



— BUREAU OF —  
RECLAMATION

WaterSMART:  
Water and Energy Efficiency Grants  
BOR-DO-21-F001

FY  
2021

# Irrigation Canal Company

ICC Canal Piping and  
Diversion Project

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- Attachment A – Project Location Map
- Attachment B – Project Detail Map
- Attachment C – ICC Service Area and On-Farm Location Map
- Attachment D – Water Conservation Assessment
- Attachment E – Reclamation’s 2015 Water Efficiency Study
- Attachment F – Letters of Support
- Attachment G – Landowner Signatures and On-Farm Locations

## Technical Proposal and Evaluation Criteria

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### Executive Summary

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#### Applicant Info

*Date:* September 17, 2020

*Applicant Name:* Irrigation Canal Company

*City, County, State:* La Grande, Union County, Oregon

*Project Manager:*

Shae Talley  
1201 Adams Ave.  
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*Project Funding Request:* **Funding Group II \$1,000,000;** Total Project Cost \$2,097,000

#### Project Summary

*One paragraph project summary that provides the location of the project, a brief description of the work that will be carried out, any partners involved, expected benefits and how those benefits relate to the water management issues you plan to address.*

The ICC Canal Piping and Diversion Project located in La Grande, Oregon, will save 1,805 acre-feet of water annually by piping 6,200 feet of open earthen canal and reconstructing the ICC Diversion, which is located on the Grande Ronde River.

Declining water levels in the Grande Ronde River, diversion structure age and location, and 62 percent seepage losses in the open canal delivery system has a substantial impact on the water reliability for the ICC and its users. The existing ICC diversion is structurally incapable of diverting enough water to irrigate and provide water for 1,021 acres of agricultural land due to the large amount of water lost to seepage. Of the flows that ICC can divert, 1,900 acre-feet is lost annually to seepage and non-allocated use. Seepage losses are flooding residential basements and preventing irrigators at the end of the system from receiving any water at all. The open canals are also used to collect stormwater within the City of La Grande, which coupled with seepage losses, creates even more flooding issues.



*Figure 1 Grande Ronde River Near ICC Diversion*

The proposed project will reconstruct the diversion structure and replace 6,200 feet of open canal with 30-inch HDPE pipe.

The proposed project will contribute to the goals of this FOA in the following ways:

- **Conserve water:** ICC will conserve and use water more efficiently by producing a quantifiable water savings of 1,805 acre-feet and by better managing their water rights.
- **Contribute to water reliability:** Development of this project will greatly increase water reliability for ICC and its users by allowing the diversion and efficient delivery of adequate irrigation flows.
- **Reduce future water conflicts:** This project will reduce multiple ongoing conflicts between users, residents, and ICC as it provides users with their full allotment of water, increases canal conveyance efficiency, and eliminates seepage losses, thereby reducing flood damages to residential homes.

### Length of Time and Estimated Completion Date

*State the length of time and estimated completion date for the proposed project.*

It is anticipated that the notice of award will be Feb/Mar 2021, and based on past experience, a fully executed contract ready by Sept/Oct 2021. The environmental process will need to be started as soon as there is an executed contract. It is expected that it will take ten to fourteen months to complete the environmental review and final design.

Advertising and bidding the project will take place in Oct/Nov 2022. Construction needs to take place outside of the irrigation season, which begins on April 15 and ends October 31. Construction will begin in Nov 2022 and go through Apr 2023, and again in Nov 2023 through Apr 2024. Final reporting and project close-out will take place in Aug/Sept 2024. The project will be accomplished within the three-year allowance.

### Federal Facility

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

The project is not located on a Federal facility. All canals are owned and operated by ICC and are located within canal easements and City of La Grande right-of-way.

### Project Location

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

### Geographic Location

The ICC Canal Piping and Diversion project area is situated in and around the City of La Grande, Union County, in northeast Oregon (Latitude 45°32'45.66"N, Longitude

118°08'79.08"W). La Grande lies at an elevation of 2,785 feet, east of the Blue Mountains and on the west side of the Grande Ronde Valley. The Grande Ronde Valley, part of the Columbia River Plateau, is a low relief valley with current land use dominated by irrigated agriculture. For a project location map and detailed project map, **See Attachment A – Project Location Map, Attachment B – Project Detail Map, and Attachment C – ICC Service Area and On-Farm Location Map.**

## Technical Project Description

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*Provide a comprehensive description of the technical aspects of your project, including the work to be accomplished and the approach to complete the work. This description should provide detailed information about the project including materials and equipment and the work to be conducted to complete the project.*

**Diversion Improvements:** The proposed diversion reconstruction consists of re-grading the existing Grande Ronde River channel with streambed simulation material and installing rock vanes to construct a roughened channel. The upstream rock vane will be installed to provide the required water surface elevation for proper fish screen operation and diversion flow rates. The proposed diversion portion of the project will eliminate the annual in-stream maintenance in the Grande Ronde River, which will improve fish habitat and passage along this reach of the river by reducing the sediment loading and disruption of the stream bed.

**Pipeline:** Two sections – 6,200 feet will be piped with 30-inch HDPE Pipe. The sections include the Northeast and Southeast open canal. The Northwest section will abandon the open canal, which will then be used only for stormwater conveyance and will pipe 3,500 feet of a new canal located within the City right-of-way along Harrison Avenue. This will allow this section of the canal to be moved out of residential backyards. The pipe will then tie back into the existing canal alignment on the Southeast section. At the tie-in location, a concrete structure will be installed to prevent scour and to control flows.

The Southeast section of piping will include piping 2,700 feet of the open canal on the east side of the City of La Grande from North Willow Street to the east end of H Avenue. This section will run the pipeline within the existing canal alignment to minimize utility conflicts and new easement acquisition.

The piping portion of the project is anticipated to eliminate the high-water losses ICC is experiencing by eliminating canal seepage and preventing illegal pumping from the canal. The piping will also reduce the concern for flooding basements. Piping the open canal will improve the water quality by eliminating contaminants that flow into the open canal from streets and farmland. **See Attachment D – Water Conservation Assessment.**

## E.1. Technical Proposal: Evaluation Criteria

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### E.1.1. Evaluation Criterion A – Quantifiable Water Savings (30 Points)

#### Quantifiable Water Savings

*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.*

By piping the proposed two sections of the ICC Canal, this project will conserve 1,805 acre-feet of water, or 59 percent of total diverted flows currently lost to seepage and non-allocated use.

*Describe current losses. Explain where the water that will be conserved is currently going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground).*

Most of the water that will be conserved can be attributed to the large amounts of seepage losses in the open, earthen canal. There has also been significant illegal diversion by residential property owners that border the open canal. There have been numerous reports of residential property owners dropping a pump in the open canal and taking water for lawns and gardens who do not have a right to this water. Policing this is difficult in that the canal runs through many backyards of multiple residential subdivisions.

*Describe the support/documentation of estimated water savings. Provide sufficient detail supporting how the estimate was determined, including all supporting calculations.*

The estimated water savings for the proposed project was determined based on the water loss studies conducted by Reclamation in the 2015 Grande Ronde River Water Efficiency Study (2015 Water Efficiency Study). Reclamation determined the conveyance efficiency of the ICC Canal to be 38 percent. ICC diverts an average of 3,064 acre-feet per year multiplied by a conveyance efficiency of 38 percent, equaling a total conveyance of 1,164 acre-feet and a total conveyance loss of 1,900 acre-feet. Considering an average conveyance efficiency of 95 percent upon project completion, the project will conserve 1,805 acre-feet per year. **See Attachment E - Reclamation's 2015 Water Efficiency Study.**

#### Canal Lining/Piping

a. *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.*

The average annual water savings as a result of the project is determined to be 1,805 acre-feet. Reclamation estimated within the 2015 Water Efficiency Study that ICC would realize a 92 to 98 percent conveyance efficiency with the installation of HDPE pipe.

- b. *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.*

Reclamation staff in the La Grande field office completed weekly canal flow measurements in the ICC canal during the irrigation season between July and October 2014. The results were documented in the 2015 Water Efficiency Study.

Flow in the ICC canal system was measured at two locations: the *ICC at Headworks* measurement site, located directly downstream from the diversion structure, and the *ICC at End of H St.* measurement site, located on the southeast side of La Grande as the canal exits the urban area and enters a more rural setting. These measurement sites were selected in order to try to best estimate flow losses in the ICC canal and existing piping through the city of La Grande, where significant seepage and other losses are expected.

Flow measurements were made using a Flo-Mate electromagnetic flowmeter. In addition to the periodic flow measurements, staff gages were installed at each measurement location and equipped with stage recorders set to record regular hourly water stages throughout the season. The objective of using stage recorders was to enable the estimation of a more continuous time series (1-hour time step) of flow estimations by applying stage-discharge relationships developed using the periodic flow measurements to the continuous stage recorder data. Stage discharge relationships for each location have been developed using the flow measurement data. Equations were fit to the data to best predict flow rate from staff gage stage, and stage recorder stages were shifted to reflect staff gage stages by the field office staff who managed the measurements and the stage recorders. Multiple types of equations were explored to best fit the data, including linear and 2<sup>nd</sup> order polynomials. Overall, exponential relationships provided the best fit of the stage-discharge data and were selected for application. The general form of the stage-discharge relationships is as shown below, where Q is the flow (in cfs), and H is the staff gage stage (in ft.), and a and b are empirical coefficients.

$$Q=H-b/ea$$

Canal flow losses were estimated and approximated to the extent possible using available data. Additionally, data and seepage loss estimations from ponding tests completed by Reclamation in 1997 on the ICC Canal Section 1 (Reclamation, 1997) were used to estimate flow losses as well as verify losses that were estimated with other methods, as appropriate. Professional judgment and assumptions were made where sufficient data wasn't available to directly estimate canal losses. Estimated losses using typical assumptions were verified and calibrated as possible using measured canal flow data. Estimated canal losses for each section of both canals were used to estimate total conveyance efficiency for each company's canal delivery system. Estimated and calculated losses and conveyance efficiency were applied to



both observed 2014 canal flow levels as well as the system design flows as assumed within this report. The total conveyance efficiency estimated was 0.38 for the ICC Canal.

Flow measurements were taken at the upstream and downstream boundaries of this section allowing for a mass balance estimation of overall flow loss. Several users have water rights between these boundaries, however they are all very small areas that amount to residential yards and thus the diversions within this reach are assumed to be zero. According to ICC representatives, there are known high flow losses within this reach that are of significant concern and this is confirmed with measured flow data. Calculated flow losses ranged between 1.0-3.6 cfs (29-63%) with an average loss of 1.8 cfs (42%). The highest two diversion measurements at the ICC at Headworks were 6.6 and 5.3 cfs, and the losses calculated for these flows are 3.6 and 3.4 cfs (54% and 63%), respectively. Assuming that measurement data is accurate, and no major diversions were operating above the downstream measurement site that were not identified, these flow losses are likely consistently contributing to high water losses within the system. There is also a significant potential for illegal diversion and use within this reach as open canal borders many residential properties. This section of ICC canal has a significant potential for overall water savings under alternatives such as piping or lining of canals that would greatly increase conveyance efficiency.

- c. *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)?*

Seepage/leakage losses of 5 percent are anticipated based on Reclamation’s estimated efficiency of 95 percent for an HDPE pipeline.

- d. *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?*

Annual transit loss reductions are estimated to be 1,537 acre-feet per mile and account for both sections of canal being piped. The water loss study conducted by Reclamation did not distinguish losses for each section of canal.

- e. *How will actual canal loss seepage reductions be verified?*

Flows will be measured using a portable flow meter and will be compared to the results from the water loss study conducted by Reclamation. A simple inflow and outflow summary will verify actual seepage loss reduction.

- f. *Include a detailed description of the materials being used.*

8-inch Streambed Cobbles – 2,350 tons  
Streambed Boulders 2 Man – 10  
30-inch HDPE Pipe – 6,200 feet  
Imported Trench Backfill – 4,700 tons  
8-inch Water Main Replacement – 100 feet  
8-inch Gate Valve Replacement – 3  
Water Meter Assembly – 2

Concrete Manholes – 15

**E.1.2. Evaluation Criterion B – Water Supply Reliability (18 Points)**

Address how the project will increase water supply reliability. Provide sufficient explanation of the project benefits and their significance. These benefits may include, but are not limited to, the following:

1. Will the project address a specific water reliability concern? Please address the following:
  - o Explain and provide detail of the specific issue(s) in the area that is impacting water reliability, such as shortages due to drought, increased demand, or reduced deliveries. Will the project directly address a heightened competition for finite water supplies and over-allocation (e.g., population growth)?

Within Reclamation’s Water Efficiency Study, it was concluded that the low efficiency of the canal through the City of La Grande can be attributed to seepage from the canal and non-allocated use by individuals living adjacent to the canal who are pumping or diverting water illegally.

In addition to the large amounts of water lost to seepage and non-allocated use, the existing ICC diversion structure on the Grande Ronde River is unable to divert the additional flows that would be necessary to provide adequate irrigation water for multiple water right holders; and some end users who own over 250 acres of land are not receiving any water at all!

By significantly increasing conveyance efficiency, the proposed project will allow ICC to divert the needed water to provide water to all of its users and reduce the amount of water they currently need to divert out of the Grande Ronde River in order to fulfill their shareholder’s water rights. With the existing canal efficiency, ICC would need to divert **62 percent more water** than is necessary to provide water right holders with adequate irrigation water. Reclamation determined that piping projects such as this could have substantial, positive in-stream benefits for the Grande Ronde River, which is a Columbia River Tributary.



Figure 2 Section of Open ICC Canal

- *Describe how the project will address the water reliability concern? In your response, address where the conserved water will go and how it will be used, including whether the conserved water will be used to offset groundwater 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.*

The proposed project will reconstruct the diversion structure and pipe two sections of canal through the City of La Grande that are losing the most water. These improvements will allow ICC to provide irrigation water to over 250 acres of land that **do not receive** any of their water shares as of now, while also conserving 1,805 acre-feet of water annually. The water loss reductions, along with a higher efficiency delivery system, will allow ICC to **reduce the amount of water they need to divert** from the Grande Ronde River by 62 percent, which could increase flows during low flow periods, typically occurring in July and August. This will also help improve water quality by lowering water temperatures in a river that is listed as a critical habitat for endangered species, including Snake River Steelhead and Chinook Salmon.

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

An estimated 1,805 acre-feet of water that is currently being lost to seepage and illegal pumping will instead be conveyed through the highly efficient HDPE piped canal where it will be delivered to the agricultural fields located on the south-east side of the Grande Ronde Valley. There are over 250 acres of agricultural fields that do not receive any water due to the inefficiencies of the aging delivery system infrastructure, and 1,021 acres that are not receiving adequate flows. Additional flows will be conserved by ICC's reduced diversion requirements, which will allow more water to remain in the Grande Ronde River.

- *Indicate the quantity of conserved water that will be used for the intended purpose.*

It is anticipated that all 1,805 acre-feet that is conserved will now be allowed to travel through ICC's delivery system and be delivered to the end users who own over 250 acres of farmland and are not receiving any water.

2. *Will the project make water available to achieve multiple benefits or to benefit multiple water users? Consider the following:*

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

**The proposed benefits from the canal improvements include:**

- Improve conveyance efficiency by reducing seepage losses and eliminating non-permitted use through a portion of the canal that is experiencing the most losses.
- Reduce ongoing flooding of residential basements that align with the open canal.

- Improve water quality by eliminating contaminants gathered in the open canal throughout the City and from agriculture land runoff.

**The proposed benefits from the diversion improvements include:**

- Eliminate annual in-stream maintenance for the existing diversion structure in the Grande Ronde River, which will help reduce sediment loading and the constant disruptions within the stream bed. This reduction of sediment and disruptions will improve the fish habitat and fish passage in the Grande Ronde River. This area of the river is a critical habitat for Chinook salmon, steelhead, and bull trout.
- Allow ICC to divert adequate flows for end users.
- Increase flows in the Grande Ronde River in the late summer months when flows are at their annual lows, by working with Oregon Water Resources to protect water in-stream and reduce the need to divert so much water just to deliver it to ICC’s users. ICC will be working with the Allocation of Conserved Water Program to obligate some of its water rights to instream flows.
  - *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)? Describe the relationship of the species to the water supply, and whether the species is adversely affected by a Reclamation project.*

The Upper Grande Ronde River Sub Basin Water Quality Management Plan (GRWQC, 2000) identified issues such as riparian habitat degradation, low summer flows, high water temperatures, and channelization. Low summer river flows and high-water temperatures, among other factors, are generally considered to be significant factors contributing to poor conditions that do not sustain healthy fish populations in the Grande Ronde Basin.

The upper Grande Ronde River hosts several anadromous salmonid species listed as threatened under the Endangered Species Act (ESA), including Snake River Steel Head and Spring Chinook Salmon. Stream flow and temperature have been identified as limiting factors for the abundance of local species. The river has been listed as “water quality limited” for temperature and several other parameters under Section 303(d) of the Clean Water Act. In addition, ICC’s existing diversion does not provide the required water surface elevation to properly operate the rotary drum fish screen.

The proposed diversion improvements will eliminate the annual in-stream maintenance in the Grande Ronde River, which will improve fish habitat and passage along this reach of the river, by reducing the sediment loading and not disrupting the stream bed. Piping the open canal will improve the

water quality by eliminating contaminants gathered in the open canal through the City.

The reduction in water lost to seepage will improve delivery system efficiency, allowing for a reduction in total diversion requirements for ICC. ICC will be working with the Allocation of Conserved Water Program to obligate some of its water rights to instream flows. Reduced diversion requirements will allow more water to remain in the Grande Ronde River, increase stream flow, and lower water temperature to help mitigate the effects of these limiting factors listed in the GRWQC, 2000.

- *Will the project benefit a larger initiative to address water reliability?*

Yes. The project is a fulfillment of the 2015 Water Efficiency Study's recommendations made by Reclamation to address water availability in the Grande Ronde River during low periods, which have adverse effects on endangered aquatic species. The proposed project will improve delivery system efficiency and allow ICC to reduce the current diversion amount required to fulfill users' water rights.

- *Will the project benefit Indian tribes?*

The project has no direct benefits to any Indian tribes.

- *Will the project benefit rural or economically disadvantaged communities?*

The project will have measurable improvements by piping sections of open canal and by eliminating seepage losses that continue to flood residential basements in the City of La Grande. The 2019 U.S. Census estimates the Median Household Income for the City of La Grande to be \$41,422, versus \$59,393 for the State of Oregon. The percent of families in the City of La Grande with income below the poverty level is estimated to be 21.8 percent, which is higher than the percent of families with incomes below the state poverty level of 12.6 percent. By reducing flooding impacts on the residents, the project will reduce stress and money needed to protect the properties of the economically distressed population within La Grande.

The workforce within the City of La Grande relies heavily on agriculture production, with 11 percent of the workforce directly employed in the industry and many more that benefit indirectly. Increased agricultural production within the City will provide a much-needed boost to the local economy in these economically unstable times.

- *Describe how the project will help to achieve these multiple benefits. In your response, please address where the conserved water will go and where it will be used, including whether the conserved water will be used to offset groundwater 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.*

The proposed project **will**:

- Reduce the need for annual in-stream maintenance in the Grande Ronde River, sediment loading, and disruption within the stream bed which will improve fish habitats and passage.
- Eliminate contaminants collected in the open canal throughout the City and along agricultural fields.
- Increase conveyance efficiency and reduce current diversion requirements.
- Leave portions of existing canals for stormwater conveyance to help mitigate flooding concern.
- Allow ICC to reduce their needed water diversion to fulfill shareholder water rights.
- Water conserved will be conveyed through the ICC Canal to end users who currently do not receive their water right.

3. *Does the project promote and encourage collaboration among parties in a way that helps increase the reliability of the water supply?*

This project is the result of collaboration and information sharing among many parties. The Bureau of Reclamation, U.S. Army Corps of Engineers, and Bonneville Power Administration collaborated with ICC and Oro Dell Ditch Company in 2015 to produce the Grande Ronde River Water Efficiency Study. The Union Soil and Water Conservation District (Union SWCD) entered into an agreement with ICC and Anderson Perry & Associates, Inc. to provide an engineering assessment for the ICC Water Conservation Assessment project.

Continued collaboration is anticipated between water managers as the project progresses and public involvement opportunities are presented.

Within the Natural Resources Conservation Service (NRCS) “Union County Long Range Plan,” resource concerns were identified. These include inefficient use of irrigation water, energy conservation, and soil health on crop land; plant health and condition, and invasive plants on forest and grazed land; water quality; threatened and endangered species; renewable energy generation on all land uses. This project will directly implement many of the concepts included in the NRCS Long Range Plan by improving the efficiency of the distribution system of the ICC, which will allow them to draw less water from the Grande Ronde River during low flow periods, raising flows and lowering

water temperatures to benefit several species of salmon listed as threatened under the Endangered Species Act (ESA).

- *Is there widespread support for the project?*

Letters of support for the project include:

- City of La Grande
- Oregon Department of Transportation
- Union Soil and Water Conservation

Water right holders fully support the project as it will provide increased water availability and reliability. Additional support for the project from the Bureau of Reclamation, U.S. Army Corp of Engineers, Bonneville Power Administration, and the Union Soil and Water Conservation District is evident by the efforts shown in the studies completed in preparation for the proposed project. **See Attachment F- Letters of Support.**

- *What is the significance of the collaboration/support?*

Support from the City of La Grande and the Oregon Department of Transportation will facilitate project implementation by facilitating access to the permits that will be required to construct the project. Efforts made in the preparation of preliminary feasibility studies by Reclamation, U.S. Army Corp of Engineers, Bonneville Power Administration, and the Union Soil and Water Conservation have enabled the project to get to this stage of development.

- *Is the possibility of future water conservation improvements by other water users enhanced by completion of this project?*

The completion of this project would provide a blueprint for future projects and allow entities to more closely estimate project implementation costs as well as economic, environmental and cultural project benefits; as ICC works with the Allocation of Conserved Water Program to obligate some of its water rights to instream flows. Others can benefit from this process and the information developed. In addition, water conservation will be observed and reported as part of the grant agreement, which will allow information gathered to be made available for future planning and strategic purposes.

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

There has been ongoing tension over water resources among ICC users as many are not being provided their full allotment of water, and some are left without any water at all. Agriculture is a huge part of life in La Grande, and when farmers cannot get enough water to produce quality crops, or any crop at all, tensions rise.

The implementation of this project would enable ICC to provide reliable irrigation water to all users and ease tensions.

Another water-related crisis that this project will address are the tensions caused by nature of an open, unlined canal running through a residential neighborhood. Seepage losses within the canal cause the water table to rise and flood residential basements. In addition, some residents are illegally pumping water out of the open canal, further reducing water availability for users. This project will eliminate these concerns and the water-related conflicts that accompany them.

- *Describe the roles of any partners in the process. Please attach any relevant supporting documents.*

The City of La Grande and the Oregon Department of Transportation have shown their support for the project and will facilitate project implementation by cooperating in the permitting process.

4. *Will the project address water supply reliability in other ways not described above?*

Reclamation determined that by piping open canals within the Columbia River Basin to increase irrigation water delivery efficiency, there could be an estimated in-stream flow benefit of 5.6 cfs in August and 10.4 cfs in September within the Grande Ronde River.

### **E.1.3. Evaluation Criterion C – Implementing Hydropower (18 Points)**

*If the proposed project includes construction or installation of a hydropower system, please address the following:*

The proposed project does not include any hydropower elements.

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

One ICC shareholder has recently installed two center-pivots at a cost of \$125,000 each in order to increase irrigation efficiency. Other users have expressed interest in implementing similar improvement projects. This project will help to encourage these efforts by providing a safer, more reliable, and more efficient water delivery system for the canal. This will give farmers the confidence to invest in improvement projects such as piping ditches and laterals and or installing sprinklers and pivots. These types of improvements will permit their irrigation systems to be more efficient and will also allow for higher crop yields and less flooding potential in residential neighborhoods that are continually encroaching on the agricultural lands.



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

Farmers who represent 635 acres have indicated an interest in irrigation efficiency upgrades, such as moving from flood irrigation to sprinklers or pivots. These farmers are willing to explore financial assistance through NRCS in the future as water availability becomes more dependable.

- *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.*

These farmers have indicated an interest in projects to improve irrigation efficiency such as sprinkle or pivots which are eligible for NRCS assistance. They have not yet applied for funding and are hesitant to invest more into farms that are not being provided adequate irrigation flows. These farmers represent 635 acres and have signed the attached landowner signatures form to indicate their interest in future irrigation efficiency improvement projects.

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

**See Attachment G – Landowner Signatures and On-Farm Locations.**

- *Describe how the proposed WaterSMART project would complement any ongoing or planned on-farm improvement.*
  - *Will the proposed WaterSMART project directly facilitate the on-farm improvement? If so, how? For example, installation of a pressurized pipe through WaterSMART can help support efficient on-farm irrigation practices, such as drip-irrigation.*

The proposed project will facilitate on-farm improvement projects by increasing their trust in ICC's ability to provide adequate irrigation water going forward. Increased water reliability in the area will provide the confidence necessary to further invest in on-farm upgrades.

OR

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

The proposed project will complement the \$250,000 investment made by one user to install two center pivots to increase irrigation efficiency.

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

It is estimated that by converting from flood to sprinkle irrigation techniques, combined with an irrigation efficiency increase from 65 percent to 80 percent,

ICC users could potentially reduce water demand by an additional 285 acre-feet per year. ICC users representing 635 acres and an allotment of 1,905 acre-feet per year have expressed interest in upgraded on-farm irrigation efficiency projects. These projects are estimated to have a potential 15 percent increase in efficiency which could result in additional water savings of around 285 acre-feet per year.

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

**See Attachment C – ICC Service Area and On-Farm Location Map.**

**E.1.5. Evaluation Criterion E – Department of the Interior and Bureau of Reclamation Priorities (10 Points)**

*Address those priorities that are applicable to your project. Points will be allocated based on the degree to which the project supports one or more of the priorities listed, and whether the connection to the Priority(ies) is well supported in the proposal.*

Department Priorities

1. *Creating a conservation stewardship legacy second only to Teddy Roosevelt.*

Teddy Roosevelt once said, “Conservation means development as much as it does protection. I recognize the right and duty of this generation to develop and use the natural resources of our land; but I do not recognize the right to waste them, or to rob by wasteful use, the generations that come after us.”



The proposed project will live up to this legacy by developing the means whereby to reduce ICC’s diversion requirements and assure that the water that was previously being lost and wasted will be used to increase agricultural productivity; for the benefit of the local economy for generations to come.

2. *Restoring trust with local communities.*

ICC understands that the water delivered in the canal is directly tied to the financial well-being of their users. ICC is entrusted with the responsibility to ensure that water is being appropriated and protected with the utmost care and diligence. Unfortunately, ICC users have been gradually losing their trust in ICC’s ability to deliver their water consistently, evidenced by illegal pumping and inefficient canal conveyance. ICC hopes to restore that trust by making every effort possible to improve their ability to deliver irrigation water consistently and prevent continued non-allocated use. Although they do not have the financial ability to complete the necessary improvements on their own, ICC has been working hard to explore every option possible to fund the project. They realize that any action that conserves or

increases water reliability will continue to prove to the water right holders that ICC takes this responsibility very seriously.

3. *Modernizing our infrastructure.*

The proposed project will modernize local infrastructure by constructing a diversion that is structurally able to divert adequate flows in accordance with current water levels in the Grande Ronde River. Inefficient, open canals will be replaced with highly efficient HDPE pipe that will convey irrigation flows reliably to end users. A concrete vault control structure will be installed to enable stormwater to flow through the ICC canal pipeline after the irrigation season. These improvements will be built to the latest design standards, which take pride in outliving the useful life of old infrastructure design. ICC is confident that the proposed modernization of their infrastructure will fulfill expectations and provide the water reliability necessary to better care for its water users.

### Reclamation Priorities

1. *Leverage Science and Technology to Improve Water Supply Reliability to Communities*

The latest technology and design specifications will be utilized in project planning and implementation, which will result in a highly efficient and up-to-date ICC infrastructure that can be relied upon by water right holders for decades to come. The benefits of this project will be far reaching, positively impacting the environment, economy, and social well-being in the City of La Grande and surrounding communities.

2. *Address Ongoing Drought*

As drought continues to plague the western states, increased irrigation efficiency becomes even more crucial to the sustainability of resources dependent upon water supply. Many western states are being affected by ongoing drought conditions and will continue to struggle with water availability as the population grows. One way to mitigate the effects of drought is to increase the efficiency in which water is utilized, allowing for a reduction in water needs. The proposed project will reduce the amount of water ICC needs to divert by **62 percent!** in order to fulfill its shareholder's water rights. This kind of efficiency improvement will go a long way towards reducing the severity of impacts a drought would have on the area.

### **E.1.6. Evaluation Criterion F – Implementation and Results (6 Points)**

#### E.1.6.1. Subcriterion No. F.1 – Project Planning

*Does the applicant have a Water Conservation Plan and/or System Optimization Review (SOR) in place? Please self-certify or provide copies of these plans where appropriate to verify that such a plan is in place.*

A preliminary engineering Water Conservation Assessment (WCA) was completed by Anderson Perry & Associates, INC. in 2015 in conjunction with Irrigation Canal Company and Union Soil and Water Conservation District. The assessment was funded in part with a financial award from the Water Conservation Reuse and Storage Grant Program funded by the Oregon Water Resources Department.

*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, or other planning efforts done to determine the priority of this project in relation to other potential projects.*

Three alternatives were produced from the WCA, and of the three alternatives presented, only Alternative 1 (the proposed project) was considered feasible. The proposed project provides for water conservation, reliable water delivery, fish passage, and fish screening, and meets the other objectives of the project.

- 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).*

As stated above, the proposed project has surfaced as the only reasonable alternative to reduce the significant amount of water being lost to seepage and illegal pumping/diversion, while also addressing the ICC's inability to divert the flows necessary to provide users with their full water right.

#### E.1.6.2. Subcriterion No. F.2 – Performance Measures

*Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (e.g., water saved or better managed, energy generated or saved).*

Flow measurements will be conducted using the same method and at the same two locations as were conducted in Reclamation's Water Efficiency Study. The ICC at Headworks measurement site is located directly downstream from the diversion structure and the ICC at End of H St. measurement site is located on the southeast side of La Grande as the canal exits the urban area and enters a more rural setting. A Flow-Mate electromagnetic flowmeter and an Acoustic Doppler Profiler will be used to measure the new flows on a regular basis. This will allow ICC to isolate the flow measurements used in canal loss verifications specific to the 6,200 feet of new pipe included in this project. The difference, if any, will be the new canal seepage losses. This will be compared to the loss number calculated in the flow loss study completed by Reclamation during the irrigation season between July and October 2014.

#### E.1.6.3. Subcriterion No. F.3 – Readiness to Proceed

*Identify and provide a summary description of the major tasks necessary to complete the project.*

ICC anticipates a notice of award and a signed agreement to be completed by Sept/Oct 2021. Upon completion of the signed agreement, the environmental process will begin, which is expected to take ten to fourteen months to complete. Design will begin in Jan/Feb 2022 and will be completed by Aug/Sept 2022, with advertising and bidding taking place in the Sept/Dec 2022 timeframe. Construction will be done outside of the irrigation season – Jan 2023 through April 2023, and again from October 2023 through April 2024. The Project can be completed within the three-year timeframe with final reports expected in Aug/Sept 2024.

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

It is anticipated that the following permits will be required:

Joint 404 Fill/Removal and 401 Water Quality Certification permits, Biological Assessment, Street Excavation, County Riparian Ordinance, SHPO Review, NOAA Consultation, and ODFW Fish Passage Approval.

Preliminary discussions with the City of La Grande on alignments and required permits are underway and are likely to be approved.

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

Preliminary designs have been completed to develop a cost estimate. No other design work has been completed at this point.

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

There are no new policies or administrative actions required to implement the project.

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

### **July 2020 – December 2022**

Agreement Signed and Environmental: Sept/Oct 2021 – Dec 2022

Design: Jan/Feb 2022 – Aug/Sept 2022

Advertising and Bidding: Sept – Dec 2022

### **Jan 2023 – Sept 2023**

Construction: Jan 2023 – April 2023

### **October 2023 – July 2024**

Construction: October 2023 – April 2024

Project closed out: July 2024

### **E.1.7. Evaluation Criterion G – Nexus to Reclamation Project Activities (4 Points)**

*Is the proposed project connected to Reclamation project activities? If so, how? Please consider the following:*

ICC water shares are diverted out of the Grande Ronde River, a Columbia River Basin tributary, which was studied by the Bureau of Reclamation, U.S. Army Corps of Engineers, and Bonneville Power Administration in 2015, to meet commitments made in the 2010 Supplemental Federal Columbia River Power System Biological Opinion (FCRPS BiOp). The FCRPS BiOp includes a Reasonable and Prudent Alternative (RPA), or a suite of actions, to protect salmon and steelhead listed under the Endangered Species Act (ESA) through their life cycle.

Reclamation’s contributions to habitat improvement in the area are meant to be within the framework of the Federal Columbia River Power System RPA or related commitments.

- *Does the applicant receive Reclamation project water?*

The applicant does not receive Reclamation project water; however, ICC diverts water from the Grande Ronde River, a Columbia River Basin tributary, that Reclamation has made commitments and efforts towards in order to improve fish habitat.

- *Is the project on Reclamation project lands or involving Reclamation facilities?*

No.

- *Is the project in the same basin as a Reclamation project or activity?*

The project is not directly located in a Reclamation project basin; however, the project will produce direct benefits to the Grande Ronde River, which is a Columbia River tributary. Reclamation completed the Grande Ronde River Water Efficiency Study in 2015 in an effort to contribute to the implementation of salmonid habitat improvement projects to help meet commitments they made in the 2010 FCRPS BiOp.

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

Yes, the project will reduce water losses by 1,805 acre-feet, which will allow ICC to reduce the amount of water they need to divert in order to fulfill their users’ water rights. The reduced diversion requirements, due to increased conveyance efficiency, will potentially increase in-stream flows within the Grande Ronde River, which would reduce the environmental and ecological stresses caused by low flow periods in the region.

*Will the project benefit any tribe(s)?*

No, the project will not have any direct benefits to Indian Tribes.

### E.1.8. Evaluation Criterion H – Additional Non-Federal Funding (4 Points)

*State the percentage of non-federal funding provided using the following calculation*

$$\frac{\$1,097,000 \text{ ICC (OWRD) NonFederal Funding}}{\$2,097,000 \text{ Total Project Cost}} = 52\%$$

## Project Budget

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### Funding Plan and Letters of Commitment

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

ICC is making application to the Oregon Water Resources Department Water Project Grants and Loans Program for their contribution to the project. The application was made previously but was pulled for multiple reasons including COVID-19 and the impact it had on the public outreach requirements of the application. A new round of applications will be accepted for

funding in Spring 2021 and notice of award is anticipated by November 2021. If they are not awarded, ICC will go to the open market to obtain a loan for its matching funds.

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

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

ICC is making application to the OWRD Water Project Grants and Loans Program for the matching money.

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

ICC has spent significant time planning for the project, and they will continue to do so in oversight and record keeping.

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

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

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

N/A.

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

ICC is making application to OWRD's Grants and Loans program for \$1,097,000, or 48 percent, of the project cost. The notice of award is anticipated by November 2021. If the application for funding through OWRD is unsuccessful, ICC will turn to the open market for a loan for the matching money.

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

- *The project expenditure and amount.*

N/A.

- *The date of cost incurrence.*

N/A.

- *How the expenditure benefits the Project.*

N/A.

## Budget Proposal

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Table 1 – Total Project Cost Table

Source	Amount
Costs to be reimbursed with the requested Federal funding	\$1,000,000
Costs to be paid by the applicant	\$1,097,000
Value of third party contributions	\$0
<b>Total Project Cost</b>	<b>\$2,097,000</b>

Table 2 – Budget Proposal

Budget Item Description	Computation		Quantity Type	Total Cost
	\$/Unit	Quantity		
<b>Salaries and Wages</b>				\$0
<b>Fringe Benefits</b>				\$0
<b>Equipment</b>				\$0
<b>Supplies and Materials</b>				\$0
<b>Contractual</b>				\$0
Environmental	\$118,368	1	EA	\$118,368
Design	\$135,278	1	EA	\$135,376
Construction Observation	\$135,278	1	EA	\$135,376
<b>Construction</b>				
Mobilization	\$160,000	1	EA	\$160,000
Traffic Control	\$3,500	1	EA	\$3,500
Streambed Cobbles 8"	\$78	2,300	TON	\$183,300
Streambed Boulder 2 Man	\$182	10	EA	\$1,820
Excavation	\$25	6,200	CY	\$155,000
Dewatering	\$37,000	1	EA	\$37,000
30-inch HDPE Pipe	\$78	6,200	LF	\$483,600
Imported Trench Backfill	\$34	4,700	TON	\$159,800
Trench Resurfacing	\$110	3,800	SY	\$418,000
8-inch Water Main Replacement	\$50	100	LF	\$5,000
8-inch Gate Valve Replacement	\$1,250	3	EA	\$3,750
Resetting Existing Hydrants	\$2,600	1	EA	\$2,600
Water Meter Assembly	\$1,300	2	EA	\$2,600
Manholes	\$5,000	15	EA	\$75,000
<b>Third-Party In-Kind Contributions</b>				<b>\$0</b>
<b>Other</b>				<b>\$0</b>
Legal	\$16,910	1	EA	\$16,910
<b>Total Direct Costs</b>				<b>\$2,097,000</b>
<b>Indirect Costs</b>				<b>\$0</b>
Type of rate	Percentage	\$base		\$0
<b>Total Estimated Project Costs</b>				<b>\$2,097,000</b>



## Budget Narrative

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### *Salaries and Wages*

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

### *Fringe Benefits*

No fringe benefits are required.

### *Travel*

No travel will be required.

### *Equipment*

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

### *Materials and Supplies*

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

### *Contractual*

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

The Engineering fees have been evaluated to ensure that they are fair and reasonable, based on the Bureau of Labor Statistics wage rates for engineers.

### *Third-Party In-Kind Contributions*

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

### *Environmental and Regulatory Compliance Costs*

The total environmental review cost is \$118,368. The estimate is based on similar projects in the Oregon area and accounts for the more stringent permitting requirements associated with in-stream biological assessments in the region and includes funds for the elevated public involvement standards.

### *Other Expenses*

Additional legal and administrative costs of \$16,910 are included for contract review and to draft and evaluate prescriptive easements and water allotments for project implementation.

*Indirect Costs*

No indirect costs will be part of the project.

*Total Costs*

ICC Portion: \$1,097,000	Fed Portion: \$1,000,000	Total: \$2,097,000
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## Environmental and Cultural Resources Compliance

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

As part of the Water Conservation Assessment that was completed by Anderson Perry & Associates, INC. in 2015, a preliminary environmental review of the potential impacts resulting from the implementation of the proposed piping project was conducted. This analysis considers potential direct, indirect, and cumulative effects on the environment from project implementation. This analysis also describes potential permits that may need to be obtained and regulatory requirements that may need to be met, as well as potential mitigation measures to minimize impacts to identified resources. As the project is further developed and funding is acquired, a more detailed report will be completed to meet specific agency requirements.

*Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?*

This project will have no effect on upland species, but has the potential to have direct, indirect, and cumulative impacts to listed fish species in the upper Grande Ronde River. Analysis and mitigation measures will be finalized in the permitting process. Important fish and wildlife habitat in the proposed project area and vicinity include the riparian areas surrounding the upper Grande Ronde River. The upper Grande Ronde River hosts several anadromous salmonid species listed as threatened under the ESA, including bull trout, Snake River steelhead, and Snake River Chinook salmon. The upper Grande Ronde River is listed as Critical Habitat for these species. According to Stream Net, these species may use the project area for spawning and migration. Redband trout (state listed) may also be located in the area. Stream flow and temperature have been identified as limiting factors for the abundance of local species. Because this project will require in-water work for the construction of the diversion improvements, there is a potential to impact these aquatic species. A Biological Assessment will likely be needed to fulfill consultation under section 7 of the ESA. Best management practices (BMPs) and mitigating factors for this project will likely require all in-water work for this project to occur in the Oregon Department of Fish and Wildlife in-water work window, the diversion improvement site isolated and dewatered, and fish salvage operations conducted to reduce project impacts to these species. The following table lists all threatened species and critical habitat in Union County.

Threatened Species and Critical Habitat	Potential Effect
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Snake River Steelhead <i>Oncorhynchus mykiss</i>	To be investigated
Snake River Chinook <i>Oncorhynchus tshawytscha</i>	To be investigated
Bull Trout <i>Salvelinus confluentus</i>	To be investigated
Gray Wolf <i>Canis lupis</i>	It is anticipated that there will be no affect. Occurs in the County but is a part of the Northern Rocky Mountain distinct population segment that has been delisted.
Yellow-billed Cuckoo <i>Coccyzus americanus</i>	It is anticipated that there will be no affect. Occurs in the County but is a part of the Northern Rocky Mountain distinct population segment that has been delisted.

*Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as “Waters of the United States?” If so, please describe and estimate any impacts the proposed project may have.*

According to the City of La Grande Local Wetlands Inventory Map and National Wetlands Inventory Map, there are no wetlands located in the project area. As such, it is supposed there will be no direct, indirect, or cumulative effects to wetlands, and no mitigation will be required.

The proposed diversion improvements will occur in the Grande Ronde River. This project has the potential to temporarily impact the upper Grande Ronde River. Removal and fill within this jurisdictional waterway require a Joint Permit Application be submitted to the U.S. Army Corps of Engineers and Oregon Department of State Lands for a 404 removal/fill permit and 401 water quality certifications from the Oregon Department of Ecology. It is possible that some of these requirements could be fulfilled under a nationwide general permit. The in-water portion of this project is likely to have direct impacts to the upper Grande Ronde River. The canal piping is unlikely to have direct, indirect, or cumulative impacts, but will be further evaluated as the project develops.

*When was the water delivery system constructed?*

The ICC Canal and diversion were constructed in 1863, the same date some of the water rights were granted.

*Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.*

ICC has had ongoing maintenance and minor improvements to their delivery system since they were constructed in 1863. The proposed project will replace two sections of the ICC canal with HDPE pipe. The Northwest section will be replaced in a new alignment along Harrison Avenue with the existing ditch being left to convey stormwater. The Southeast section of piping within the existing alignment of the canal. The diversion structure will be improved by re-grading the

existing Grande Ronde River channel with streambed simulation material and installing rock vanes to construct a roughened channel. This diversion improvements alternative would utilize the existing return flow culvert, located on the ICC Canal just upstream of the fish screen, to provide a sediment sluice to control sedimentation in the canal during high spring flows.

*Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.*

According to the National Register of Historic Places, there are 11 locations listed in the City of La Grande; however, none of these are located in the project area. In addition to completing a Cultural Resource Inventory, the Oregon State Historic Preservation Office and the Confederated Tribes of the Umatilla Indian Reservation should be consulted prior to finalizing the project design. Direct, indirect, and cumulative impacts from this project will be determined through the Cultural Resources Inventory and associated consultation. Depending on the outcome of the consultation process, mitigation measures such as avoidance, drafting an inadvertent discovery plan, or monitoring may be required.

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

ICC is not aware of any known archeological sites in the project area.

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

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

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

No.

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

No.

## Required Permits or Approvals

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

It is anticipated that the project will require Joint 404 Fill/Removal and 401 Water Quality Certification permits, Biological Assessment, Street Excavation, County Riparian Ordinance, SHPO Review, NOAA Consultation, and ODFW Fish Passage Approval.

## Letters of Project Support

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*Include letters from interested stakeholders supporting the proposed project.*

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

- City of La Grande
- Oregon Department of Transportation
- Union Soil and Water Conservation

## Official Resolution

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*Include an official resolution adopted by the applicant's board of directors or governing body. The official resolution may be submitted up to 30 days after the application deadline.*

The Official Resolution for the ICC Canal Piping and Diversion Project will be submitted within 30 days after the application deadline.





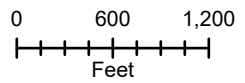
**Northwest Section**  
45°20'24"N  
118°6'35"W

**Southeast Section**  
45°19'12"N  
118°4'31"W

# Attachment A

## Project Location ICC WaterSMART WEEG La Grande, OR

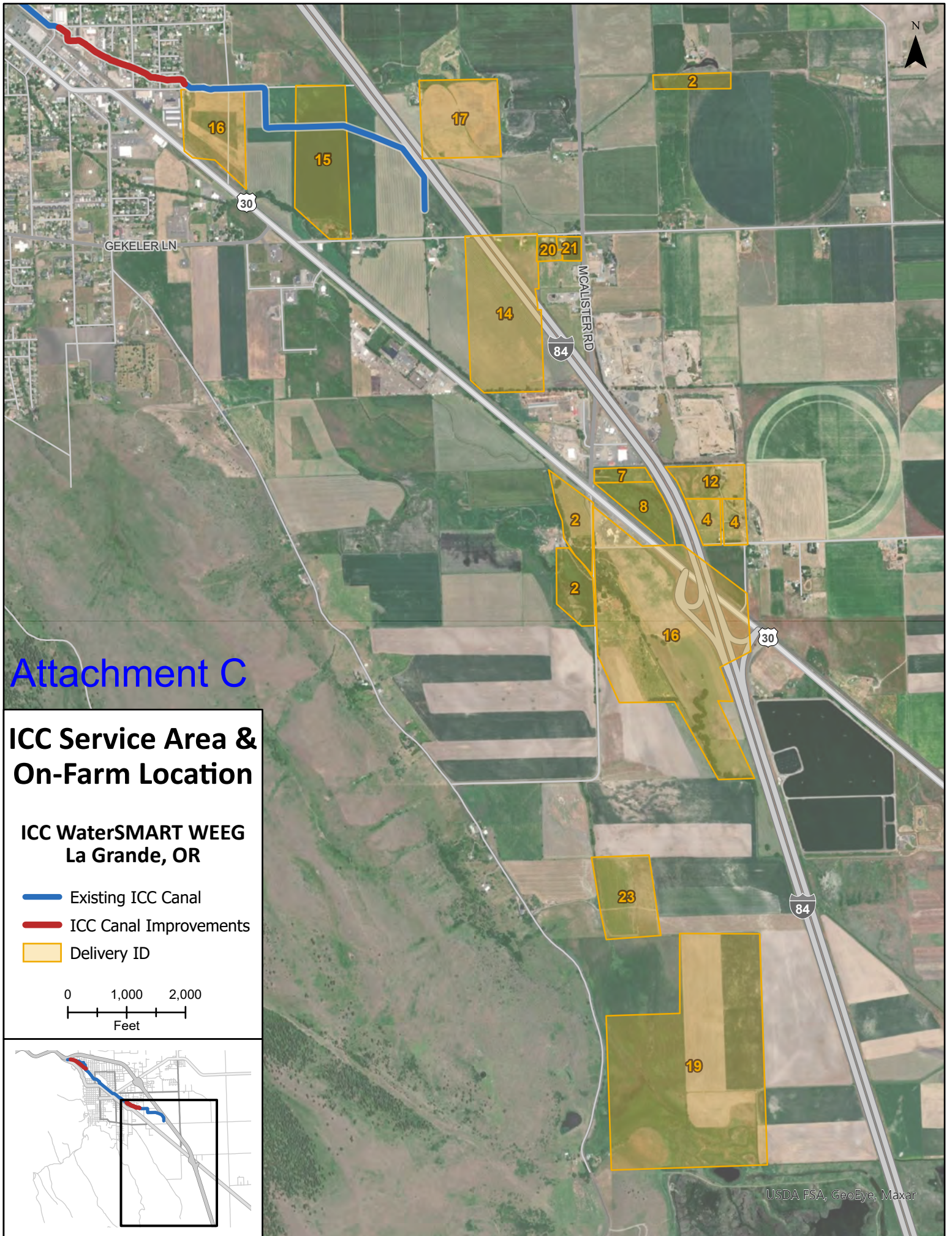
-  Existing ICC Canal
-  ICC Canal Improvements





## Attachment B



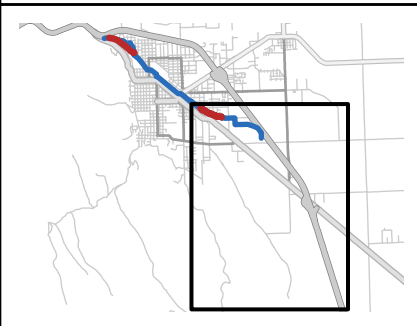
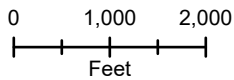


## Attachment C

### ICC Service Area & On-Farm Location

#### ICC WaterSMART WEEG La Grande, OR

- Existing ICC Canal
- ICC Canal Improvements
- Delivery ID





# Attachment D

- After the convergence, the canal returns to underground piping for approximately 1,500 feet before returning to an open canal on the east side of La Grande. From here, the open canal runs approximately 2,500 feet through a residential and industrial area on the east side of La Grande. Once outside the City of La Grande, the open canal flows approximately 5.5 miles to the area irrigated by the canal. See Figure 3 for an aerial photograph of the existing system.

## Design Criteria

Design criteria are the parameters utilized to help determine the size, shape, function, operating conditions, etc., for a given system to meet the objectives of the project. The following outlines the design criteria to be used for this project.

### *Irrigation Requirements*

The ICC currently serves 1,021 acres with a water right of 25.5 cfs. Based on current irrigation practices, the ICC has indicated they would be willing to use 15.5 cfs for the design flow rate, which would provide a possible diversion flow rate reduction of 10 cfs below their water right. Designing a system that provides for more flow than that used would increase initial capital and long-term operation and maintenance (O&M) costs when compared to a system that is designed for actual water use (with some factor of safety for drier years). This 15.5 cfs flow rate would provide sufficient irrigation water while not oversizing the system.

### *Pipeline Requirements*

The pipeline would need to be sized appropriately to provide the peak flow rate for the area being served based on the above design flow rate of 15.5 cfs. Pipeline rating would need to be provided for the working pressure of the pipe plus anticipated surges that can be experienced in a distribution system similar to the one proposed. Because the proposed system is a gravity irrigation system with low differential pressures, low-head high-density polyethylene would be appropriate. Appropriate soil cover of 2.5 feet would need to be provided. Special consideration needs to be given for anti-floatation of the pipelines in the area of shallow groundwater to ensure the pipeline does not float to the surface when it is empty.

### *Fish Passage*

Fish passage criteria, as published in the National Marine Fisheries Service (NMFS) Anadromous Salmonid Passage Facility Design and Oregon Administrative Rule (OARs) 635-412-0035, will be utilized in the design process to maintain upstream and downstream movement of fish through the project reach located in and around the ICC diversion on the Grande Ronde River.

## Alternative Development

Evaluating the project objectives and the design criteria provides a basis for identifying possible improvements that could be pursued to meet the needs of ICC Canal users. Improvement alternatives developed with the ICC for the ICC Canal irrigation delivery system include the following:

**Alternative 1 - Diversion Improvements and Canal Piping.** This consists of piping the existing open canal through the City of La Grande and improving the existing POD. This alternative consists of two phases for piping the canal.

**Alternative 2 - Moving the Point of Diversion and Rehabilitating the Grande Ronde Ditch (GRD).** This consists of moving the POD downstream to the City of La Grande's GRD POD and abandoning the existing ICC diversion. Rehabilitating the GRD would include piping a portion of the open ditch and cleaning and repairing the remaining portion of the existing ditch.

**Alternative 3 - Evaluating the Potential for Aquifer Storage and Pumping.** This consists of a preliminary analysis to determine if aquifer storage recovery may be an option and if it would be cost-effective.

### **Alternative 1 - Diversion Improvements and Canal Piping**

#### **Diversion**

This existing diversion does not provide the required water surface elevation to properly operate the rotary drum fish screen or provide the required diversion rates for the ICC. Based on the preliminary data collected, the water surface elevation in the Grande Ronde River needs to be raised approximately 2 feet in order to provide the required water surface elevation for proper fish screen operation and diversion flow rates.

Several diversion improvement options were discussed, including re-grading the channel with streambed simulation material and installing rock vanes to construct a roughened channel, installing a radial gate, and installing a structure that would allow wooden checkboards to be installed when the water surface elevation in the Grande Ronde River drops during summer base flows. Based on river channel conditions and economic constraints, it was determined that installing a radial gate would not be feasible, so it was not evaluated further.

#### **Alternative 1A**

Alternative 1A consists of installing a structure that would allow wooden checkboards to be installed when the water surface elevation in the Grande Ronde River drops during summer base flows. The structure would consist of hollow precast concrete diversion units filled with streambed simulation material and installed flush with the streambed. The precast units would include steel checkboard post that lie flush with the streambed when not being used. In order to provide fish passage when checkboards are installed, a precast concrete fishway bypass containing a roughened channel constructed of streambed simulation material and large-scale roughness boulders would be constructed. The Alternative 1A diversion improvements are shown on Figure 4.

#### **Alternative 1B**

Alternative 1B consists of re-grading the existing Grande Ronde River channel with streambed simulation material and installing rock vanes to construct a roughened channel. The upstream rock vane would be installed at an elevation to provide the required water surface elevation for proper fish screen operation and diversion flow rates. Large-scale roughness boulders would be installed along the roughened channel to cause a significant increase in roughness for improved fish passage conditions. The roughened channel would be designed to provide fish passage for all life stages of fish species present along this reach of the Grande Ronde River. The Oro Dell Ditch Company is able to remove checkboards on a sediment sluice at their diversion box and allow high spring flows to flush sediment down

their canal and past their diversion box. This diversion improvements alternative would utilize the existing return flow culvert, located on the ICC Canal just upstream of the fish screen, to provide a sediment sluice similar to the Oro Dell Ditch Company's to control sedimentation in the canal during high spring flows. This alternative would require less operation and maintenance associated with installing checkboards like in Alternative 1A, and would provide a more natural diversion constructed of rock instead of concrete. The Alternative 1B diversion improvements are shown on Figure 5.

## Pipeline

Regardless of the diversion alternative chosen, piping the existing open channel portions of the canal through the City of La Grande would be included. The piping was broken into two phases to reduce the project size and increase funding options while still seeing increased efficiency and delivery rates with only one phase completed. Phase I would include piping the existing canal from the fish screen to the railroad crossing located approximately 3,500 feet away; this portion of the canal appeared to have the lowest efficiency. The pipe would tie into the existing canal at this location in order to utilize the existing culverts to cross beneath the railroad tracks. At the tie-in location, a concrete structure would be installed to prevent scour and control flows. The structure would have a headgate to prevent backwatering the existing canal during the irrigation season; the headgate would be opened during the non-irrigation season to allow for stormwater to flow down the existing canal piping.

Based on the design flow of 15.5 cfs, a pipeline diameter of 30 inches is needed. This phase runs the pipeline along Harrison Avenue between the asphalt pavement and the railroad tracks. Running the pipe in the existing canal was considered; however, this would require additional pipe and custom fittings and would eliminate stormwater management provided by the canal for this area of the City. The Phase I piping improvements are shown on Figure 6.



Harrison Avenue looking southeast down the Phase I pipe alignment.

Phase II would include piping the open canal on the east side of the City of La Grande from North Willow Street to the east end of H Avenue. This phase runs the pipeline along the existing canal alignment to minimize utility conflicts, asphalt restoration, and easement acquisition. A pipeline diameter of 30 inches would be utilized for this section of piping as well. The Phase II piping improvements are shown on Figure 7.

## Easements and Rights-of-Way

The pipeline alignment shown for Phase I is located on some public properties and would require obtaining a permit. Based on preliminary discussions with the City of La Grande, the alignments shown appear to be permissible. The pipeline alignment shown for Phase II is located in the existing canal alignment, and it was assumed the piping could be placed within the existing ICC easements.

# Attachment E

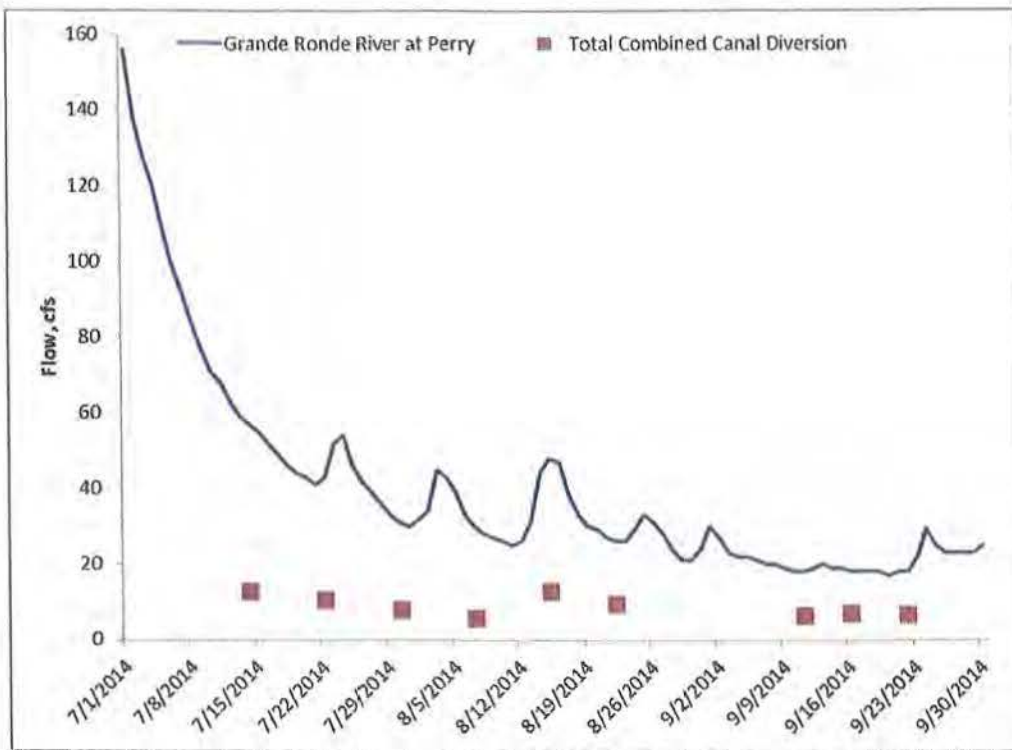


Figure 4.—Flow in the Grande Ronde River at the Perry gage and measured total combined diversion of ICC and ODC canal measurements.

## Estimates of Canal Losses and Conveyance Efficiency

Canal flow losses were estimated and approximated to the extent possible using available data. Additionally, data and seepage loss estimations from ponding tests completed by Reclamation in 1997 on the ICC Canal Section 1 (Reclamation, 1997) were used to estimate flow losses as well as verify losses that were estimated with other methods, as appropriate. Professional judgment and assumptions were made where sufficient data wasn't available to directly estimate canal losses (see Appendix 6 for more information regarding assumptions). Estimated losses using typical assumptions were verified and calibrated as possible using measured canal flow data. Estimated canal losses for each section of both canals were used to estimate total conveyance efficiency for each company's canal delivery system. **Estimated and calculated losses and conveyance efficiency were applied to both observed 2014 canal flow levels as well as the system design flows as assumed within this report.** The loss analysis and conveyance efficiency estimates are shown within Appendix 2. **The total conveyance efficiencies estimated are 0.38 for the ICC and 0.58 for the ODC.**

The only section within which canal flow losses were able to be calculated directly using flow measurements was the ICC Section 1 through La Grande. Flow measurements were taken at the upstream and downstream boundaries of this section allowing for a mass balance estimation of overall flow loss. Several users have water rights between these boundaries, however they are all very small areas that amount to residential yards and thus the diversions within this reach are assumed to be zero. According to ICC representatives, there are known high flow losses within this reach that are of significant concern and this is confirmed with measured flow data. Calculated flow losses ranged between 1.0-3.6 cfs (29-63%) with an average loss of 1.8 cfs (42%). The highest two diversion measurements at the ICC at Headworks were 6.6 and 5.3 cfs, and the losses calculated for these flows are 3.6 and 3.4 cfs (54 and 63%), respectively. Assuming that measurement data is accurate and no major diversions were operating above the downstream measurement site that were not identified, these flow losses are likely consistently contributing to high water losses within the system. There is also a significant potential for illegal diversion and use within this reach as open canal borders many residential properties. This section of ICC canal has a significant potential for overall water savings under alternatives such as piping or lining of canals that would greatly increase conveyance efficiency.

### **Estimates of Required Water Usage**

In order to make estimates of the total water requirements of the water users and canal companies independent of canal flow and water rights data, the irrigation, delivery, and diversion requirements were estimated for the areas served by the ICC and ODC canals.

Within this report, the irrigation requirement is defined as the amount of water required for a crop to enable full growth, without stress from lack of adequate water. The irrigation requirement is essentially the required evapotranspiration (ET) of the crop minus any effective precipitation. Expected irrigation requirements for different crops within the Upper Grande Ronde basin (HUC 17060104) were obtained using the Penman-Monteith based ET Demands model recently developed for irrigation demand studies under the West-Wide Climate Risk Assessment (Reclamation, 2014). Based on observed local meteorological data, simulated crop ET and irrigation requirements for 50 years of historical data were calculated, averaged, and summarized to obtain the best estimate of average crop irrigation requirements. These estimated irrigation requirements, determined in inches of water required over the irrigated area, are shown in

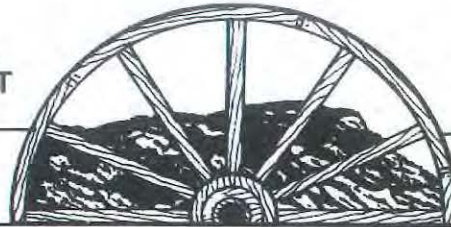
Table 5 summarized by month and other applicable time periods. The irrigation requirements were then applied to the average cropping patterns for the ICC and ODC served irrigated lands to estimate the total volume of irrigation water required by crop for each canal, as shown in Table 6.

# Attachment F

PUBLIC WORKS DEPARTMENT

800 X Avenue  
La Grande, OR 97850  
Phone (541) 962-1325  
FAX (541) 963-3608

CITY OF



LA GRANDE

THE HUB OF NORTHEASTERN OREGON

February 28, 2020

Ron Larvik – Board Member  
Irrigation Canal Company  
La Grande, OR 97850

Dear Ron,

The City of La Grande is pleased to support the proposed Diversion Structure Improvement and Canal Piping Project seeking funding through the Oregon Water Resources Department Grants and Loans and the Bureau of Reclamation WaterSMART Programs. We recognize and appreciate the necessity to improve system conveyance efficiency in an effort to better manage the limited amounts of water within the Columbia River Basin. These efforts have the potential to increase in-stream flows within the Grande Ronde River during low flow periods while concurrently improving agricultural production within the area. The benefits of this project would have long lasting impacts on the local environment in multiple categories.

As the local road authority, it is of the utmost importance to the City that the Stormwater system, as well as any other water conveyance system, is properly designed and effectively functioning. The efficiency of the existing Irrigation Canal Company's system has shown to have a direct impact on the City's Stormwater system, and has been reported in the past to have attributed to the flooding of a few of the bordering residences. In review of the project scope it appears that the project will include many improvements that will exist within the City Right of Way. With the potential advantages that will materialize as a result of the proposed project, the City is pleased at the prospect of moving forward with its completion.

We strongly support your grant application and appreciate the advancements it will make in water conservation in the Columbia River Basin and agricultural production for Irrigation Canal Company's water users'.

Sincerely,

Kyle Carpenter, PE CWRE  
Public Works Director  
City of La Grande



# Oregon

Kate Brown, Governor

**Department of Transportation**  
**District 13 Maintenance and Operations**  
3014 Island Ave  
La Grande, OR 97850  
(541) 963-8406  
FAX (541) 963-0249

March 3, 2020

Ron Larvik – Board Member  
Irrigation Canal Company  
La Grande, OR 97850

Dear Ron,

On behalf of the Oregon Department of Transportation, District 13 maintenance and operations is pleased to support the proposed Diversion Structure Improvement and Canal Piping Project seeking funding through the Oregon Water Resources Department Grants and Loans and the Bureau of Reclamation WaterSMART Programs. We recognize and appreciate the necessity to improve system conveyance efficiency in an effort to better manage the limited amounts of water within the Columbia River Basin. These efforts have the potential to increase in-stream flows within the Grande Ronde River during low flow periods while concurrently improving agricultural production within the area. The benefits of this project would have long lasting impacts on the local environment in multiple categories.

Oregon Department of Transportation highway facilities currently use the City of La Grande's storm water system that outlets into this irrigation canal. Improvements to the canal will help provide a more reliable transportation system for the traveling public and residents of La Grande.

We strongly support your grant application and appreciate the advancements it will make in water conservation in the Columbia River Basin and agricultural production for Irrigation Canal Company's water users'.

Sincerely,

Ace Clark, P.E.  
District 13 Manager  
Oregon Department of Transportation



10507 N. McAlister Rd.  
La Grande, OR 97850  
(541)-963-1313

May 5, 2020

Irrigation Canal Company  
Attention: Ron Larvik, Board Member  
La Grande, Oregon 97850

Subject: Proposal for Diversion Structure Improvement and Canal Piping Project

Mr. Larvik,

The Union Soil and Water Conservation District (Union SWCD) is pleased to support the proposed Diversion Structure Improvement and Canal Piping Project seeking funding through the Oregon Water Resources Department Grants and Loans and the Bureau of Reclamation WaterSMART Programs. We recognize and appreciate the necessity to improve system conveyance efficiency in an effort to better manage the limited amounts of water within the Columbia River Basin. These efforts have the potential to increase in-stream flows within the Grande Ronde River during low flow periods while concurrently improving agricultural production within the area. The benefits of this project would have long lasting impacts on the local environment in multiple categories.

The Union SWCD is an active planning and implementation partner and a local advocate for landowners and managers to assist with development, protection, and conservation of natural resources. We have assisted the agricultural community with conservation planning and project implementation in the Grande Ronde Basin for over 70 years. We have assisted the Irrigation Canal Company (ICC) in the past to complete a Water Conservation Assessment in 2015, which provides some background information for this proposal. Improving the delivery system for the ICC supports our goals of conserving natural resources and improving ecological values in the Grande Ronde Subbasin.

We strongly support your grant application and appreciate the advancements it will make in water conservation in the Columbia River Basin and agricultural production for Irrigation Canal Company's water users'. Please contact me at 541-963-1313 or [jwebster@unionswcd.org](mailto:jwebster@unionswcd.org) for additional information.

Respectfully,

James Webster  
District Manager, Union SWCD

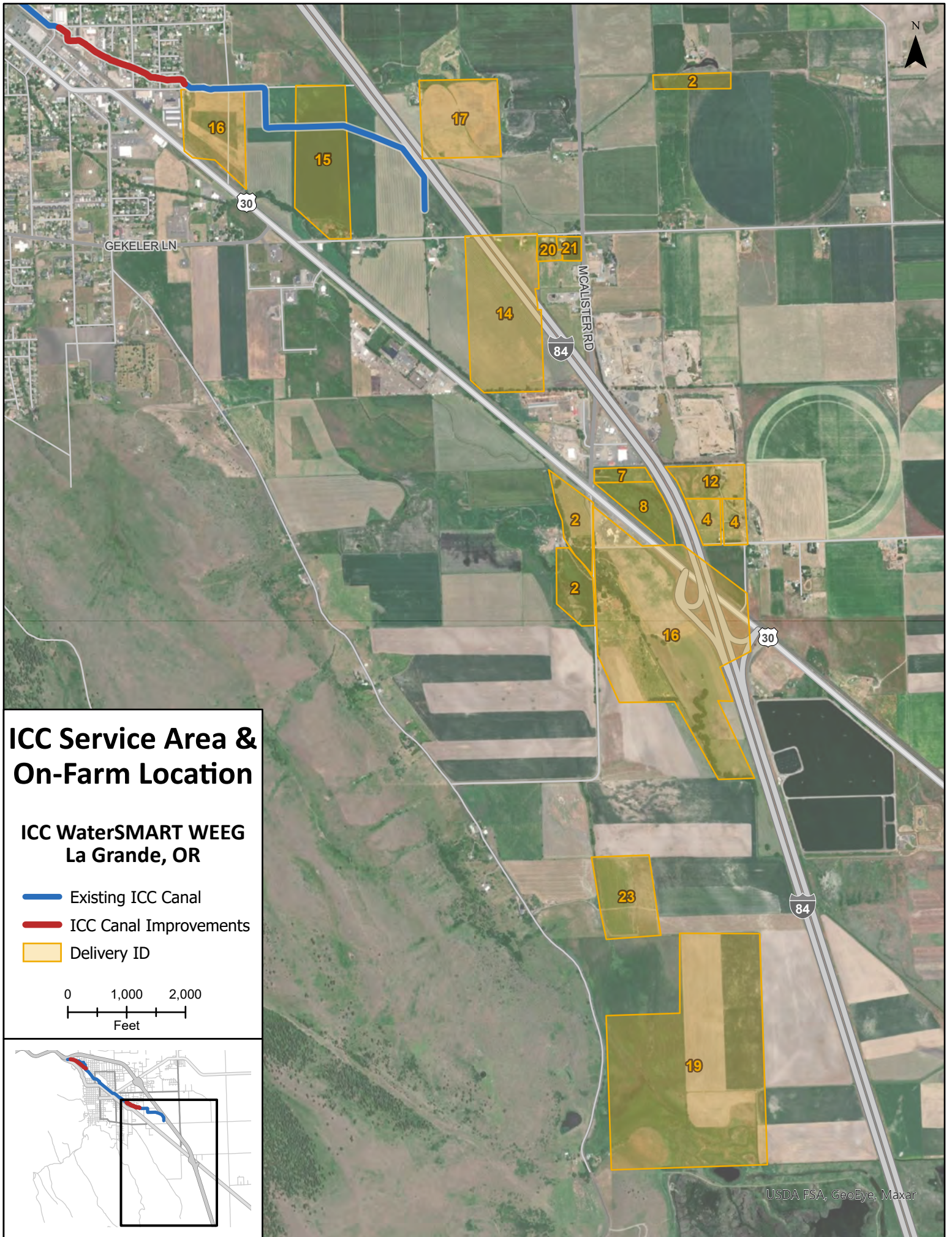


# Attachment G – Landowner Signatures and On-Farm Locations ;

Name of Canal/Lateral/Ditch: ICC Canal

Delivery ID (Corresponding to GIS Map)	Landowner name	Proposed Irrigation Method	Irrigated 2 out of the last 5 years Yes or No	Claimable acreage (Corresponding to GIS Map)	Landowner signature I have an interest to install a high-efficiency irrigation system (on the fields represented by the ID number) when sufficient water quantity, quality, and application requirements are met. (Sign and Print)
16	Audrey McCall	WL	Yes	20	Audrey McCall Audrey McCall
15	RON LARVIK	PV	"	60	Ron Larvik RON LARVIK
17	Audrey McCall	PV	"	35	Audrey McCall Audrey McCall
14	DARIN LARVIK	PV	"	80	Darin Larvik DARIN LARVIK
2	Tom Bowman	WL	"	30	Tom Bowman Tom Bowman
80	Inter Mt Lives	PV	"	20	Dennis Arzen Dennis Arzen
12	Chaney Hamilton	WL	"	20	Chaney Hamilton Chaney Hamilton
4	Russ COOK	WL	"	20	Russ Cook Russ COOK
16	Audrey McCall	P.V	"	100	Audrey McCall Audrey McCall
190	Irwin Smutz	P.V	"	250	Irwin Smutz Irwin Smutz
TOTAL ACRES CLAIMED				635	0

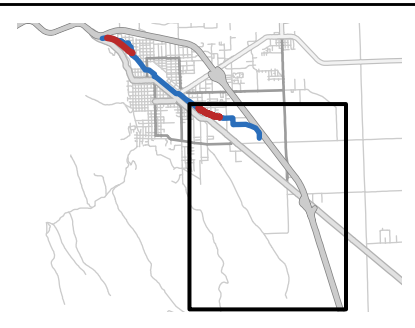
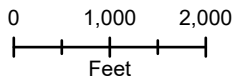
WL = Wheel Line  
 PV = center Pivot



# ICC Service Area & On-Farm Location

## ICC WaterSMART WEEG La Grande, OR

- Existing ICC Canal
- ICC Canal Improvements
- Delivery ID



OFFICIAL RESOLUTION

RESOLUTION NO. BOR-DO-21-F001

Irrigation Canal Company

WHEREAS, The Irrigation Canal Company must maintain, provide for, and service the Water System,

WHEREAS, The Irrigation Canal Company sees the need to construct the ICC Canal Piping and Diversion Project to improve water and energy conservation and efficiency,

WHEREAS, The Irrigation Canal Company desires to obtain grant funding from the Bureau of Reclamation through the WaterSMART: Water and Energy Efficiency Grant.

NOW THEREFORE, BE IT RESOLVED that the Board of Directors agrees and authorizes that:

1. The President of Irrigation Canal Company has the legal authority to enter into an agreement with Reclamation;
2. The WaterSMART: Water and Energy Efficiency Grant application prepared by J-U-B Engineers, Inc. has been reviewed by the Board of Directors and supports the application submitted;
3. The Irrigation Canal Company is capable of providing the amount of funding and/or in-kind contributions specified in the funding plan; and
4. If selected for a WaterSMART: Water and Energy Efficiency Grant, the Irrigation Canal Company will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement.

DATED: 9-28-2020

Mike ORourke – President



ATTEST:

DARIN LARVIK - Vice President  
