Water and Energy Efficiency Projects in the Deschutes Basin: Conserving Water Through Piping and Improved Monitoring and Measurement

Proposal submitted by:

Deschutes River Conservancy

in partnership with:

Central Oregon Irrigation District

North Unit Irrigation District

Arnold Irrigation District

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TECHNICAL PROPOSAL AND EVALUATION CRITERIA

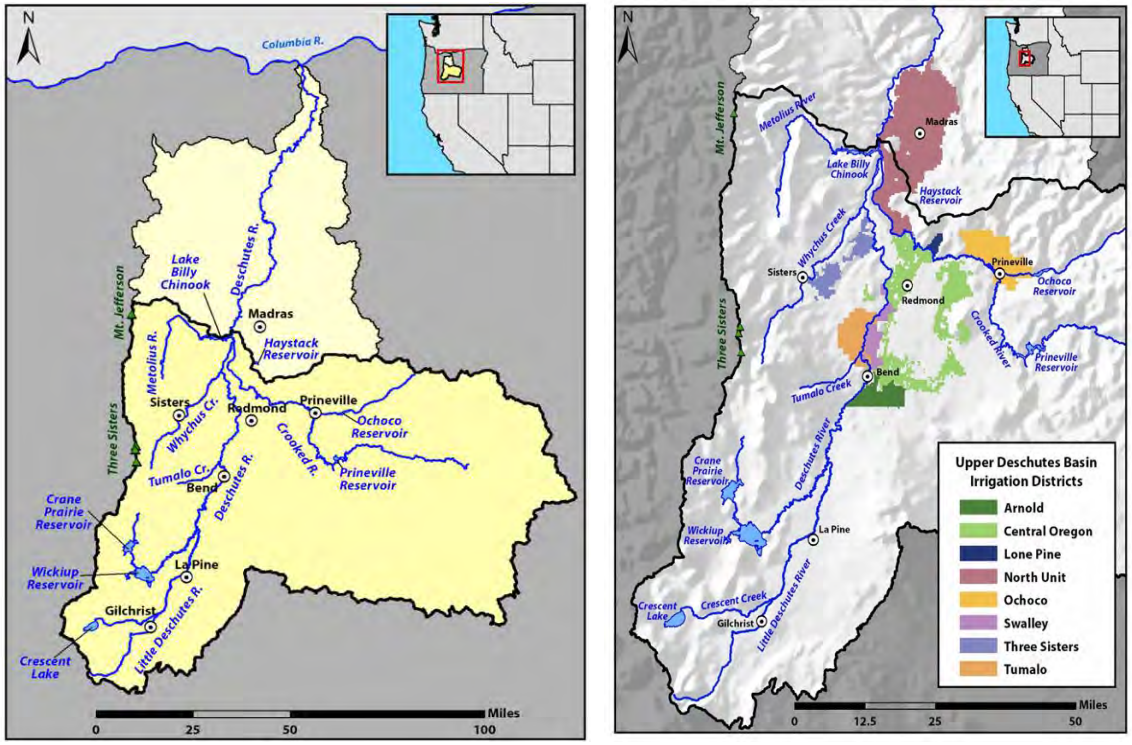
EXECUTIVE SUMMARY

The Deschutes River Conservancy (DRC), a 501(c)(3) non-profit organization and Category B applicant, in partnership with Central Oregon, North Unit, and Arnold irrigation districts, seeks WaterSMART Water and Energy Efficiency Project funds to facilitate canal piping and water delivery measurement and monitoring. Central Oregon is currently in a drought of historical significance. The extraordinarily low precipitation levels, coupled with record-setting heat waves, and compounded by several years of drought prior to this, have resulted in devastation to the agricultural communities, critical impacts to fish and wildlife throughout the basin, including several listed under the Endangered Species Act, declining regional groundwater levels, and increased uncertainty for municipalities trying to secure future drinking water supplies. Various collaborative planning efforts have been undertaken within the Basin for many years, culminating most recently in the completion of a Reclamation-funded Upper Deschutes River Basin Study (Basin Study) and the Upper Deschutes Basin Habitat Conservation Plan signed in 2020. Additional collaboration is on-going, including through the recently formed Deschutes Basin Water Collaborative. Additionally, Central Oregon Irrigation District (COID) and DRC are in the third and final year of developing a water marketing strategy through a Reclamation WaterSmart grant. This proposal endeavors to build on these previous and ongoing efforts to facilitate on-the-ground, physical irrigation system improvements. Implementing these improvements has been identified as a critical path to increasing irrigation efficiency at the district level. In concert with these improvements, the districts and DRC have developed strong relationships with the Deschutes County Soil and Water Conservation District and the Natural Resources Conservation Service (NRCS) to implement on-farm efficiency improvements. Piping of district canals, installing SCADA throughout the canal system, and facilitating on-farm projects are all strategies that are supported by the Basin Study as well as effective drought actions identified in COID and North Unit Irrigation Districts' Water Management Conservation Plans. The Deschutes Basin Board of Control (DBBC) and DRC received approval from Reclamation for funding a Drought Resiliency Project to establish and operate a water bank, particularly to address drought impacts in Central Oregon. This water bank requires enhanced metering and monitoring of water diversions, the ability to better forecast climate conditions and drought impacts on reservoir and river levels, and a strategy to tie these forecasts to needed responses. The bank will optimize transactions during drought years to facilitate the voluntary reallocation of water on an adaptive basis. The projects detailed in this proposal will work in concert with the needs and goals of the water bank, capitalizing on this water conservation and improved management. It is particularly notable that a significant portion of the water diverted through irrigation canals in central Oregon currently seeps into the area's porous, volcanic soil prior to reaching farms. Through improving aging irrigation infrastructure, we have an opportunity to support and maintain existing agricultural land use through enhanced water

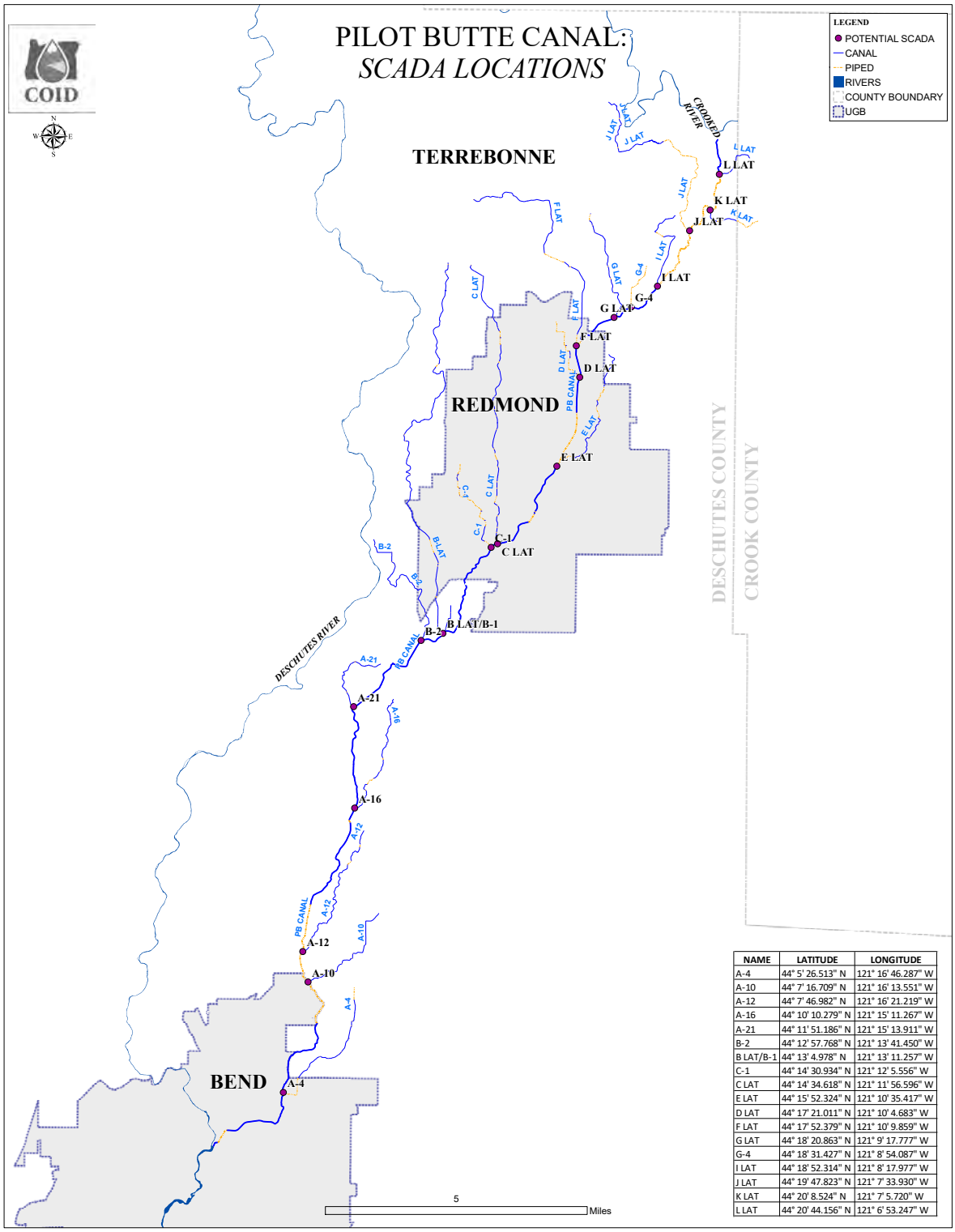
supply reliability, provide financial stability to irrigation districts in the Deschutes Basin, enhance aquatic species habitat, and reduce public safety risks. The project area for this proposal includes Reclamation's Deschutes Project, ties directly to improving operations in Wickiup Reservoir and North Unit Irrigation District, Reclamation facilities, and will support goals associated with the ESA-listed Oregon spotted frog Habitat Conservation Plan agreements and Section 7 consultations. This proposal is being submitted in the Funding Group III, allowing for a 3-year timeframe to complete the projects. Implementation is proposed to initiate on July 1, 2023 and be completed by June 30, 2026.

PROJECT LOCATION

The overall Project location is the Deschutes Basin of Central Oregon (HUC 10 number: 1707030511). The maps below show the basin within the region, the boundaries of the entire Deschutes, as well as the Upper Deschutes River, and the eight Irrigation Districts within the Basin.

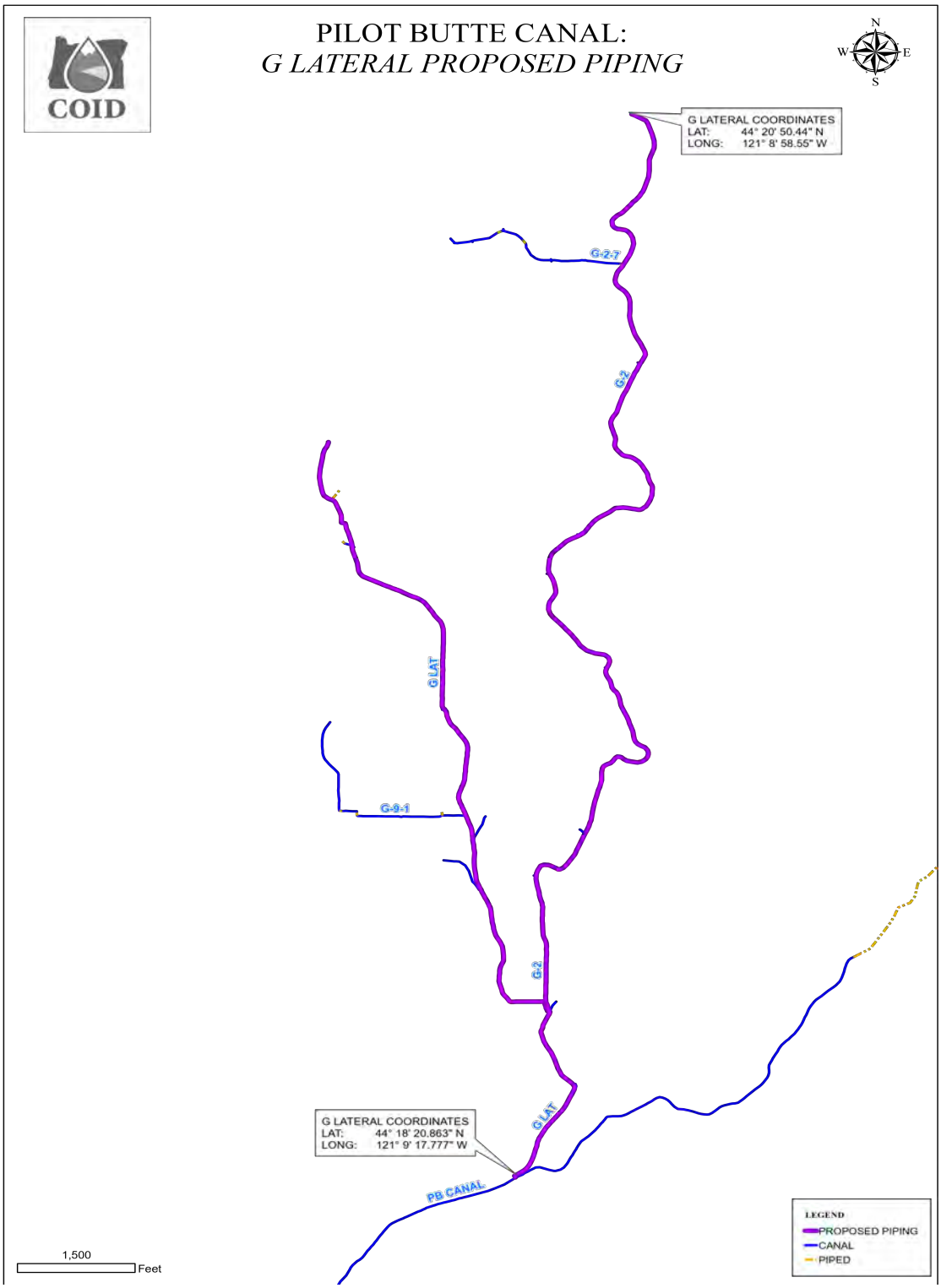


The Central Oregon Irrigation District potential SCADA locations and canals/laterals are identified in the image below.

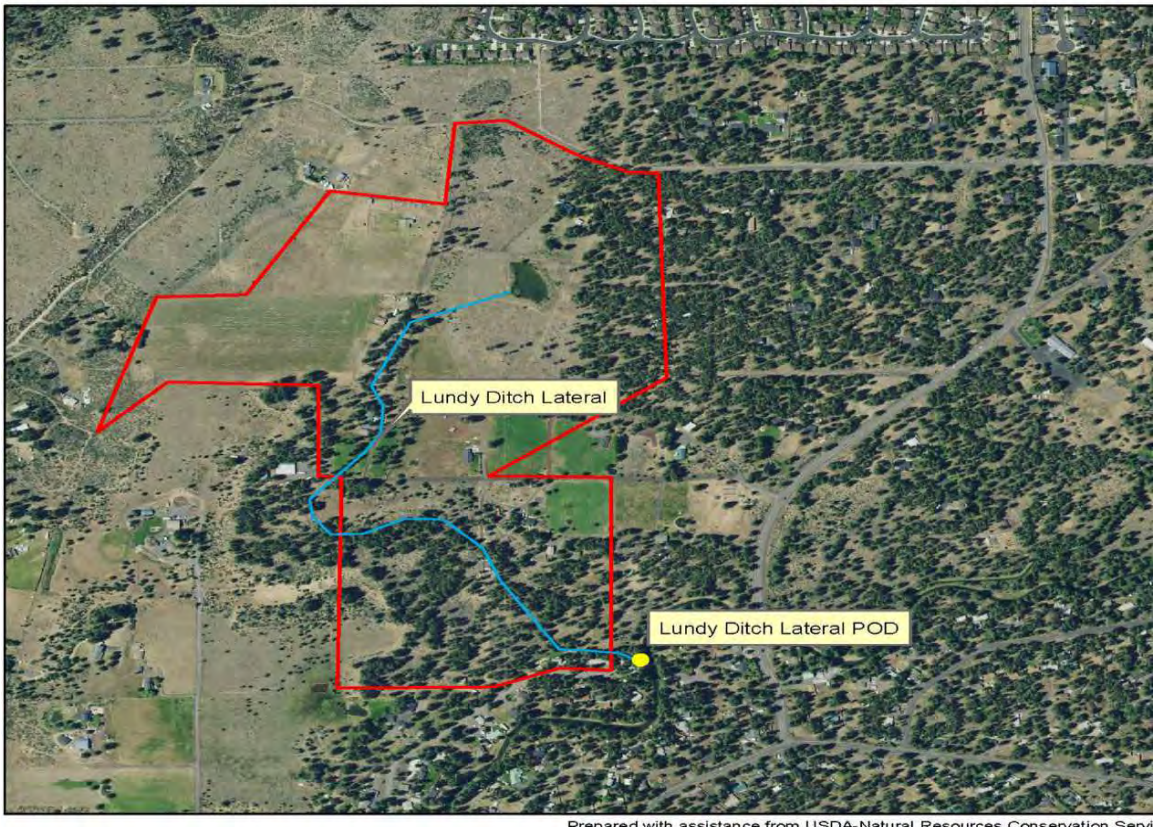


NAME	LATITUDE	LONGITUDE
A-4	44° 5' 26.513" N	121° 16' 46.287" W
A-10	44° 7' 16.709" N	121° 16' 13.551" W
A-12	44° 7' 46.982" N	121° 16' 21.219" W
A-16	44° 10' 10.279" N	121° 15' 11.267" W
A-21	44° 11' 51.186" N	121° 15' 13.911" W
B-2	44° 12' 57.768" N	121° 13' 41.450" W
B LAT/B-1	44° 13' 4.978" N	121° 13' 11.257" W
C-1	44° 14' 30.934" N	121° 12' 5.556" W
C LAT	44° 14' 34.618" N	121° 11' 56.596" W
E LAT	44° 15' 52.324" N	121° 10' 35.417" W
D LAT	44° 17' 21.011" N	121° 10' 4.683" W
F LAT	44° 17' 52.379" N	121° 10' 9.859" W
G LAT	44° 18' 20.863" N	121° 9' 17.777" W
G-4	44° 18' 31.427" N	121° 8' 54.087" W
I LAT	44° 18' 52.314" N	121° 8' 17.977" W
J LAT	44° 19' 47.823" N	121° 7' 33.930" W
K LAT	44° 20' 8.524" N	121° 7' 5.720" W
L LAT	44° 20' 44.156" N	121° 6' 53.247" W

Below is a closer view of the G-lateral, and the portions of this canal we are seeking the funding to pipe:



The following aerial image shows the Lundy ditch, a private lateral proposed for piping through this funding request:



TECHNICAL PROJECT DESCRIPTION

Water Conservation projects often result in quantifiable and sustained water savings and/or improved water management. The suite of projects included in this proposal will achieve those goals, as well as protect water quality, improve public safety, reduce operation and maintenance costs, and reduce energy costs to individual water users and farms. This water savings and improved management will not only benefit a river basin that is "water-short" on an average year but will build upon on-going measures underway to increase resiliency to existing and future drought conditions. Coupling this funding opportunity with a WaterSMART Drought Resiliency grant awarded to DRC in 2022 for the development of a Central Oregon Water Bank, will assist in increasing the accuracy of measurement and forecasting of climate, river flow, and reservoir conditions; reliable and accurate access to the quantity of water supplies available for transfer, leading to a more automated and efficient canal management system; and provide significant and measurable water savings through piping of irrigation (lateral) canals. This project emphasizes proactive resource management to ensure water availability, thus enabling Central Oregon's drought-prone basin, farms, and communities to become more effective water managers through replacing reactive and expensive short-term assistance measures with a

framework for long-term efficiency and drought resilience. The increase in real-time monitoring as well as more accurate measurements of irrigation canal distributions will be possible via the proposed improved data collection and automation with the installation of Supervisory Control and Data Acquisition (SCADA) systems at various locations throughout COID, as well as metering of distributions at turnouts from the laterals of the piped canals. Currently SCADA is deployed in the Three Sisters and North Unit Irrigation Districts in this basin, and has proven effective in regulating the flow distribution, resulting in increased efficiency and conservation. Metering has been and is currently being installed at patron turnouts to better record and manage deliveries. Incorporating this collection of data into a web-based decision support platform ("Dashboard") funded through the Drought Resiliency grant will provide districts, municipalities, and those managing ecological flows for the river and listed species, with the best and most accurate water resources data related to irrigation, in the Deschutes Basin.

Previous studies in the Deschutes Basin assessing projected water supplies and demands through 2050 indicate an overall 230,000 acre-feet unmet annual average demand, including agricultural, instream flow, and groundwater (municipal) needs. Stakeholders completed a comprehensive Basin Study in 2018, funded in part by the Reclamation, evaluating strategies to reduce this gap, including improving irrigation district efficiencies, water transactions, storage optimization, and legal/policy pathways to facilitate the movement of water between users and uses. Additionally, in December 2020, the completion of the Habitat Conservation Plan (HCP), developed by the Deschutes Basin Board of Control (DBBC) and the City of Prineville, in partnership with the US Fish and Wildlife Service and National Marine Fisheries Services, identified an accelerated need to restore flows in the Upper Deschutes River, addressing habitat issues for the ESA-listed Oregon spotted frog, as well as additional measures to support listed Mid-Columbia steelhead in the Crooked River and Whychus Creek. The 2018 Basin Study report also identified a significant water savings opportunity through establishing modeling efforts for current conditions and forecasting, developing drought year alternatives, and calibrating with real-time data through existing and enhanced metering and data collection.

Building off these studies and previous efforts, DRC endeavors to capitalize on this Water and Energy Efficiency Grant funding opportunity to expand water conservation and measurement/management efforts in multiple irrigation districts, directly addressing current inefficiencies. The proposed delivery system improvements within this proposal, which will complement on-farm enhancements supported by the Natural Resources Conservation Service, and others, will make a significant impact on water savings, management, and increase long-term drought resiliency.

EVALUATION CRITERIA

E.1.1. Evaluation Criterion A—Quantifiable Water Savings (28 points)

All applicants should be sure to:

1) Describe the amount of estimated water savings. For projects that conserve water, please state the estimated amount of water expected to be conserved (in acre-feet per year) as a direct result of this project.

Per loss estimates (based on field measurements) by Central Oregon Irrigation District (COID) staff, the proposed G-Lateral piping efforts will save or conserve 6.74 acre-feet/day (3.4 cfs) or 1348 AF/yr (given a 200-day irrigation season).

Per the Oregon Water Resources Department (OWRD), Deschutes Soil and Water Conservation District (DSWCD), and Arnold Irrigation District (AID), the transmission loss estimate for the Lundy ditch (private lateral) are 74%. This loss estimate translates to approximately 1 acre-foot/day (0.5 cfs) or 200 AF/yr (given a 200-day irrigation season).

2) Describe current losses: Please explain where the water that will be conserved is currently going and how it is being used. Consider the following:

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

As water flows through the Lundy Ditch and G Lateral, current losses are predominately occurring through seepage into the ground.

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

Current losses are entering groundwater. Groundwater impairment (degraded water quality) is not an issue in the vicinity of this piping project.

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

No. No benefits are associated with this water loss. The water is entering the groundwater system and potentially being discharged to the Deschutes River at or below Lake Billy Chinook, in a reach of river that is not lacking adequate streamflow.

3) Describe the support/documentation of estimated water savings: Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations. Note: projects that do not provide sufficient supporting detail/calculations may not receive credit under this section. Please be sure to consider the questions associated with your project type (listed below) when determining the estimated water savings, along with the necessary support needed for a full review of your proposal.

COID completed a loss study in July of 2022, which measured the total water losses in two unlined sub-laterals (G Lateral and G-2) seen in the map above. These water losses include seepage, evaporation, evapotranspiration loss from phreatophytes, and all other water losses.

The COID study used an inflow/outflow method. The study included three Cipolletti weir blades at the start of each lateral and subtracted the other turnout volumes stemming from each lateral. The unaccounted water remaining is reported as the cumulative volumetric loss rate, totaling 3.4 cubic feet per second (cfs). The 3.4 cfs is the average loss taken over the three separate weir measurements.

Additionally, the seepage losses were calculated using a modeling approach. The COID study provided volumetric seepage losses (cfs units), and the hydrological model assumed a linear seepage rate of 1.3 feet/day. To validate the hydrologic model's linear rate using the COID study's volume, The Freshwater Trust (TFT) staff calculated the volumetric seepage loss of the two laterals by multiplying the linear seepage rate of 1.3 by the lengths and widths of the two sub-laterals.

TFT extracted GIS lengths of the two sub-laterals from the *riversCrossSectionIntersectionJoin* shapefile included in the BOR HEC-RAS model results. The shapefile contained section length and width in feet and velocity in cubic feet per second (cfs). TFT multiplied these lengths and widths by the linear seepage rate 1.3 ft/day, then summed all segment values together to get seepage loss expressed in cubic feet/day. Finally, the loss per day value was divided by 86,400 seconds/day to convert the value to cfs.

The result of the model's calculation described above produced 3.3 cfs loss. Compared to the COID loss study measured result of 3.4 cfs, the team considers the modeled loss rate validated, at least for this section.

To establish the transmission losses from the Lundy Ditch in AID, OWRD also utilized the inflow/outflow methodology. OWRD staff measured discharge at two locations utilizing a flow meter. As mentioned above, the loss measurements/calculations resulting in a >70% loss rate, or 0.5 cfs. Data sheets from these field exercises are available.

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

A. Canal Lining/Piping: Canal lining/piping projects can provide water savings when irrigation delivery systems experience significant losses due to canal seepage. Applicants proposing lining/piping projects should address:

1. How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.

Estimated average annual water savings is based on the results of the seepage loss calculations, and in the case of the G Lateral, validated by modeled calculations, as described above. Knowledge based on prior experience and measurement demonstrates that the installation of pipe along these canals will eliminate this seepage loss. Therefore, the water savings associated with the projects on the G Lateral and Lundy Ditch will equal the current losses calculated from field measurements, as described above. These two projects will result in approximately 7.74 acre-feet/day (3.9 cfs) of water savings.

2. How have average annual canal seepage losses been determined? Have ponding and/or inflow/outflow tests been conducted to determine seepage rates under varying conditions? If so, please provide detailed descriptions of testing methods and all results. If not, please provide an explanation of the method(s) used to calculate seepage losses. All estimates should be supported with multiple sets of data/measurements from representative sections of canals.

Inflow/outflow methodology was utilized for both the G Lateral and Lundy Ditch seepage loss measurements. Additionally, these losses were modeled, and the results were nearly identical to the measured amounts.

3. What are the expected post-project seepage/leakage losses and how were these estimates determined (e.g., can data specific to the type of material being used in the project be provided)?

For the reach of the G-Lateral canal and the Lundy ditch that will be piped, the seepage loss will be reduced to a negligible amount. The type of piping material being utilized is likely HDPE for larger diameter and possibly PVC for smaller diameter.

4. What are the anticipated annual transit loss reductions in terms of acre-feet per mile for the overall project and for each section of canal included in the project?

Minimal, approaching zero.

5. How will actual canal loss seepage reductions be verified?

Measurements will be taken at the inflow and outflow of the piped sections to verify the reduction in seepage losses. More details are provided on the verification of project results in Performance Measures.

6. Include a detailed description of the materials being used.

Materials for piping include: HDPE for larger pipe and PVC for smaller diameter pipe.

<u>As per the System Improvement Plan (SIP):</u>

Pipe material selections were made by Kevin L. Crew, P.E., based upon 29 years of experience with a full range of pipe diameters and piping systems including 20 years of experience in Central Oregon. From the hydraulic model, both static and dynamic pressures were evaluated throughout the system to select appropriate pipe material options. For District tertiary system piping, high density polyethylene was selected due to its outstanding abrasion resistance, longevity, and ability to be pulled into canal curve alignments. Costs for each of these material options were obtained from large, reputable vendors that are active in bidding on Central Oregon projects.

Valves for pressure reducing stations were technically assessed and narrowed down to plunger valves and Cla-Val valves. Both use internal energy dissipation within the valve to accomplish the needed pressure-sustaining function downstream of the valves. Cla-Val valves use a control tubing and a diaphragm/bonnet arrangement to adjust pressures within the pressure reducing apparatus. No power is necessary for the operation of a Cla-Val. For the purposes of this study, Cla-Val E-90-01 pressure reducing valves were assumed.

B. Irrigation Flow Measurement: Irrigation flow measurement improvements can provide water savings when improved measurement accuracy results in reduced spills and over-deliveries to irrigators. Applicants proposing municipal metering projects should address:

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

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

For COID: There is currently only one spill point on G Lateral, and it is labeled as "Snake Pit Spill." Over the three days the seepage loss measurements were taken, the Snake Pit Spill amount varied from 0.75 AF to 2.2 AF. This number can vary substantially; day-to-day and even an hour-to-hour measurement vary due to a variety of factors including diurnal variances, varying evapotranspiration losses due to localized weather events, ability of patrons to turn on or shut off, and the ditch rider's ability to accurately adjust the head of the lateral to account for the extra water at the spill approximately 2.2 miles away.

The G-2 Sub-lateral does not have a spill point, but it is designed to send any excess water to the last rotation at the tail of the system. This leads to a feast or famine scenario, where they either have too much or too little water. A completely piped G-Lateral and G-2 Sub Lateral would eliminate any variances in flows and thus allow zero loss within those laterals.

The Lundy Ditch in AID does not have a spill, as it is a rotation scenario on a private lateral. Operational losses are limited to the transmission loss as water moves through the current canal. Piping and metering the turnouts would prevent this loss and any losses associated with having to deliver excess water on the rotation.

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

All main diversion points for laterals have a cipolletti weir blade installed at the head of the lateral. According to the "Water Measurement Manual" issued by the Bureau of Reclamation there is a +-5% accuracy variance associated with cipolletti weir blades. There are no data loggers installed at these sites, so a point in time measurement is all that can be measured.

With the installation of the SCADA enabled measurement devices, it is the goal to have on-going data collection, which can better inform flow management and distribution decision making.

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

For the purposes of improving accessibility of flow data within the canals, as well as providing the opportunity to control flows through automation, DRC is proposing to install Supervisory Control and Data Acquisition (SCADA) devices on up to 10 locations along the Pilot Butte Canal. This is one of two main canals within the district, and the one that serves the G Lateral. Additionally, when the G Lateral and Lundy ditch are piped, as proposed by this application, each turn out will be metered to allow the district to measure all deliveries.

Specifications on the meters:

Manufacturer: Seametrics

Model: AG3000 or AG3000r

Accuracy: ±0.75% of reading on AG3000p and AG3000r (±1.0% AG3000), ±0.025% of full-scale flow from low flow cutoff to maximum flow rate of 10 m/sec.

These meters would allow for a tighter tolerance on the accuracy of measurements with data logging capacity. Better information about how much water is used cumulatively per lateral and the associated acres or water right per lateral, would help prioritize future piping projects and better inform the management of the Central Oregon Water Bank.

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

The amount of "carry water" needed to deliver the water right to the patrons will be reduced based off the loss study completed. In COID, once the G Lateral and G-2 Sub-lateral are piped all patrons will have an increase in pressure as the main Pilot Butte Canal (PBC) is piped upstream. This would decrease the pumping cost for patrons using efficient pressurized irrigation systems, hence increasing the likelihood that they would convert from a flood irrigation system. Piping the laterals would also decrease the amount of time it takes the water to reach the farms and allow each landowner to turn their water on or off based on their system needs. While COID is not planning on reduction of delivery volumes at this time, the ability of landowners to manage their deliveries would lead to additional water savings beyond the carry water that will be saved from piping the laterals.

This is the same scenario in AID on the Lundy Ditch, as 0.5 cfs has been calculated as the transmission loss, and this amount (at a minimum) would be saved by delivering water to the patrons in a piped system. Potential for additional water savings is present, for the same reasons described above.

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

COID G Lateral: Water savings will be verified at the completion of the project based off max seasonal diversions totalized minus the new seasonal use logged by the new Seametrics mag-meter at the head of G Lateral.

AID Lundy Ditch: Water savings will be calculated based on the deliveries to the ditch and use logged by meters installed at ditch.

C. Smart Irrigation Controllers, Controllers with Rain Sensor Shutoff, Drip Irrigation, and High-Efficiency Nozzles:

N/A

E.1.2. Evaluation Criterion B—Renewable Energy (20 points)

For projects that include constructing or installing renewable energy components, please respond to Subcriterion No. B.1: *Implementing Renewable Energy Projects Related to Water Management and Delivery*. If the project does not implement a renewable energy project but will increase energy efficiency, please respond to Subcriterion No. B.2. *Increasing Energy Efficiency in Water Management*. If the project has separate components that will result in both

implementing a renewable energy project and increasing energy efficiency, an applicant may respond to both.

E.1.2.1.Subcriterion No.B.1: Implementing Renewable Energy Projects Related to Water Management and Delivery

Describe the amount of energy capacity. For projects that implement renewable energy systems, state the estimated amount of capacity (in kilowatts) of the system. Please provide sufficient detail supporting the stated estimate, including all calculations in support of the estimate.

Describe the amount of energy generated. For projects that implement renewable energy systems, state the estimated amount of energy that the system will generate (in kilowatt hours per year). Please provide sufficient detail supporting the stated estimate, including all calculations in support of the estimate. Please explain how the power generated as a result of this project will be used, including any existing or planned agreements and infrastructure.

Describe the status of a mothballed hydropower plant. For projects that are brining mothballed hydropower capacity back online, please describe the following:

•Clearly describe the work that will be accomplished through the WaterSMART Grant. Note: normal OM&R activities are not eligible for funding. The work being proposed must be an investment.

•Provide information about the capacity (in kilowatts) of the existing hydro system and the expected capacity once it is brough back on-line.

•Provide information about the duration that the hydro system has been offline and the reasons why it has been mothballed. Please include any regulatory reporting or filings (e.g., FERC filings) or other documentation regarding the system.

Describe any other benefits of the renewable energy project. Please describe and provide sufficient detail on any additional benefits expected to result from the renewable energy project, including:

•How the system will combat/offset the impacts of climate change, including an expected reduction in greenhouse gas emissions

•Expected environmental benefits of the renewable energy system

•Any expected reduction in the use of energy currently supplied through a Reclamation project.

•Anticipated benefits to other sectors/entities.

•Expected water needs, if any, of the system.

AND/OR

E.1.2.2. Subcriterion No.B.2: Increasing Energy Efficiency in Water Management

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

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

While this project does not in and of itself conserve or generate energy, it is integral to a COID-wide plan that opens up both energy conservation and generating opportunities. On the conservation side, it installs the piped systems that will create opportunities for the associated 916 acres of on-farm users (within the G-Lateral service area) to connect to the system and access pressurized water as the district continues to pipe. This would allow patrons to eliminate existing pumps. In addition, the proposed COID piping project is part of a larger effort to pipe all or large portions of the district to create a piped and pressurized system. COID currently has about 40,000 MWh/year of renewable energy hydropower capacity. Additional in-conduit hydropower opportunities associated with planned piping projects increase this to 63,500 MWh/year.

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

Future energy conservation and generation opportunities that this project helps to facilitate will reduce electricity usage associated with the traditional grid, including coal-fired power plants which contribute to climate change.

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

Water users who choose to take advantage of piped and pressurized water that this project helps to facilitate would be able to eliminate pumps. Exact estimates are not available, but individual pumps serving some portion of 916 acres could be eliminated.

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

The energy savings detailed above are both specific to the project service area (for the G Lateral) and speak to the larger, point of diversion, COID service area.

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

N/A

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

Allowing for data to be accessible on canal/lateral flow status, as well as having significant sections of the G Lateral and the Lundy Ditch piped will decrease the level of effort required by ditch riders to assess these facilities and maintain the open ditches. This will result in reduced miles driven, reduced need for heavy equipment, and associated greenhouse gas emissions.

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

The installation of SCADA facilities within the COID Pilot Butte Canal service area (as shown on the map in the Project Area section) would each include solar panels for the power source.

E.1.3. Evaluation Criterion C—Sustainability Benefits (20 points)

Enhancing drought resiliency. In addition to the separate WaterSMART Environmental Water Resources Projects NOFO, this NOFO places a priority on projects that enhance drought resiliency, through this section and other sections above, consistent with the SECURE Water Act. Please provide information regarding how the project will enhance drought resilience by benefitting the water supply and ecosystem, including the following:

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

The proposed piping projects, as well as improved measurement and metering of water deliveries allows for more efficient irrigation diversions and conservation of water. This conserved water allows for increased ecological resiliency, as the excess water will remain instream. This is achieved through either: 1) the conserved flow being released from Wickiup Reservoir in the winter, supplementing flows in the Upper Deschutes River during a critical time for ESA-listed species (as per the HCP), or 2) the water being left instream in the summer, benefiting flows in the Middle Deschutes. Increased summer flows in the Middle Deschutes aid in maintaining cooler temperatures for sensitive fish species.

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

Reduced water diverted from the river during the summer months will allow for more live flow (particularly in the Middle reach of the Deschutes River) and result in lower water temperatures during this critical period.

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

Yes, the projects proposed in this grant will benefit the Oregon spotted frog, which is listed as Threatened under the Endangered Species Act (ESA), and native redband trout. Habitat for these species has been adversely affected by Wickiup Dam and Reservoir, a Reclamation facility.

Water is stored in Wickiup Reservoir in the winter months and released in the spring, summer, and early fall to serve North Unit Irrigation District (NUID) during the irrigation season, drastically altering the hydrology of the Upper Deschutes River and adversely affecting native redband trout and the Oregon spotted frog, an ESA-listed species.

Opportunities to restore flow in the Upper Deschutes River rely almost solely on NUID reducing its demand for stored water from Wickiup by increasing its access to more senior, live-flow rights from the Deschutes River. Central Oregon Irrigation District (COID) holds senior live-flow rights from the Deschutes (1900/1907), and the water conservation opportunity in COID is high. The projects included in this proposal will increase water conservation in COID, hence increasing the availability of live flow to NUID, in exchange for increased outflow from Wickiup Reservoir and flow restoration in the upper river.

In December 2020, the completion of the Deschutes Basin Habitat Conservation Plan (HCP), developed by the Deschutes Basin Board of Control (a board representing all eight irrigation districts in the Deschutes Basin) and the City of Prineville, in partnership with the US Fish and Wildlife Service and National Marine Fisheries Services, identified an accelerated need to restore flows in the Upper Deschutes River, addressing habitat issues for the ESA-listed Oregon spotted frog, as well as additional measures to support listed Mid-Columbia steelhead in the Crooked River and Whychus Creek. This resulted in aggressive streamflow restoration targets in the Upper Deschutes River that irrigation districts need to meet incrementally over the next 30 years

Water saved from this proposed project will be used to reduce COID diversions, improve water availability (live flow) to North Unit Irrigation District (NUID) in the irrigation season, and, in turn restore streamflow to the Upper Deschutes River in the winter months.

This project directly benefits and works in concert with Reclamation's Deschutes Project, including Section 7 ESA issues related to the Oregon spotted frog and the operation of Wickiup Reservoir.

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

Although the ESA-listed Oregon spotted frog is the focus of restoration efforts in the Upper Deschutes River, restoring the river to a more natural hydrograph will directly benefit the entire upper Deschutes ecosystem and all the species that depend on it. Therefore, this project will contribute to system-wide ecosystem benefits.

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

Yes, enabling better measurement and control of COID water supplies through the installation of SCADA will directly result in more efficient management of COID's diversion. Access to real-time data will provide greater flexibility to and more efficient use of water supplies for COID staff as they manage diversions on the Pilot Butte Canal.

Projects that are intended to improve streamflows or aquatic habit, and that are requesting $500,000 or more in Federal funding, must include information about plans to monitor the benefits of the project. Please describe the plan to monitor improved streamflows or aquatic habit 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.

Monitoring the effectiveness of the proposed piping, SCADA, and metering projects will be conducted post-installation and include: observing and analyzing the gage data in the Upper Deschutes (below Wickiup Reservoir) to determine if conserved water is being released in winter months (as per agreements between irrigation districts), maintaining and analyzing delivery data for metered turnouts on piped sections of district and private laterals, and inflow/outflow measurements on piped reaches of canals to verify reduction in seepage loss.

Monitoring is on-going for water quantity and quality, including gaging and temperature probes in the Upper and Middle Deschutes. This monitoring would continue and be evaluated to determine if the increased flows during seasonally sensitive times of year are benefitting aquatic habitat. These benefits can be achieved through temperature reductions in the summer and higher flows (cfs) in winter months, allowing species to access critical habitat. Specifically, populations and habitat are being continuously evaluated for redband trout and Oregon spotted frog.

Addressing a specific water and/or energy sustainability concern(s). Will the project address a specific sustainability concern? Please address the following:

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

  The recently completed the Upper Deschutes River Basin Study assessed current and future water supply and demand in the basin. The study identified that median shortages are approximately 130,000 acre-feet (AF), ranging up to 300,000 AF in dry years. To meet higher flows required for ESA needs under the Habitat Conservation Plan, median shortages are approximately 200,000 AF, and up to 400,000 AF in dry years.

  Central Oregon is currently in a drought of historical significance. The extraordinarily low precipitation levels, coupled with record-setting heat waves, and compounded by several years of drought prior to this, have resulted in devastation to the agricultural communities, critical impacts to fish and wildlife throughout the basin, including several listed under the Endangered Species Act, declining regional groundwater levels, and increased uncertainty for municipalities trying to secure future drinking water supplies.

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

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

  This proposal is not addressing energy sustainability outside of supporting a larger, district-wide, hydropower efforts, potentially reducing the amount of vehicle miles traveled to monitor flow measurements in COID's laterals where SCADA and telemetry would be installed and reducing the need for individual (patron-level) pumping once the water is piped and pressurized by the district.

Please address where any conserved water because of the project will go and how it will be used, including whether the conserved water will be used to offset ground water pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.

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

The water conserved from piping the G Lateral and improving monitoring and measurement on the Pilot Butte Canal will be used to reduce COID diversions, improve water availability to North Unit Irrigation District (NUID) in the irrigation season, and, in turn increase the amount of water left instream in the Upper Deschutes River in the winter months.

Flow alterations in the Upper Deschutes River are largely due to the storage and diversion of irrigation water in Wickiup Reservoir (200,000 AF), which stores water for NUID. Much of NUID's irrigated lands are engaged in economically productive agriculture, and, as the junior district in the basin (1913 priority date), irrigation practices in NUID are already highly efficient to utilize junior water rights as effectively as possible. Therefore, opportunities to restore flow in the Upper River rely almost solely on NUID reducing its demand for stored water from Wickiup by increasing its access to more senior, live-flow rights from the Deschutes River. COID holds senior live-flow rights from the Deschutes (1900/1907). COID a diversity of demographics and agricultural activity, and the water conservation opportunity in COID is high. The projects included in this proposal will increase water conservation in COID, hence increasing the availability of live flow to NUID, in exchange for increased outflow from Wickiup Reservoir and flow restoration in the upper river.

The water conserved from piping the Lundy Ditch in Arnold Irrigation District (AID) will be used to address shortages that are impacting the diversions and reducing deliveries. In the wake of the ongoing drought in Central Oregon, AID has been forced to ceases water deliveries as early as July. Water savings from piping will be used to help extend the irrigation season for AID patrons.

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

  Piping the G Lateral will result in saving 3.4 cfs, the installation of SCADA is expected to conserve additional water and piping the Lundy Ditch will result in 0.5 cfs. These water savings will be used as described above. In addition to the water savings anticipated that will be enabled by better monitoring and measurement of the water being diverted to the laterals from the Pilot Butte Canal, improved monitoring and measurement will also enable improved accounting that is necessary to implement the development of the Central Oregon Water Bank, which will allow water to be traded among users and delivered where it's most needed in the basin.

Other project benefits. Please provide a detailed explanation of the project benefits and their significance. These benefits may include, but are not limited to, the following:

1. Combating the Climate Crisis: E.O. 14008: "Tackling the Climate Crisis at Home and Abroad", focuses on increasing resilience to climate change and supporting climate-resilient development. For additional information on the impacts of climate change throughout the western United States, see: https://www.usbr.gov/climate/secure/docs/2021secure/2021SECUREReport.pdf.

Please describe how the project will address climate change, including:

- Please provide specific details and examples on how the project will address the impacts of climate change and help combat the climate crisis.

Amidst the ongoing drought and more limited water availability anticipated under future climate change scenarios, the projects in this proposal will help improve the resiliency of the irrigation districts (COID, NUID, and AID) and enable more efficient water management.

To help combat the climate crisis, the water conserved from piping the G Lateral and improving monitoring and measurement on the Pilot Butte Canal will be used to reduce COID diversions, improve water availability to NUID in the irrigation season, and, in turn increase the amount of water left instream in the Upper Deschutes River in the winter months.

The water conserved from piping the Lundy Ditch in AID will be used to address shortages that are impacting the district's diversions and reducing patron deliveries. In the wake of the climate crisis and ongoing drought in Central Oregon, in recent years, AID has been forced to cease water deliveries as early as July. Water savings from piping will be used to help extend the irrigation season for AID patrons.

- Does this proposed project strengthen water supply sustainability to increase resilience to climate change?

Yes. By decreasing transmission loss through canals by piping, these projects eliminate evapotranspiration and seepage losses that occur when water diverted for irrigation is moved through open canals. In this region, transmission losses are significant due to regional geology and the high-desert climate. Improved efficiency of transporting irrigation water to its point of use helps to sure up supplies available for agriculture. Allowing more water to reach the end user will result in less water needing to be diverted. Less water diverted results in more water left instream and/or less need for stored water. Central Oregon is currently experiencing extreme drought conditions – and has been for the past several years – reducing water inefficiencies are a significant goal in allowing this region and its water users to become more resilient to this and future drought.

- Will the proposed project establish and utilize a renewable energy source?

These projects will not establish a renewable energy source; however, the SCADA-controlled portions of the irrigation network will rely on solar power. These facilities will utilize this renewable energy source, allowing for installation in relatively remote locations, without other power sources.

- Will the project result in lower greenhouse gas emissions?

Given the reduced manpower required to manage the irrigation canal network once the SCADA-controlled facilities are in place, as well as the reduced manpower required to assess and maintain canals/ditches once they are piped, the associated reduction in carbon emissions from the work vehicles and maintenance equipment will lower greenhouse gas emissions.

Furthermore, piping the G Lateral will create opportunities for the associated on-farm users within that service area to connect to the system and access pressurized water as the district continues to pipe. This would allow patrons to eliminate existing on-farm pumps, resulting in a decrease in greenhouse gas emission.

Additionally, improved instream flow levels (resulting from less water diverted and increased releases from Wickiup Reservoir in the winter months) will enhance the riparian buffers and allow for more successful streamside vegetation restoration projects. This increased vegetation growth and related improvement in streamside soils and hyporheic exchanges, will sequester carbon beyond current levels.

2. Disadvantaged or Underserved Communities: E.O. 14008 and E.O. 13985 support environmental and economic justice by investing in underserved and disadvantaged communities and addressing the climate-related impacts to these communities, including impacts to public health, safety, and economic opportunities. Please describe how the project supports these Executive Orders, including:

a. Does the proposed project directly serve and/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, new renewable energy sources, or economic growth opportunities.

Yes.

b. If the proposed project is providing benefits to a disadvantaged community, provide sufficient information to demonstrate that the community meets the disadvantaged community definition in Section 1015 of the Cooperative Watershed Act, which is 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, or the applicable state criteria for determining disadvantaged status.

Jefferson County, the county encompassing NUID, meets applicable state criteria or meets the definition in Section 1015 of the Cooperative Watershed Act (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), with $53,277 in median family income vs. $62,818 statewide. Source: https://www.census.gov/quickfacts/fact/table/deschutescountyoregon,jeffersoncountyoregon,OR/PST045219

c. 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.

Improvements and increased reliability to water supplies for the predominantly agricultural communities, such as those within Jefferson County, will benefit the residents, laborers, and businesses that rely on the agricultural economy. Jefferson County has a significantly higher percentage of the Hispanic and Native American population than the rest of Central Oregon or than the State of Oregon at large. Specifically, Jefferson County is 19.9% Hispanic/Latino and 18.3% Native American. This compared to 8.3% and 1.1% respectively for Deschutes County, or 13.4% and 1.8% respectively for the state. Source: https://www.census.gov/quickfacts/fact/table/deschutescountyoregon,jeffersoncountyoregon,OR/PST045219

3. 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. Please address the following, if applicable:

a. Does the proposed project directly serve and/or benefit a Tribe? Will the project increase water supply sustainability for an Indian Tribe? Will the project provide renewable energy for an Indian Tribe?

Yes. See question below for more details regarding positive impacts to Tribes in the basin.

b. Does the proposed project directly support tribal resilience to climate change and drought impacts or provide other Tribal benefits such as improved public health and safety through water quality improvements, new water supplies, or economic growth opportunities?

Yes. The Confederated Tribes of Warm Springs have been experiencing an on-going drinking water crisis. A portion of their drinking water is taken directly from the Lower Deschutes River, into their water treatment plant. By increasing reliability of river flows and improved water quality, the CTWS will directly benefit and experience an improved resiliency to climate change impacts related to drought conditions and lower/impaired river flows.

4. Other Benefits: Will the project address water and/or energy sustainability in other ways not described above? For example:

a. Will the project assist States and water users in complying with interstate compacts?

N/A

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

Yes. The projects detailed in this proposal, upon implementation, will benefit multiple sectors and users in the Deschutes River Basin. These sectors include agriculture, recreation, environmental, and municipal users. By addressing needs identified and described in the Deschutes River Basin Study, these projects continue the current momentum of moving

towards more reliable water supplies and more efficient use of water, all while working in cooperation between the various stakeholders/users in the basin.

c. Will the project benefit a larger initiative to address sustainability?

The projects proposed are detailed in the irrigation district's Water Management and Conservation Plans, Drought Resiliency Plans, the Upper Deschutes Basin Study, and other initiatives focused on addressing sustainability for all sectors of water use in the region. Specifically, improving drought resiliency and increasing overall efficiency of water use will be direct benefits of this work.

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

There have certainly been increased tension over water use, inefficiencies, and shortages over time. The current and elongated period of drought has exacerbated this issue, as these tensions increase when drought conditions make a finite resource even more scarce. Projects, such as the proposed piping and water management improvements, work to improve and alleviate water-related conflict/tension.

E.1.4. Evaluation Criterion D—Complementing On-Farm Irrigation Improvements (10 points)

If the proposed project will complement an on-farm improvement eligible for NRCS assistance, please address the following:

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

The applicants are actively working with farmers/ranchers to help them hook into the newly piped sections of COID's delivery system and convert from less efficient methods of irrigation, (like flood) to more efficient methods (like sprinklers). DRC, COID, and the Deschutes Soil and Water Conservation District are currently working with NRCS through NRCS's Regional Conservation Partnership Program (RCPP) to pipe district laterals and do companion on-farm improvement projects on private lands in the same geography as the G Lateral. In addition to this RCPP funding, the applicants are utilizing funds provided by Deschutes County through the American Rescue Plan Act (ARPA) to provide financial assistance to additional on-farm projects and pipe private laterals that connect to COID-owned laterals. Furthermore, the applicants are also working with NRCS to implement NRCS's Conservation Implementation Strategy (CIS) and complete more on-farm projects. The applicants intend to complete the projects that were awarded funding through the current RCPP by the end of irrigation season in 2023 (the award was made in 2021) and reapply for subsequent funding in an upcoming funding cycle. The applicants are committed to maximizing the benefits of district piping by working with COID farmers and ranchers to help them connect to the newly piped system and improve their on-farm practices to maximize efficiency, both in terms of water and energy conservation.

- Provide a detailed description of the on-farm efficiency improvements.

The focus of the on-farm efficiency improvements is converting flood irrigators to more efficient systems, like handlines, wheel lines, center pivots, and drip irrigation. This also sometimes

includes building on-farm ponds and adding irrigation pumps. Additionally, on-farm improvements might also involve piping private ditches to better enable the conversion from less efficient to more efficient irrigation practices, reduce water lost to seepage, and eliminate private rotations that are cumbersome for both the district and the patrons to manage efficiently.

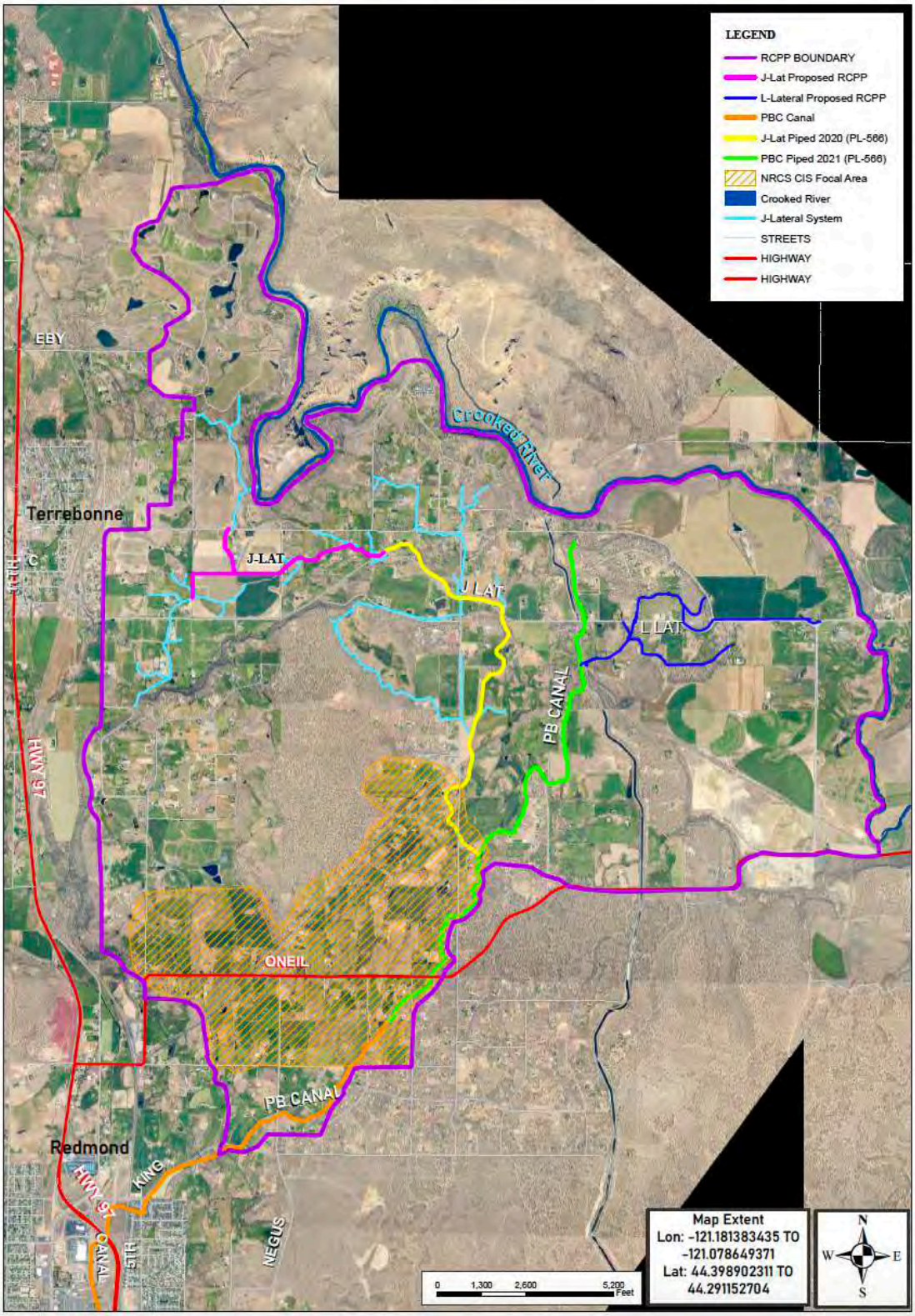
- Have the farmers requested technical or financial assistance from NRCS for the on-farm efficiency projects, or do they plan to in the future?

Yes, following opening our first RCPP application period to farmers last fall, we had more applicants apply for NRCS assistance than there were funds available to implement projects this year. Additionally, the Deschutes Soil and Water Conservation District (DSWCD) opened another application period to help disburse the ARPA funds allocated by Deschutes County, and they had twice the number of applicants than the amount of funding available for projects. We anticipate continued interest for technical and financial assistance from farmers as COID efficiency projects (i.e., piping) continue to be implemented further enabling on-farm projects; the applicants fully intend to continue writing grants in the years to come to provide this technical and financial assistance to all interested landowners.

- If available, provide documentation that the on-farm projects are eligible for NRCS assistance, that such assistance has or will be requested, and the number or percentage of farms that plan to participate in available NRCS programs.

Below is a map of the current RCPP project boundary, which includes the G Lateral (proposed for piping under this ROA); all the landowners within this geographic boundary are eligible for funding under the current RCPP. Additional landowners outside of this boundary are eligible for funding through NRCS's CIS and the DSWCD's ARPA funding. As noted, following the first RCPP application period this past fall, we had more applicants than we had funds to implement on-farm projects. It appears that approximately 50 percent of the applicants that applied in the funding cycle this past fall will receive funding through the current RCPP. Also, it should be noted that NRCS, DRC, and COID decided not to widely publicize the RCPP funding opportunity, because we did not want to create unrealistic expectations about the amount of funding and technical assistance that was available through the current RCPP. Instead, NRCS and the applicants did targeted outreach to landowners on the J and L laterals that are currently being piped through a combination of RCPP funds and match funding provided by the Oregon Water Resources Department; still, we had twice the number of applications than we had available financial assistance. We fully anticipate that demand for on-farm project will outpace supply.

Smith Rock Irrigation Modernization & Conservation
Regional Conservation Partnership Program (RCPP)
Project Focus Area



- Applicants should provide letters of intent from farmers/ranchers in the affected project areas.

As noted above, thus far we have had more requests for financial and technical assistance than we have funding available for on-farm project implementation. We anticipate this trend will continue. Due to NRCS privacy release requirements, we are unable to provide letters of intent from farmers/ranchers who have applied for RCPP funding thus far, but we are certain that demand for projects will continue to outpace the funding available for the implementation of these project. The applicants are committed to continuing to raise grant funds to implement these projects.

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

The proposed WaterSMART project will complement both on-going and planned on-farm improvements in the Smith Rock Project area. The proposed project will open another geographic area (the G Lateral) where landowners can directly connect to COID's piped laterals, thereby facilitating the conversion from flood to sprinklers, and, as more piping occurs in this geography, providing pressurized water deliveries that can alleviate the energy required to use on-farm pumps to operate efficient on-farm water applications, like sprinklers and drip irrigation.

Will the proposed WaterSMART project directly facilitate the on-farm improvement? If so, how? For example, installing a pressurized pipe through WaterSMART can help support efficient on-farm irrigation practices, such as drip-irrigation.

OR

Will the proposed WaterSMART project complement the on-farm project by maximizing efficiency in the area? If so, how?

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

The proposed WaterSMART project will both facilitate and complement on-farm improvements. Piping the G Lateral will provide another area where landowners can directly connect to a piped section of COID's delivery system. This will facilitate the conversion from flood irrigation to more efficient methods of irrigating, like sprinklers and drip irrigation. Additionally, piping the G Lateral will help provide pressurized water deliveries to farmers, further incentivizing the conversions from flood to sprinklers and reducing the amount of pumping and energy required to run the more efficient systems. Therefore, both on-farm energy and water savings benefits are anticipated to result from the proposed project.

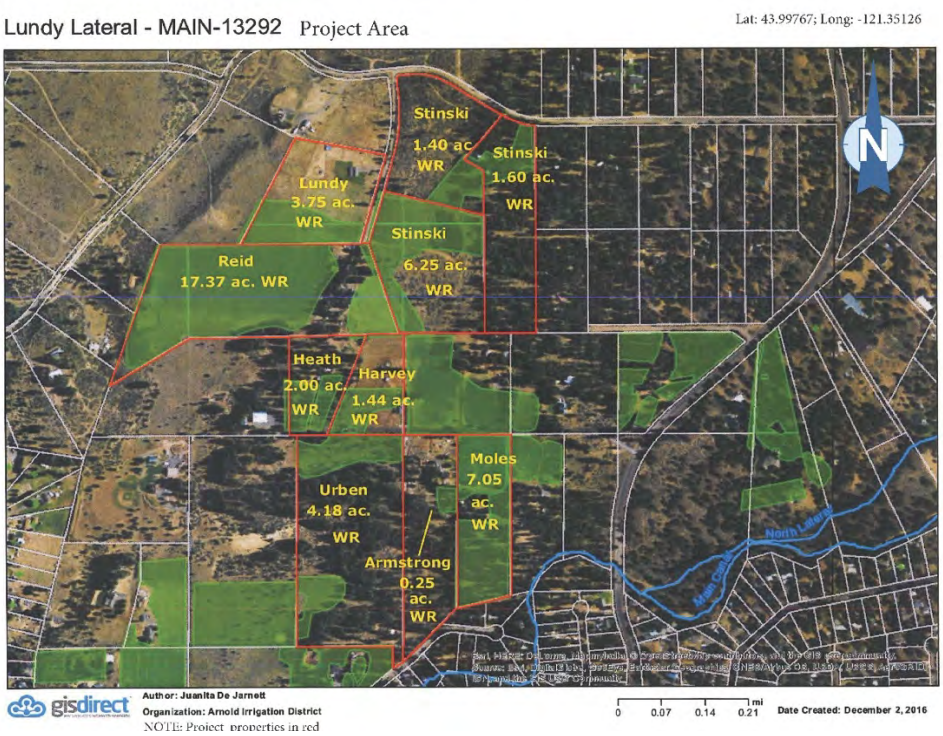
- Estimate the potential on-farm water savings that could result in acre-feet per year. Include support or backup documentation for any calculations or assumptions.

With regarding to the efficiencies of the water use on-farm (once it is delivered), according to NRCS, flood irrigation is estimated to be about 30 percent efficient. Sprinklers and drip irrigation systems range in efficiency from 50 to 90 percent. The resulting improvements in crop efficiency are 20-60%, dependent on the type of upgrade/improvement made on-farm. Assuming this

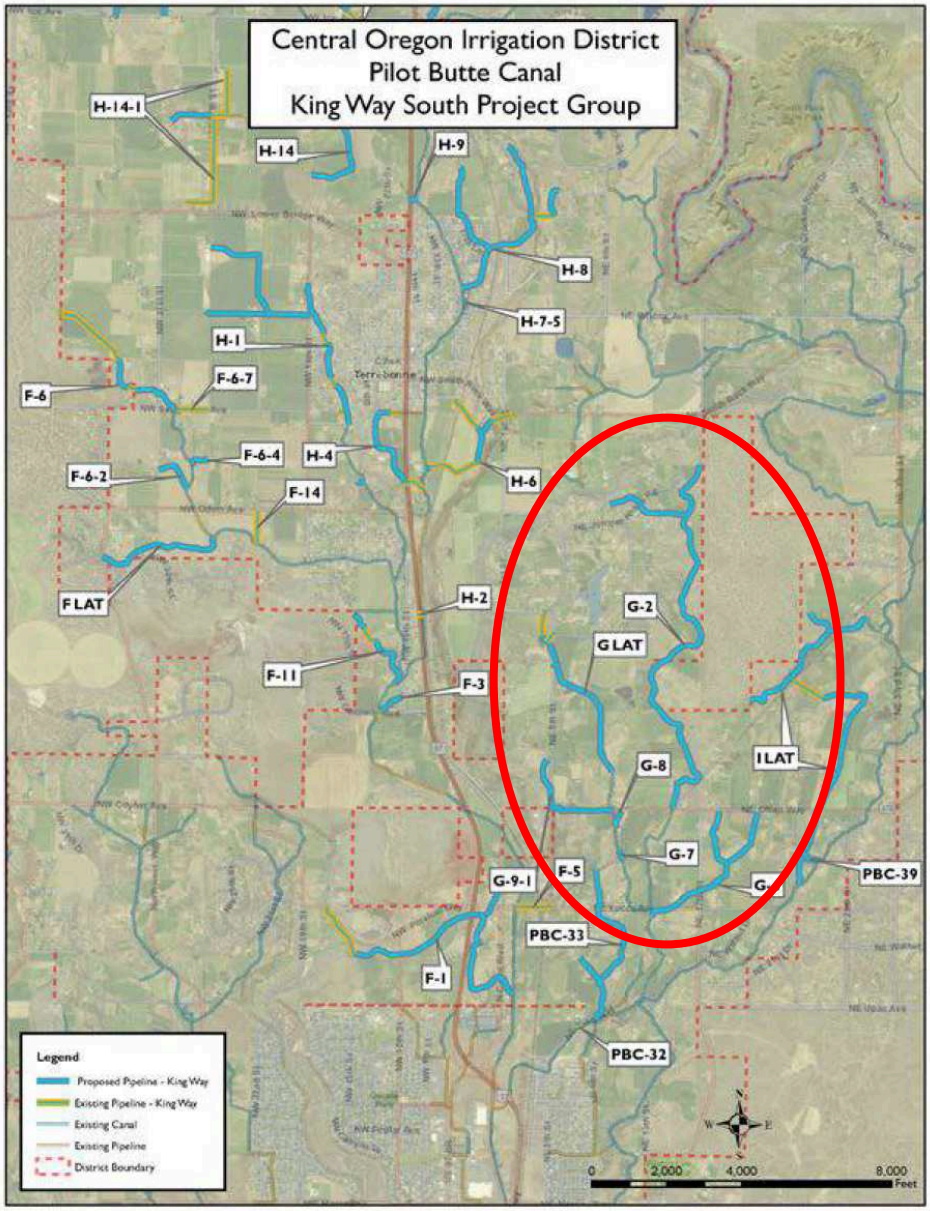
piping project opens the opportunity for a 20% increase in efficiency on-farm, 998 acre-feet potential savings exist.

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

  For AID, Lundy ditch, the service area is denoted below:



Within COID, the G Lateral is in the area mapped below. Map sourced from the COID SIP:



E.1.5. Evaluation Criterion E—Planning and Implementation (8 points)

E.152.1. Subcriterion No.E.1: Project Planning

Does the applicant have a Water Conservation Plan and/or System Optimization Review (SOR) in place? Does the project address an adaptation strategy identified in a completed WaterSMART Basin Study? Please self-certify or provide copies of these plans where appropriate to verify that such a plan is in place. Including a specific excerpt or a link to the planning document may also be considered where appropriate.

The Bureau of Reclamation website for the Pacific Northwest links to the Upper Deschutes Basin Study, funded in part by Reclamation, and describes the outcomes of this study by stating: "*water conservation methods such as piping district canals and upgrading on-farm infrastructure can increase irrigation efficiency and help restore flows in the Deschutes. Market-based approaches and potential storage concepts can also contribute to water management goals in the basin. In the Upper Deschutes River, lower summer flows and higher winter flows tend to benefit riparian vegetation, redband trout, and Oregon spotted frog."* The complete WaterSMART Basin Study can be found at: https://www.usbr.gov/pn/studies/deschutes/finalstudy.pdf

Each of the irrigation districts have a Water Management Conservation Plan, as well. These plans, along with the Basin Study referenced above, are included in Appendix C.

Provide the following information regarding project planning:

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

Each of the irrigation districts partnered with DRC on this grant application have completed Water Management Conservation Plans (WMCP) and System Improvement Plans (SIP). These studies/plans include the proposed projects as priorities for water conservation.

Specifically, within the COID Water Management Conservation Plan, it states: "*the COID System Improvement Plan includes installation of water measurement and monitoring equipment along our piping projects, software updates, and integration of SCADA for gate control and flow monitoring."*

Also, in the WMCP, COID lists these as the top three (3) "*long term goals in order of importance, that COID will pursue in the next five to ten years:*

- *Continue to apply for federal and state funding to* ***pipe the Pilot Butte Canal (PBC) and laterals****, thereby reducing water loss and improving system efficiency, providing patrons with pressurized water, reducing energy demand, and improving water quality.*
- *Contribute to* ***meeting or exceeding the DBBC HCP goals****.*
- ***Update SCADA at COID points of delivery along both the PBC and Central Oregon Canal to the latest technology****, ensuring that the district can frequently, easily, and accurately measure and record flow throughout the system."*

The entire WMCP for COID is included in Appendix C.

AID also has a Water Management Conservation Plan (WMCP), which states, that there is an additional "*incentive to identify and implement water conservation measures is the recent participation of the district within the Deschutes River Habitat Conservation Plan (HCP) executed by all members of the Deschutes Basin Board of Control, including AID, and the U.S. Fish & Wildlife Service in December 2020. There are particular conservation and Deschutes*

River flows identified within the HCP that are conducive to AID continuing to focus on water delivery efficiencies and reducing overall diversion totals in order to benefit ESA and State or Oregon listed species."

Additionally, the AID WMCP states "*the desire of the district to optimize pressurized deliveries to its patrons and reduce pumping electricity effects and reduce operational expenses to provide a reasonable assessment to its patrons, piping was chosen as the district's preferred choice for canal water loss mitigation."*

The most recent WMCP for AID is included in Appendix C.

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

COID and AID are focused on piping canals and laterals throughout their planning efforts, and this planning is detailed in their respective System Improvement Plans (SIPs), detailing specific locations, phasing, and cost estimates for planning purposes.

All eight (8) irrigation districts in central Oregon are signatories on the Habitat Conservation Plan (HCP) with the US Fish and Wildlife Services (USFW) and it is the responsibility of these districts to implement water conservation measures, and any other means of conserving water, so that winter flows can be increased from Wickiup Reservoir. With approximately 200 cfs of increased releases required, the districts are exploring all means of "finding" this water. Piping leaky canals and better managing flows and deliveries of water during irrigation season, are a primary way of achieving this goal. That is the driving force, as well as the desire to improve water efficiencies to improve drought resilience, that will move this work forward. These efforts are detailed in the SIPs, WMCPs, and the Basin Study.

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

The proposed projects DRC is seeking funding for through this grant opportunity focus on the implementation of water conservation through methods recommended in the previously mentioned WaterSMART Basin Study from 2018. Specifically, the document states: "The water conservation option considered specific tools for reducing agricultural demands, including piping district canals, piping privately owned laterals, and on-farm infrastructure upgrades (e.g., flood-to-sprinkler shifts in irrigation). Water conservation can decrease irrigation demand in particular areas, making water available to meet other needs in the basin and possibly increasing water supply security for other users."

It is this potential for conserved water to assist meeting the water needs of others in the basin and increasing water supply security that DRC is focused on achieving through this work. The water needs of others may refer to agricultural users, municipalities, and/or in streamflow needs. Increasing water security is a critically important goal in this basin, given the extreme drought conditions that have persisted for the past 3+ years and will likely be an on-going issue in years to come.

DRC is currently leading a Water Management Options Pilot (WMOP), the Smith Rock-King Way Water Conservation Feasibility Study, which will result in the development of a prioritization toolbox (modeling-supported dashboard). The Dashboard aspect of the toolbox will provide the district (COID initially, and then all irrigation districts in Central Oregon) with the ability to run various scenarios with regards to on-farm improvements, canal piping, pressurization, and other measures. These scenarios will be evaluated by the Toolbox to assist in understanding system-wide interactions between reduced demand on-farm, operational issues in private and district laterals, and potential water generated from combinations of actions. The toolbox will provide information about what projects and packages of projects are the most feasible to target with scarce resources to provide the most water conservation benefit. This Toolbox is being developed in cooperation with the Bureau of Reclamation and COID. The Freshwater Trust is providing technical assistance in the Dashboard creation and additional analytics.

E.1.5.2. Subcriterion No.E.2: Readiness to Proceed

Applications that include a detailed project implementation plan (e.g., estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates) will receive the most points under this criterion.

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

The proposed project schedule is included below in the Gantt diagram. The work proposed through this NOFO will be completed as follows:

- Grant awarded and funding made available
- Evaluate previous design efforts completed for the Lundy Ditch and advance conceptual design efforts for the G-Lateral piping efforts
- Finalize designs and engineering
- Seek and receive permitting for the piping efforts
- Coordinate construction of canal piping with districts (must be completed, in-part, outside of irrigation season)
- Design and install SCADA-enabled canal flow monitoring and measurement devices
- Have SCADA facilities programmed and made useable by districts
- Complete piping construction and installation of meters at turnouts
- Provide final reporting on project, including results of evaluating Performance Measurements to BOR

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

Permits required for canal piping and installation of SCADA/metering facilities include:

- Cultural resources (Archeological) review/permit through SHPO
- Road Crossing permits for portion of the laterals (as necessary)

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

The design work for the piping of the Lundy Ditch was completed by an engineer/ consultant during the feasibility planning stages.

Engineering and design work for the COID/G-Lateral piping project has been completed on a conceptual level. Final designs to be used for permitting will be initiated upon award of this funding.

Engineering/design of the SCADA facilities and their installation will need to be completed and will be initiated upon award of this funding.

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

No new policies or administrative actions will be required to implement these projects.

•Please also include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. Milestones may include, but are not limited to, the following: complete environmental and cultural compliance; mobilization; begin construction/installation; construction/installation (50% complete); and construction and installation (100% complete). Was the expected timeline for environmental and cultural compliance discussed with the local Reclamation Regional or Area Office

Proposed Schedule

Below is a Gantt diagram of the proposed project schedule(s), based on project initiation in the second quarter of Fiscal Year 2023. Dates will be adjusted accordingly if the start date is to occur later. DRC has communicated with the local BOR office regarding the applicable compliance timeline.

Project Component	2023			2024				2025				2026
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Grant Awarded												
Initiate Projects with Districts												
Commence Piping Final Design												
Submit and Complete Compliance												
SCADA design and compliance												
Construction of COID and AID Piping						mobilize			50%			100%
Installation of SCADA						50%				100%		
Programming of SCADA												
Report on Project Progress and Completion												
Verification of Water Savings												

E.1.6. Evaluation Criterion F—Collaboration (6 points)

Please describe how the project promotes and encourages collaboration. Consider the following:

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

The projects being proposed in this application will be conducted in close partnership with the following: Central Oregon Irrigation District (COID), Arnold Irrigation District (AID), and North Unit Irrigation District (NUID). The DRC has secured letters of partnership from these entities and include them in the appropriate Appendix. Additionally, the DRC works with numerous stakeholders throughout the basin that have a vested interest in seeing projects such as these completed. The DRC participates and leads a group of over 40 of these stakeholders, the Deschutes Basin Water Collaborative (DBWC). This collaborative is currently working on a water plan or the Upper Deschutes and is directly considering the issues these proposed projects address. We have secured letters of support from some of these stakeholders, and they are attached to this proposal as well.

- What is the significance of the collaboration/support?

Collaboration with and support from the various stakeholders and water users within the basin for the work proposed is critical. These projects are funded through various initiatives, including private, local, state, and federal sources. To pursue this work, and achieve significant improvements in water management and efficiency, attempting to meet the various needs throughout the region, the basin must more forward as one – reinforcing the end goal of being more resilient, equitable, and effective with our use of this precious resource.

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

The district-level efforts in canal piping are focused and have been an important part of the water management and system improvement planning process. Additionally, meeting the goals set forth by the HCP is a challenge, which the irrigation districts must act together to address. Funding piping projects is an on-going challenge. Maintaining momentum in acquiring funding and implementing this work is an important step in increasing the likelihood of future water conservation efforts by other users as well. Providing pressurized, piped water to patrons allows for use of more efficient irrigation practices. Conservation of water (such as having to divert less and account for transmission losses in open canals) by more senior districts allows for more junior ones to sustain their livelihoods more reliably – while drawing less on water from reservoirs. Decreased reliance on stored water allows for flexibility with releases to address critical habitat concerns allowing for the districts to comply with regulations, while supporting the various threatened species in the basin. This water conservation domino-effect is initiated with these canal piping efforts.

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

Letters of Partnership form COID, AID, and NUID are included in this proposal. Letters of Support from various partners in the basin are included as well.

E.1.7. Evaluation Criterion G— Additional Non-Federal Funding (4 points)

NON-FEDERAL FUNDING	$2,695,456.26
TOTAL PROJECT COST	$5,388,811.44

E.1.8. Evaluation Criterion H— Nexus to Reclamation (4 Points)

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

•Does the applicant have a water service, repayment, or operations and maintenance (O&M) contract with Reclamation?

No.

•If the applicant is not a Reclamation contractor, does the applicant receive Reclamation water through a Reclamation contractor or by any other contractual means?

Yes, see below.

•Will the proposed work benefit a Reclamation project area or activity?

The Deschutes Project is a Reclamation facility and is the primary focus of this work. Principle features include Wickiup Dam and Reservoir, Crane Prairie Dam and Reservoir, Haystack Dam and Reservoir, North Unit Main Canal and lateral system, and the Crooked River Pumping Plant. The project supports a full supply of irrigation water for about 50,000 acres of land within the North Unit Irrigation District, and a supplemental supply for more than 48,000 acres in the Central Oregon Irrigation District, Arnold Irrigation District, and Lone Pine Irrigation District.

This project directly benefits and works in concert with Reclamation's Deschutes Project, including Section 7 ESA issues related to the Oregon spotted frog and the operation of Wickiup Reservoir.

The proposed piping and measurement improvements focus on addressing supply shortfalls that are central to the Deschutes Project. Crane Prairie and Wickiup Reservoirs drive management of the Upper Deschutes River, which experiences significant flow alterations, because of the storage and release of water from these Reclamation facilities. Reclamation manages these reservoirs to supply irrigation water to four irrigation districts in the basin. The development and implementation of these water conservation practices, and more efficient management of irrigation flows will directly benefit Reclamation and the Deschutes Project by providing tangible solutions to water supply shortfalls that will reduce conflict and threats of further litigation.

Currently, COID and DRC are partnered with Reclamation through the Water Management Options Pilot Program to create a Prioritization Toolbox. The Toolbox will assist with

prioritization and implementation of on-farm water conservation projects. The toolbox will provide information about what projects and packages of projects are the most feasible to target with scarce resources to provide the most water conservation benefit. Engineers and scientists at Reclamation's Technical Services Center (TSC) in Colorado are assisting in analyses of innovative solutions to water and power resource issues. Their technical assistance and training in hydrology and modeling will be critical to the toolbox-building efforts of COID and DRC. Additionally, DRC is partnered with COID and NUID on implementing a Water Banking Pilot Program, moving towards a more robust and permanent Water Banking mechanism being funded through 2022 WaterSMART Drought Resiliency funding.

•Is the applicant a Tribe?

No, however this work is in the direct interest of the Confederated Tribes of Warm Springs Reservation's priorities for clean and sufficient water and quality salmon habitat. They are a partner in this work, and chair of the Deschutes Basin Water Collaborative and DRC board.

PERFORMANCE MEASURES

Performance Measure A.1: Canal Lining/Piping

Canal lining or piping projects are implemented to decrease or eliminate canal water seepage and evapotranspiration. **The following information may be helpful in estimating the water conservation that will be realized upon completion of the proposed project and to verify this amount post-project.**

Pre-project estimation of benefits:

This estimation has been performed for both the COID and AID proposed canal piping areas. This was conducted to calculate potential water savings. Physical measurements of losses from seepage, evaporation, and/or transpiration were conducted.

Post-project methods for quantifying the benefits of canal lining or piping projects:

•Using the data mentioned above, we will compare pre-project and post-project test results to calculate water savings. For canal lining projects, evaporation will be calculated based on weather data and then subtracted from the total loss measured by testing. For piping projects, it is typically assumed all seepage and evaporation are eliminated with most types of pipe materials.

•Results will be verified using a ratio of historical diversion and delivery rates if adequate data exists. The adequacy of the data will be discussed with regard to methods used to measure diversion and delivery quantities. This type of verification will also include a comparison of historical canal efficiencies and post-project canal efficiencies.

We may use these useful references regarding canal seepage monitoring and verification include:

•Water Measurement Manual at www.usbr.gov/tsc/techreferences/mands/wmm/index.htm

•Measurement of Seepage Losses from Irrigation Canals

www.usbr.gov/tsc/techreferences/hydraulics_lab/pubs/PAP/PAP-0015.pdf

•Measuring Seepage Losses from Canals Using the Ponding Test Method

gfipps.tamu.edu/files/2019/12/B-6218_Measuring-Seepage-Losses.pdf

Performance Measure A.2: Measuring Devices

Good water management requires accurate and timely water measurement at appropriate locations throughout a conveyance system.

Measuring Devices: A.2.b. Irrigation Metering

Measuring devices that are proposed include, but are not limited to:

- Flow meters (current or acoustic)
- Mag meters
- Weirs
- Meter gates
- Submerged orifices

Potential benefits from improved irrigation delivery system measurement include being able to:

- Quantify system losses between measurement locations
- Quantify waste way (spill) flows
- Facilitate accurate and equitable distribution of water within a district
- Allow for implementing future system improvements such as seepage reduction, remote flow monitoring, and canal operation automation projects

The following performance measures may be helpful in estimating the water conservation that will be realized upon completion and to verify this amount post-project for improved irrigation delivery system measurement.

Pre-project estimations of baseline data:

•Pre-project flows may be difficult to estimate without a measuring device in place. Ideally, temporary measurement devices or other methods to estimate flow rates may be used to estimate flow rates as accurately as possible.

•If flow data is not available, we may rely on other historical data and/or estimates based on a combination of soils/geology, delivery data, flow data, and weather data.

Post-project methods for quantifying the benefits of projects to install measuring devices:

•We will compare post-project water measurement (deliveries, diversions, and waste/spills) data to pre-project data or estimates—considering other factors which may have caused changes.

•Present how measurement devices are being used to identify water losses, which were previously unknown, and how these will be addressed.

Performance Measure A.3: SCADA and Geographic Information Systems (GIS)

As this proposal includes installing or expanding a SCADA or combined SCADA/GIS system that monitors flows in an individual district, we will evaluate these facilities once installed. SCADA systems provide water managers with real-time data on the flow rates and volumes of water at key points within an irrigation water delivery system. Access to such data allows water managers to make accurate and timely deliveries of water, reducing over-deliveries and spillage at the end of the canal. SCADA/GIS systems can provide water users with real time delivery data to promote improved on-farm efficiencies.

For the portion of our project that includes installing and/or expanding the SCADA and/or GIS system, the applicant will consider the following:

•How SCADA or SCADA/GIS implementation differs from pre-project operations in terms of how improved data availability will be incorporated into daily operational decisions

•How the SCADA or SCADA/GIS systems are maintained once implemented. Applicant will discuss the balance of in-house expertise anticipated vs. reliance on third party service provider(s)

•Projected opportunities for improved operational efficiencies that are realized through implementation of a SCADA or SCADA/GIS system (e.g., improved delivery equity, improved response to unanticipated events, reduced administrative spillage, and enhanced productivity of human resources)

•Describe the response process to SCADA or SCADA/GIS failures/outages

•Additionally, we will review published reports on considerations when implementing a SCADA system, such as Freeman, B. and C. Burt, 2009. Practical experience with state-of-the-art technologies in SCADA systems, Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo, California.

The following performance measures may be helpful in estimating the water conservation that will be realized upon completion and to verify this amount post-project for installing a SCADA or SCADA/GIS system.

Pre-project estimations of baseline data:

•Collection of data on diversions and deliveries to water users

•Collection of data on waste way flows

•Documenting employee pre-project time spent on ditch/canal monitoring and water control

Post-project methods that will be included to quantifying benefits of SCADA or SCADA/GIS system projects:

•Calculate the amount of increased carryover storage in associated reservoirs. This is a long-term measure which will be more meaningful over a period of years.

•Track and record the diversions to water users and compare to pre-project diversions. This would show results of improved management if yearly fluctuations in weather are accounted for.

•Report delivery improvements (e.g., changes in supply, duration, or frequency that are available to end users because of SCADA/GIS).

•Document other benefits such as less mileage by operators on dusty roads (which saves time and influences air quality) and less damage to canal banks.

PROJECT BUDGET

FUNDING PLAN AND LETTERS OF COMMITMENT

A funding plan for the required matching funds is presented in Appendix A, as a Letter of Commitment from DRC.

BUDGET PROPOSAL

Table 1.

SOURCE	AMOUNT
Costs to be Reimbursed with the Requested Federal Funding	$2,693,355.18
Costs to be Paid by the Applicant	$2,695,456.26
Value of Third-Party Contributions	$0
TOTAL PROJECT COST	$5,388,811.44

Table 2.

FUNDING SOURCES	AMOUNT
Non-Federal Funding Entities	
Deschutes River Conservancy (DRC)	$$2,695,456.26
Non-Federal Subtotal	**$2,695,456.26**
Requested Reclamation Funding	**$2,693,355.18**

Table 3. Proposed Budget

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	Total WaterSMART Grant Funding Request	Match	TOTAL PROJECT COSTS
	$/Unit	Quantity				
Salaries and Wages						
Executive Director, Kate F	$57.66	575	hours	$16,577.25	$16,577.25	$33,154.50
Programs Director	$43.27	700	hours	$15,144.50	$12,115.60	$30,289.00
Communications Director	$38.68	115	hours	$2,224.10	$1,779.28	$4,448.20
Senior Program Manager	$41.42	230	hours	$4,763.30	$3,810.64	$9,526.60
Program Manager	$40.00	600	hours	$12,000.00	$9,600.00	$24,000.00
Project Manager	$28.85	65	hours	$937.63	$750.10	$1,875.25
Fringe Benefits						
Executive Director, Kate F	$28.83	575	hours	$8,288.63	$8,288.63	$16,577.25
Programs Director	$21.64	700	hours	$7,572.25	$7,572.25	$15,144.50
Communications Director	$19.34	115	hours	$1,112.05	$1,112.05	$2,224.10
Senior Program Manager	$20.71	230	hours	$2,381.65	$2,381.65	$4,763.30
Program Manager	$20.00	600	hours	$6,000.00	$6,000.00	$12,000.00
Project Manager	$14.43	65	hours	$468.81	$468.81	$937.63
Equipment						
Water Metering Equipment - SCADA	$35,000.00	10		$350,000.00		$350,000.00
Travel						
In-basin Travel to Districts	$0.58	1000	miles	$580.00		$580.00
Conference Registration Fee - Present Project Results	$800.00	1	per	$800.00		$800.00
Conference Travel - Airfare, per Diem	$700.00	1	per	$700.00		$700.00
Supplies and Materials						
Outreach Materials - Office and Distribution	$2,500.00	1	-	$3,500.00		$3,500.00
Data Collection Supplies - SCADA software & calibration	$20,000.00	1	-	$20,000.00		$20,000.00
Other						
Labor - Districts (in-kind) COID and AID				-	$125,000.00	$125,000.00
Contract Services						
Pipe Design/Installation (AID)	$500,000.00	1	labor / materials	$250,000.00	$250,000.00	$500,000.00
Pipe Design/ Installation (COID)	$4,300,000.00	1	labor / materials	$1,980,000.00	$2,250,000.00	$4,230,000.00
SUB-TOTAL PROJECT DIRECT COSTS				$2,683,050.16	$2,695,456.26	$5,378,506.42
Indirect Costs						
DRC de minimus MTDC	10%			$10,305.02	-	-
TOTAL ESTIMATED PROJECT COSTS				**$2,693,355.18**	**$2,695,456.26**	**$5,388,811.44**

BUDGET NARRATIVE

The budget detailed above provides the breakdown of costs by type and organization for this proposed project. The funding term requested is three (3) years.

Salaries & Wages:

Employees, including the Executive Director for DRC and others, are listed in the Proposed Budget, as well as consultants. All Staff of the DRC listed in this proposal will be actively working on the project for the duration, and in a variety of capacities from Project Management, Coordination of Partners, Boards, and Stakeholders, Public Outreach, Data Collection and Analyses, Program Oversight, and Reporting to Reclamation as per provided direction on reporting requirements, including final project and evaluation reports.

Fringe Benefits:

Regarding the listed salaries and associated fringe benefits, each employee has a different fringe rate, due to longevity, rate of pay, and other factors. The rate also changes from year to year, with adjustments in rate of pay and which benefits are being utilized. For the budget, we took a weighted average to fit the proposed budget format. We weighted the rates based on proposed hours to get to the 50% of the hourly rate included in the budget. Fringe benefits include medical and dental insurance, retirement contributions, FICA/Medicare, unemployment insurance, and workers' compensation insurance.

Travel:

Most travel associated with this project will be in-basin and by car. It is anticipated that DRC personnel will require travel to and from meetings, monitoring locations, and other related events during the project. The DRC staff have also allocated a portion of the travel budget for attending one (1) out of State professional conference to present Project related data and results. Without the ability to currently register for such an event, estimates have been made for possible needed airfare, per diem, and conference registration fees.

Equipment:

For the purposes of collecting data and for effectively managing irrigation facilities, DRC has included the installation of SCADA operated facilities. The associated improved efficiency of water movement and delivery will assist in supporting the efforts of the Bank and the goals of better utilizing the existing water resources in times of scarcity. Additionally, for the purposes of calibrating hydrological models and water supply forecasting within the basin, DRC may elect to install in-stream gages and/or other methods of collecting more accurate flow level data.

Contractual:

There are many aspects of this project that will include the employment and participation of various consultants. The consultant descriptions, hourly rates, and hours are included in the proposed budget. DRC has identified various potential consultants for the specific needs of the project and will follow the stated Procurement process for selection and hiring of consultants (*2CFR §200.320 – Methods of procurement to be followed*)

The participation of consultants is woven throughout the project tasks and schedule, and includes the following activities (as described in more detail in the Project Description section):

- Design of Measurement devices
- Design of Canal Piping
- Permitting of Canal Piping
- Construction and Installation of SCADA equipment and measurement devices
- Construction and Installation of canal piping
- Construction and Installation of meters at lateral turn-outs

Indirect Costs

DRC includes 10% *de minimus* rate for Indirect expenses and includes the following in this designation: administrative salaries and fringe benefits associated with overall financial and organizational administration, operation and maintenance costs for facilities and equipment, and payroll and procurement services.

ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

It is not anticipated by DRC that the work proposed with this project will require extensive Environmental and Regulatory Compliance costs. Permits will be acquired as needed. Cultural resources evaluations and SHPO compliance is anticipated as part of the budget and schedule.

REQUIRED PERMITS AND/OR APPROVALS

Cultural resources evaluations and/or permits may be required. Additionally, if road crossings are included in the piping layout/design, there may be permits required for that aspect of the projects as well.

LETTERS OF SUPPORT AND LETTERS OF PARTNERSHIP

Please see attached letters of partnership and support from partners and various stakeholders within the Deschutes River Basin in Appendix B.

OFFICIAL RESOLUTION

An Official Resolution is being presented to the DRC Board at the August, 2022 meeting and will be forwarded to BOR following submittal of this proposal.

CONFLICT OF INTEREST DISCLOSURE

There is no known active or potential conflict of interest related to this proposal and/or projects described herein.

UNIFORM AUDIT REPORTING STATEMENT

The DRC was not required to complete a federal audit during our most recently closed fiscal year.

CERTIFICATION REGARDING LOBBYING

The DRC does not utilize any grant funds for the purposes of Lobbying.

APPENDIX A – LETTERS OF COMMITMENT AND FUNDING PLAN

DESCHUTES RIVER
CONSERVANCY

7/27/2022

To Whom it May Concern:

This letter confirms the Deschutes River Conservancy's commitment to secure match funding for the Water and Energy Efficiency Projects in the Deschutes Basin: Conserving Water Through Piping and Improved Monitoring and Measurement in the amount of $ $2,570,456.26 over three years, or $856,818.75 per year. The balance of the matching funds will be provided by the irrigation district partners, through in-kind services.

The DRC has a successful and stable track record securing state and foundation grants. The table below identifies the DRC's match funding plan by funder. The DRC has consistently raised the identified funding amounts from these donors in the past and we expect the listed donors to invest in this work to accelerate flow restoration and water management improvements in the basin.

Oregon Water Resources Department	$ 1,285,228.13
Oregon Water Enhancement Board	$ 1,285,288.13

The DRC feels confident that it can secure funding based on our track record and the available annual grant opportunities. DRC would also be willing to demonstrate this at the beginning of each year.

Warmly,

Kate Fitzpatrick

Kate Fitzpatrick, Executive Director

APPENDIX B – LETTERS OF SUPPORT AND PARTNERSHIP

CENTRAL OREGON
Irrigation
DISTRICT
Since 1918

July 11, 2022

To Bureau of Reclamation grant review team:

The Central Oregon Irrigation District provides this Letter of Partnership with the Deschutes River Conservancy (DRC), in support of the DRC's application for the 2023 Bureau of Reclamation WaterSMART: Water and Energy Efficiency Grant.

Central Oregon Irrigation District (COID) delivers irrigation water to 3600 patrons covering 48,000 acres of land in the Deschutes Basin. COID is in the process of modernizing its infrastructure, which is a critical component to maximizing conserved water in the basin. DRC is an Oregon not-for-profit corporation dedicated to restoring streamflow and improving water quality in the Deschutes Basin through the use of irrigation district system improvement projects, on-farm efficiency work, and market-based mechanisms. Cooperatively, these two organizations, as well as two other Districts (North Unit Irrigation District and Arnold Irrigation District), have pursued and implemented numerous water efficiency, habitat improvement, and conservation projects. The districts have also included drought resiliency measures in the development of their Water Management and Conservation Plans, and, currently, they are aggressively working on conservation measures related to a recently signed Habitat Conservation Plan.

COID and DRC see the implementation of water efficiency and conservation projects, as well as increased water monitoring and measurement to facilitate more effective management, as logical next steps in increasing drought resiliency and improving the overall utilization of water resources throughout the basin.

Specifically, this partnership endeavors to achieve improvements in water use efficiency, increased drought resiliency, and a higher degree of sustainability of irrigation water movement.

COID welcomes this partnership and the support it brings for a more sustainable, efficient, and effective water supply.

Sincerely,

Craig Horrell
Managing Director

1055 SW Lake Ct. Redmond, OR 97756 541-548-6047 coid.org

ARNOLD
IRRIGATION DISTRICT

19604 Buck Canyon Rd., Bend, OR 97702
Phone: 541-382-7664 Fax: 541-382-0833

July 18, 2022

To Bureau of Reclamation grant review team:

Arnold Irrigation District provides this Letter of Partnership with the Deschutes River Conservancy (DRC), in support of the DRC's application for the 2023 Bureau of Reclamation WaterSMART: Water and Energy Efficiency Grant.

Arnold Irrigation District (AID) delivers irrigation water to 1,200 patrons covering 4,384 acres of land in the Deschutes Basin. AID is in the process of modernizing its infrastructure, which is a critical component to maximizing conserved water in the basin. DRC is an Oregon not-for-profit corporation dedicated to restoring streamflow and improving water quality in the Deschutes Basin through the use of irrigation district system improvement projects, on-farm efficiency work, and market-based mechanisms. Cooperatively, these two organizations, as well as two other Districts (North Unit Irrigation District and Central Oregon Irrigation District), have pursued and implemented numerous water efficiency, habitat improvement, and conservation projects. The districts have also included drought resiliency measures in the development of their Water Management and Conservation Plans, and, currently, they are aggressively working on conservation measures related to a recently signed Habitat Conservation Plan.

AID and DRC see the implementation of water efficiency and conservation projects, as well as increased water monitoring and measurement to facilitate more effective management, as logical next steps in increasing drought resiliency and improving the overall utilization of water resources throughout the basin.

Specifically, this partnership endeavors to achieve improvements in water use efficiency, increased drought resiliency, and a higher degree of sustainability of irrigation water movement.

AID welcomes this partnership and the support it brings for a more sustainable, efficient, and effective water supply.

Sincerely,

Steve Johnson
District Manager

NORTH UNIT IRRIGATION DISTRICT

2024 NW Beech Street
Madras, Oregon 97741

(541) 475-3625
(541) 475-3652
Fax (541) 475-3905
nuid@northunitid.com

July 12, 2022

To Bureau of Reclamation grant review team:

North Unit Oregon Irrigation District (NUID) provides this letter confirming that it is acting in partnership with the Deschutes River Conservancy (DRC), with respect to the DRC's proposal for the 2023 Bureau of Reclamation WaterSMART: Water and Energy Efficiency Grant Funds. The proposal includes the implementation of two canal piping projects to improve efficiency and conserve water, and the implementation of in-line flow monitoring facilities (SCADA) to improve canal management

NUID is located in the Deschutes River Basin, and it supplies irrigation water to nearly 59,000 acres of farmland in Jefferson County. NUID is a quasi-municipality under contract with the U.S. Bureau of Reclamation. In addition, the District is a part of the Deschutes Basin Board of Control, a consortium of eight irrigation districts and municipalities that collaborate on issues facing Central Oregon and water users. The DRC is an Oregon not-for-profit corporation dedicated to improving water quantity and quality in the Deschutes Basin with irrigation improvement projects, on-farm efficiency work, and market-based mechanisms. Cooperatively, NUID and the DRC, as well as two other Districts in the Deschutes River Basin (Central Oregon Irrigation District and Arnold Irrigation District), have pursued and implemented numerous water efficiency, habitat improvement, and conservation projects. These Districts have also included Drought Resiliency measures in the development of their Water Management and Conservation Plans, and are currently working to implement a series of conservation measures related to the recently approved Deschutes Basin Habitat Conservation Plan.

NUID and DRC view the continued implementation of water efficiency and conservation projects as the logical next step in continuing to increase drought resiliency and improve the overall utilization of water resources throughout the Deschutes Basin. In particular, NUID is partnering with the DRC for purposes of the 2023 Bureau of Reclamation WaterSMART: Water and Energy Efficiency Grant Funds program in order to improve water use efficiency, increase drought resiliency, and achieve a higher degree of sustainability.

Consistent with these objectives, NUID agrees to the submittal and content of the DRC proposal for the 2023 Bureau of Reclamation WaterSMART: Water Efficiency Grant Funds. NUID is confident that once implemented, the projects included in the proposal will help to bring about a more reliable and affordable supply of water to sustain agriculture in the Deschutes Basin, and help to improve instream flows and water quality to support fish and wildlife.

Sincerely,

Josh Bailey
General Manager

CENTRAL OREGON CITIES ORGANIZATION

Bend, Culver, La Pine, Madras, Maupin
Metolius, Prineville, Redmond, Sisters

July 27, 2022

Bureau of Reclamation
1150 North Curtis Road
Boise, ID 83706-1234

Dear Review Committee,

The Central Oregon Cities Organization (COCO) was formally established in 2002 and has grown to include the cities of Bend, Culver, La Pine, Madras, Maupin, Metolius, Prineville, Redmond and Sisters. COCO's purpose is to effectively and efficiently promote common interests of the cities in Central Oregon for issues such as transportation, economic development, school funding, tax reform, and water. COCO has specifically established a water subcommittee that meets each regularly to engage in basin-wide water issues and is an active participant in the Deschutes Basin Water Collaborative.

COCO supports the proposal from the Deschutes River Conservancy (DRC) for the Bureau of Reclamation WaterSMART Water and Energy Efficiency grant funding opportunity. The DRC endeavors to utilize these funds to implement water saving projects through lateral canal piping in both the Central Oregon and Arnold Irrigation Districts, and installation of SCADA gaging equipment throughout the Pilot Butte canal portion of Central Oregon Irrigation District. The projects will facilitate water savings and improved measurement and monitoring of irrigation water, enabling opportunities for irrigation water movement.

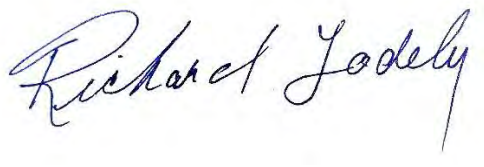
The recently completed Deschutes Basin Study, the current work of the Deschutes Basin Water Collaborative, and the on-going water conservation projects within these districts are all moving the basin forward towards better drought resiliency and improved water efficiency of existing irrigation practices. Water efficiency projects and improved irrigation water monitoring, made possible through this funding, will be important next steps in sustainably meeting water demands and water management goals in the Deschutes Basin, providing

Chair Richard Ladeby
Central Oregon Cities Organization
Email: rladeby@ci.madras.or.us

Doug Riggs, Lobbyist
NW Grassroots & Communications
(503) 702-5120 doug@ngrc.com

reliable water for agriculture and municipalities, while restoring critical stream flows – particularly during significant drought conditions.

Sincerely,



Richard Ladeby, Chair, Central Oregon Cities Organization

Chair Richard Ladeby
Central Oregon Cities Organization
Email: rladeby@ci.madras.or.us

Doug Riggs, Lobbyist
NW Grassroots & Communications
(503) 702-5120 doug@ngrc.com

CENTRAL OREGON LANDWATCH

2843 NW Lolo Drive, Ste. 200 | Bend, OR 97703
Phone (541) 647-2930
www.colw.org

July 21, 2022

Bureau of Reclamation
1150 North Curtis Road
Boise, ID 83706-1234

Re: BOR WaterSMART: Water and Energy Efficiency Grant Proposal

Dear Grant Review Team:

Central Oregon LandWatch ("LandWatch") submits this letter in support of the Deschutes River Conservancy's ("DRC") proposal related to the Bureau of Reclamation WaterSMART Water and Energy Efficiency grant funding opportunity.

LandWatch is an Oregon non-profit, public interest organization with over 700 members. Its offices are located in Bend, Oregon. LandWatch's mission is to defend and plan for Central Oregon's livable future and it has advocated for the preservation of natural resources in Central Oregon for over 30 years, including the efficient and equitable use of water in the Deschutes Basin.

The DRC endeavors to utilize these funds to implement water saving projects through lateral canal piping in both the Central Oregon and Arnold Irrigation Districts, and installation of SCADA gaging equipment throughout the Pilot Butte canal portion of COID. The projects will facilitate water savings and improved monitoring and measurement of irrigation water movement/deliveries.

The recently completed Deschutes Basin Study, the current work of the Deschutes Basin Water Collaborative, and the on-going water conservation projects within these districts are all moving the basin forward towards better drought resiliency and improved water efficiency of existing irrigation practices. Water efficiency projects and improved irrigation water monitoring, made possible through this funding, will be important next steps in sustainably meeting the Deschutes basin water demands and water management goals. These projects will also allow the districts to move forward in meeting the demands of the basin, implementing the Habitat Conservation Plan (HCP) and in doing so, provide reliable water for agriculture and municipalities, while restoring critical stream flows – particularly during significant drought conditions.

We support the DRC in requesting this grant to implement water efficiency and improved management projects.

Thank you for your consideration and please reach out with any questions.

Sincerely,

Jeremy Austin
Wild Lands & Water Program Manager
Central Oregon LandWatch
2834 NW Lolo Drive, Ste. 200
Bend, OR 97703
jeremy@colw.org | 541-647-2930

Bureau of Reclamation
1150 North Curtis Road
Boise, ID 83706-1234

July 25, 2022

Re: BOR WaterSMART: Water and Energy Efficiency Grant Proposal

Dear Grant Review Team:

Confederated Tribes of Warm Springs, Branch of Natural Resources encourages support for the proposal from the Deschutes River Conservancy (DRC), for the Bureau of Reclamation WaterSMART Water and Energy Efficiency grant funding opportunity. The DRC endeavors to utilize these funds to implement water saving projects through lateral canal piping in both the Central Oregon and Arnold Irrigation Districts, and installation of SCADA gaging equipment throughout the Pilot Butte canal portion of COID. The projects will facilitate water savings and improved monitoring and measurement of irrigation water movement/deliveries.

The recently completed Deschutes Basin Study, the current work of the Deschutes Basin Water Collaborative, and the on-going water conservation projects within these districts are all moving the basin forward towards better drought resiliency and improved water efficiency of existing irrigation practices. Water efficiency projects and improved irrigation water monitoring, made possible through this funding, will be important next steps in sustainably meeting the Deschutes basin water demands and water management goals. These projects will also allow the districts to move forward in meeting the demands of the basin, implementing the Habitat Conservation Plan (HCP) and in doing so, provide reliable water for agriculture and municipalities, while restoring critical stream flows – particularly during significant drought conditions.

We support the DRC in requesting this grant to implement water efficiency and improved management projects.

Thank you for your consideration.

Sincerely,

Robert A. Brunoe
General Manager, Branch of Natural Resources, Tribal Historic Preservation Officer
Confederated Tribes of Warm Springs

Oregon
Kate Brown, Governor

Water Resources Department
South Central Region
Watermaster District 11
231 SW Scalehouse Loop, Suite 103
Bend, OR 97702
Phone: (541) 306-6885
www.wrd.state.or.us

U. S. Bureau of Reclamation
1150 North Curtis Road
Boise, ID 83706-1234

July 18, 2022

Re: BOR WaterSMART: Water and Energy Efficiency Grant Proposal

Dear Grant Review Team:

Oregon Water Resources Department encourages support for the proposal from the Deschutes River Conservancy (DRC), for the Bureau of Reclamation WaterSMART Water and Energy Efficiency grant funding opportunity. The DRC endeavors to utilize these funds to implement water saving projects through lateral canal piping in both the Central Oregon and Arnold Irrigation Districts, and installation of SCADA gaging equipment throughout the Pilot Butte canal portion of COID. The projects will facilitate water savings and improved monitoring and measurement of irrigation water movement/deliveries.

The recently completed Deschutes Basin Study, the current work of the Deschutes Basin Water Collaborative, and the on-going water conservation projects within these districts are all moving the basin forward towards better drought resiliency and improved water efficiency of existing irrigation practices. Water efficiency projects and improved irrigation water monitoring, made possible through this funding, will be important next steps in sustainably meeting the Deschutes basin water demands and water management goals. These projects will also allow the districts to move forward in meeting the demands of the basin, implementing the Habitat Conservation Plan (HCP) and in doing so, provide reliable water for agriculture and municipalities, while restoring critical stream flows – particularly during significant drought conditions.

We support the DRC in requesting this grant to implement water efficiency and improved management projects.

Thank you for your consideration.

Kyle Gorman
Region Manager – South Central Region
Oregon Water Resources Department
Kyle.G.Gorman@water.oregon.gov

Bureau of Reclamation
1150 North Curtis Road
Boise, ID. 83706-1234

July 20, 2022

SUBJECT: Bureau of Reclamation WaterSMART - Water and Energy Efficiency Grant Proposal

Dear Grant Review Committee,

The Deschutes Redbands Chapter of Trout Unlimited strongly supports the Deschutes River Conservancy's (DRC) application, in partnership with Central Oregon Irrigation District (COID), North Unit Irrigation District (NUID) and Arnold Irrigation District (AID), for grant support from the Bureau of Reclamation's (BAR) WaterSMART program. This funding will further water savings initiatives within the Deschutes Basin by targeting lateral canal piping in both the COID and AID service areas along with installation of SCADA gaging equipment throughout the Pilot Butte Canal portion of COID. These long overdue projects will facilitate water savings and improved monitoring and measurement of irrigation water deliveries.

In our view, these projects are important steps toward enabling the districts to fully implement the provisions of the Deschutes Basin Habitat Conservation Plan (HCP) within the timeframes the plan specifies. They address a critical infrastructure need within the current distribution system and will provide improved drought resiliency and water efficiency over existing irrigation practices. These projects will allow the districts to move forward in providing reliable water for agriculture and municipalities, while restoring critical stream flows, particularly during significant drought conditions.

The Deschutes Redbands Chapter of TU has 720 members committed to protecting the coldwater fisheries of the Deschutes Basin with particular emphasis on restoring winter flows in the Upper Deschutes and reducing the severity of flow fluctuation in this reach of the river. We see this grant support as a necessary investment in upgrading the existing irrigation water delivery system in order to meet future demands for this resource by enabling productive agriculture, achieving HCP flow restoration standards and ensuring water supply reliability for the growing communities in the Deschutes Basin.

Sincerely,

Shaun Pigott, President
Deschutes Redbands Chapter – Trout Unlimited
16 NW Kansas Ave.
Bend, OR. 97703
spigott@teleport.com