a team of two @ $180.00 per hour. Assumed time to survey this site is 2.5 weeks, 40 hours per week, for a total of 100 hours. As such, we've budgeted a total surveying fee of $18,000.00.

Geotechnical engineers will work with the chief engineer of the project with respect to soil and rock mechanics. Eleven bores are assumed, one per 1000 feet of existing ditch line, plus one bilateral road bore for a total estimated expense of $27,500.00.

An LWDA member will act as the project manager/site supervisor and will be responsible for the daily direction of the project. Compensation for these duties is assumed to be $45.00 per hour, 40 hours per week for 16 weeks, for a total of $28,800.00. The manager/supervisor will file a weekly progress report to the LWDA board of managers.

Site work on the 1.6 miles of open ditch for pipe and structure installation consists of removing all vegetation, leveling the existing ditch, gravel bedding, pipe installation and connection, backfilling, and compaction. Our current ditch has been in use for over 130 years. We have some areas of solid rock, some trees, and substantial vegetation to deal with, and want to do so in an environmentally friendly way. This will require several types of heavy and light equipment with tight access. Equipment includes Bobcats E88, E50, T590, and T320, a Yanmar C50r, a John Deere 160G excavator, and a Terramac RT79 crawler carrier. Equipment costs run $90.00 to $210.00 per hour, labor $30.00 to $70.00 per hour, and material $70.00 to $75.00 per yard.

Demolition of concrete structures is required in two locations on the existing ditch; one of reasonable access and the other less so. This will require an excavator with rock hammer, loader, and a crawler carrier. If possible, the concrete will be recycled.

Construction includes all material, labor, and equipment required for completion of the project. We have 4 concrete control structures: an inlet, Point Sluice for flushing, Hi-Low Split where we divert to upper and lower ditch, and an outlet. Access is challenging in all locations. Concrete, for example, will have to be pumped from 100 to 400 feet. There are:
8,750 linear feet of SDR51 80 psi PVC GJ PIP pipe:
8,450' of 24" @ $79.72 per foot.

300’ of 30” @ $99.55 per foot.
PVC pipe elbows, 102 @ $1,945.00 ea.
6 air valve assemblies @ $3,750.00 ea.
Bedding and backfill materials, 4,170 Cu. Yds. @ $75.00 per yd.
Concrete pumping $24,000.00.
Misc. steel grates and covers $14,500.00.
Equipment and labor to install $990,950.00.

Miscellaneous
Course of construction insurance, $2,000.00
Mobilization and demobilization, $30,000.00. Several pieces and types of equipment are required.
Road bore under 60 linear ft. of county road for a 24” pipe, $47,000.00.
Traffic control will be needed for road bore and concrete pumping, $12,640.00.
Site base and storage, prepare and operate a flat site for operations and storage of materials, $15,000.00
Hydro seeding upon completion (native seed), 15 acres, $56,250.00.

The total project cost, as detailed in the accompanying Form SF-424C and Technical Proposal, is estimated to be $3,358,032.47.

Environmental and Cultural Resources Compliance

As noted in the accompanying Technical Proposal, because the proposed pipeline will be situated in the existing Ditch and ditch right-of-way, environmental and/or cultural impacts will be virtually nil. That said, and with reference to the Section H questions in the NOFO:

a. The proposed project will **positively** affect the surrounding environment by (a) conserving water and returning more tail water to McElmo Creek for the benefit of the McElmo Canyon riparian habitat and for the larger benefit of the San Juan and Colorado Rivers, and (b) combatting the proliferation of invasive species (Tamarisk, Russian Olive) along the current open ditch. That said, a certain amount of grading will be required within the Ditch as a prelude to gravel bedding, pipe installation, and backfill/compaction. Fill material will need to be stored in a clearing adjacent to the right-of-way (immediately south and west of the "Point Sluice" on the interactive map embedded in the Technical Proposal), but since that location was previously cleared and flattened by Montezuma County's installation of a new culvert under Road G in 2022, environmental impacts will again be negligible.

b. There are no endangered or threatened species within the actual project area, which is predominantly steep hillside dotted with pinon and juniper trees. We are aware, however, that McElmo Creek further west of the project area hosts a population of endangered Southwest Willow Flycatchers whose habitat can only be improved by the water savings to be realized by this piping project.

c. There are no wetlands or other surface waters within the project area.

d. The open Ditch is known to have existed in its current location since around 1904.

e. The project contemplates demolishing the present gravity sluice structure, which allows water from the Ditch to be diverted back into McElmo Creek, and moving that structure eastward to the mouth of the new proposed pipeline. Similarly, the present "High-Low" distribution box structure will be demolished and replaced at its current location. The date on which these two structures were first constructed is unknown, but was many decades ago.

f. No buildings, structures, or features along the Ditch right-of-way are listed or eligible for listing on the National Register of Historic Places.

g. There are no known archeological sites within the proposed project area.

h. The proposed project will have no adverse effect on any communities with environmental justice concerns. To the contrary, the Ute Mountain Ute Tribe, as a

member of LWDA holding approximately 10% of the water rights serviced by the Ditch, will benefit from the project in the same manner and for the same reasons, described above, as will all LWDA members.

i. The proposed project will not limit access to, or ceremonial use of, any Native sacred sites, nor result in other negative impacts on Tribal lands.

j. The proposed project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area. To the contrary, by replacing the open ditch with an enclosed pipeline, the proposed project will slow or prevent the introduction of non-native species such as Tamarisk and Russian Olive that currently populate the Ditch right-of-way.