Consolidated Irrigation Company

Improving Drought Resilience by Building Water Transferring Infrastructure between Irrigation Companies in Franklin County Idaho

Funding Opportunity Announcement No. R16-FOA-DO-006

WaterSMART:
Drought Resiliency Project Grant
For Fiscal Year 2016

APPLICANT
Consolidated Irrigation Company
33 S. 1st E
Preston, Idaho 83263

PROJECT MANAGER
Lyla Dettmer
Franklin Soil & Water Conservation
Phone: (208) 852-0562
Email: Lyla.Dettmer@FranklinSWCD.net
98 E. 800 N. Suite 5, Preston, ID 83263

Title Page

Table of Contents

Technical Proposal

Executive Summary

Projected Start Date: July1, 2016 Applicant: Consolidated Irrigation Company

Approximate length: 24 months Projected completion date: June 30, 2018

Consolidated Irrigation Company (CIC) located in Preston, Franklin County, Idaho wishes to submit the application titled "Improving Drought Resilience by Building Water Transferring Infrastructure between Irrigation Companies".

The service areas of both CIC and Cub River Irrigation Company (CRIC) are in an area of the Bear River Watershed that is at risk and vulnerable to drought. This section it is growing rapidly and is dominated by agriculture. Change in climate increases the risk of longer, more frequent droughts which present the potential for economic losses associated with hotter and drier conditions. These changes exacerbate the growing need for drought contingency mitigation projects on a regional scale. How will we recognize the signs in order to change our way of operating in time for it to make a difference and reduce the need for crisis management?

Improving efficiencies, managing our water in a progressive manner, and accepting the growing scientific evidence that climate change is causing longer and more frequent drought has led us to a drought resiliency project. This project will build long-term resilience to drought by improving water management and building infrastructure to facilitate the voluntary sale, transfer, or exchange of water.

We plan to install a Hi-Low pipeline at the end of the existing Johnson Lamont pipeline using the technology associated with pressure reducing/ sustaining "Cla-Valves". In this section 4 service connections that require the existing high pressure would relocate to 1,600 feet of new 12" 100psi pipe. The remaining 2 service connections that need low pressures would remain in the existing pipe. This would better manage the water by removing the need for constant adjustments and the aggravation associated with pressure reducing stations and such.

In addition to facilitate water transfer and better manage the Cub River decreed rights for Consolidated Irrigation Company and the neighboring Cub River Irrigation Company measuring stations would be installed on the Cub River and Cub River Canal. At the end of the Low pipe an additional 100 feet 15" 100psi pipe would interconnect the existing infrastructure of the two companies.

The benefits of better managing 30,000 acre feet annually for CIC and 18,260 for CRIC is very significant in that it accomplishes multiple goals with a single project, allows for transferring of water between irrigation companies, more efficiently manages pressure and delivery to shareholders, and includes precise monitoring of stream level and water available. This information will be presented to the stakeholders in the water district, providing them with information so that they can continue to make effective water management decisions and build resilience to drought for the entire Cub River Watershed.

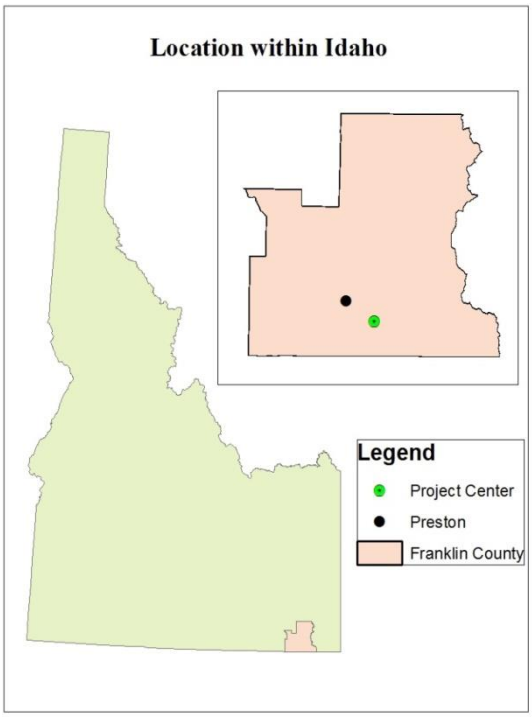
The Reclamation Project known as the Preston Bench Project contract no IIr-1520 dated August 31, 1948 and contract NO 4-07-40-R0070 dated September 27, 1994 is located in Franklin County. This is within the planning area. This Reclamation project was for the Preston Mink Creek Irrigation Company who Combined with the Preston Whitney and is now known as Consolidated Irrigation Company.

In recent months the Upper Colorado Office, located in Provo Utah, has provided increased technical staff assistance to CIC. This interest, support, and commitment of resources, both technical and financial, demonstrate to us the desire to continue a relationship beneficial to both parties that began in 1948.

Background Data

Project Location

The proposed project is located in Franklin County in Southeastern Idaho. The project is located within the HUC 8 Middle Bear River Watershed, one of six watersheds within the Bear River Basin which covers Utah, Wyoming and Idaho. The largest nearby city is Preston, Idaho.



Company Description

When the settlers first came to this area in the late 1800's the first projects they begun were irrigation. They knew that our arid climate would not generate productive farmland without irrigation. Irrigation companies continue what the settlers began. Their goals have always been to effectively use the water available without waste or abuse to promote the desired crop response. This is vital to the continuation of the agricultural community during drought periods that are becoming more common in our arid west.

In September 1980 a feasibility study for the North Cache Water Development project was completed. This consisted of a group project between the City of Preston, the Preston Whitney Irrigation Company, the Preston, Riverdale, and Mink Creek Canal Company, the Preston Whitney Reservoir Company, and the Cub River Irrigation Company. These companies provide irrigation water to approximately 40,000 acres in Franklin County, Idaho and Cache County, Utah of which 24,000 is in Idaho. This project was needed because of the rapid rise in energy costs, water loss through seepage and evaporation, a high water table, and random and unorganized development of sprinkler systems in the area. (Taylor, 1980)

During the 1979 irrigation season, a block of approximately 750 acres under sprinkler irrigation measured a delivery of approximately 900 acre-feet. This amounted to 1.2 acre-feet per acre.

This amount of water was slightly less than needed for maximum production. "Based on consumptive use requirements of about 2 acre-feet per acre, it appears that the existing system is not delivering adequate water for maximum production." (Taylor, 1980)

To complete a water management conservation plan Dr. Robert Hill, Utah State University analyzed the Preston, Riverdale, Mink Creek Canal Company and developed a water budget to identify water supply and timing problems for the year 1999. The company had increased the efficiency since 1979 to delivering 1.46 acre-feet per acre. This results in an overall, average district-wide efficiency of 67%. This system was still not delivering adequate water. (Franklin Soil & Water Conservation District, 2001)

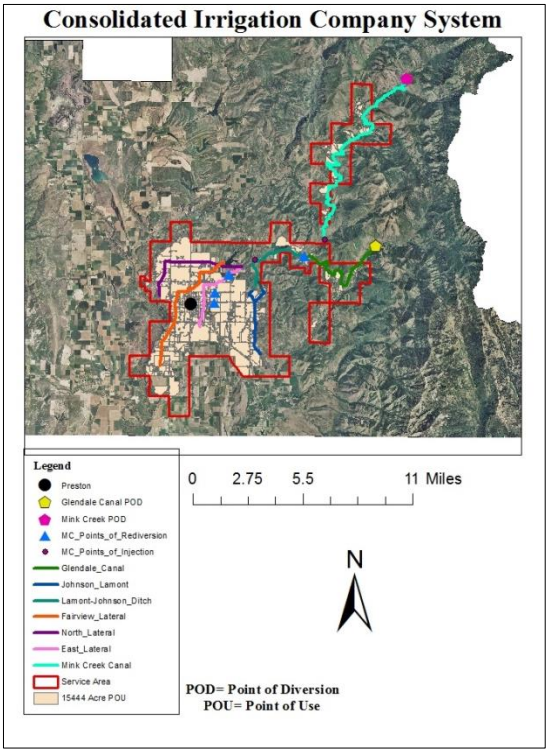
The Preston, Riverdale, Mink Creek Canal Company implemented the top two water saving measures identified in their water management conservation plan. During the 2004 irrigation season normal water use by the irrigators was called for. At the end of the irrigation season an additional 1,300 acre-feet of water was available from previous years. Preston-Riverdale Mink Creek Canal Company divided into two separate companies in the 1990's, then becoming Riverdale Canal Company and Preston-Mink Creek Canal Company.

Prior to January 2012, the irrigation water was managed under a unique inter-relationship, collaborative approach. Multiple companies co-mingle their irrigation water in surface water and in company laterals. During the irrigation season, water was released and managed with the goal of providing the best efficiency of the water for all the companies. This allowed the separate irrigation companies to prevent water shortages and get the maximum potential from stored water.

Joint conveyance improvements and cooperative water operating agreements created the necessity to combine the three individual irrigation companies, Preston Whitney Irrigation, Preston Whitney Reservoir Company and Preston-Mink Creek Irrigation. This combined company is known as Consolidated Irrigation Company and received majority support of stockholders during annual meetings in 2011. Confirmation of the Government's acceptance of the merger was received from the Bureau of Reclamation on Jan 12, 2012.

The Consolidated Irrigation Company's existence is for the sole and exclusive purpose of appropriating or owning rights to the use of the public waters, and for the construction, operation and maintenance of an irrigation system for diverting such waters from the public supply in order to convey and deliver the same in a convenient and economical manner to its stockholders for use upon their lands. (Consolidated Irrigation Company, 2011) It is the responsibility of the company manager and watermaster to implement the board of directors' decisions.

The majority of the service area is located south and west of the Reservoirs between the foothills and the Bear River. Approximately 1,800 acres of the service area is located above the reservoir and delivered to shareholders via the feeder ditches. The remaining service area is divided into the North Lateral, the Eastside Ditch, the Fairview Lateral, and the Johnson Reservoir Ditch. (See Appendix A for enlarged system map). The Middle Ditch is rented through an agreement with the Cub River Irrigation Company. Consolidated Irrigation Company has 465 shareholders and irrigates 15,000 acres. Water rights include surface rights from Cub River, Mink Creek, and Worm Creek, (see Appendix B for detailed water rights).



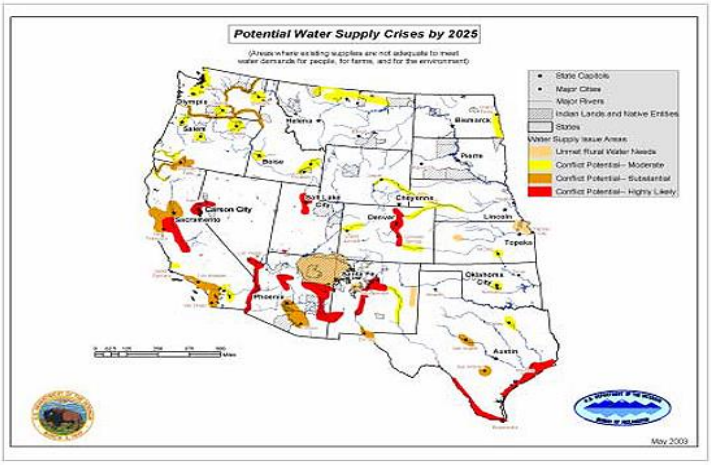
Water Uses

Majority of the water (95%) supplied by CIC's delivery system is used for agriculture. Major crops grown are small grains, pasture, alfalfa, field corn, and safflower. Specifics associated with the crops irrigated along the Bear River are: Potatoes 2%, Alfalfa 35%, Meadow hay 4%, Pasture 18%, Spring wheat 6%, Winter wheat 15%, Spring barley 12%, Sugar beets 1%, Field corn 6%, Other 1%. (Hill, 1989)

During the average growing season, May-September, limited precipitation is available for crop production. Direct use of ground water by the crops is an integral part of the present consumptive use. Within this service area, the Soil Conservation Service (SCS) estimated that 25-50 percent of the crop's needs come from precipitation and ground water. (Taylor, 1980) Thus irrigation and irrigation water storage is necessary for the crops in this system.

Other uses include domestic and municipal supplies to Preston City parks, schools, and golf course, which accounts for 5% of the total water usage.

Supply during drought conditions



The Bear River watershed in Idaho is unique since it is the only Idaho watershed that drains into the Great Salt Lake instead of the Pacific Ocean. This is significant because it is the headwaters of the Wasatch Front which is labeled as a "Water 2025 drought hotspot".

The "Potential Water Supply Crises by 2025," commonly known as the Hot Spot Illustration, was used to begin a dialogue with the States and others in the West on the water supply crises that many areas in the West will likely face in the future. Reclamation looked at data such as hydrologic conditions, weather patterns, endangered species locations, and population growth trends, and then identified where they appeared to converge.

The Wasatch Front is the mountain range that runs from Northern Utah to Provo. It is also the area of highest population in the state of Utah. "Roughly 80% of Utah's population resides in this region, as it contains the major cities of Salt Lake City, Provo, West Valley City, West Jordan and Ogden (Wiki 2015)." These cities depend on the water flowing through the Bear River as it winds its way to the Great Salt Lake.

Growing population tends to increase the overall demand for land and water. Agriculture has been responsible for much of the existing water development, and thus controls a large supply of relatively low-cost water and land that is attractive to new developments. (UDWR 1992)
In this Bear River watershed a valley straddles Idaho and Utah. Cache Valley is included in the Logan Utah-Idaho Metropolitan Statistical Area. The population is about 110,000 with greater than 85,000 vehicles. Franklin County Idaho has a 2010 population of 12,786. The two largest Idaho towns in the Cache Valley are Preston and Franklin. The remaining population resides in Cache County Utah and the largest city being Logan Utah. (Martin, 2009)

The 2010 census ranks states by growth rate. From 2000 to 2010 the five fastest growing states in the nation are: 1) Nevada (35%), 2) Arizona (24%), 3) Utah (23%), 4) Idaho (21%), and 5) Texas (20%). The Cache Valley in Utah and Idaho has grown by 64% since 2000, and is expected to double by 2050.

This population growth has a direct impact on the water available in the watershed. Cost-effectiveness in conserving water and the economic impacts solutions will have on the farmers and land-users required to make the change are important considerations because they affect the acceptability of the project. Various methods benefit the natural resources and society, but often do not provide an economic benefit to the landowner who installs and maintains them. This is why financial incentives are critical for promoting implementation of water conservation and management improvements.

Each conveyance system is unique in water source, storage, service area and delivery; many do not have the same opportunities to store water, a very effective measure in combatting one or two years of consecutive meteorological drought. As stated in Consolidated Irrigation Company Background section, the company has the unique capability of reservoir storage. This storage does not hold even one year of water needs for this company. One suggested protection measure in the Idaho Drought Plan is to "increase storage of surface water in areas that currently do not have adequate storage supplies" (Idaho Department of Water Resources, 2001).

This project will be used to address drought severity at all levels to a certain extent. Cub River Irrigation Company does not have storage capabilities and relies entirely on the stream flows. Both short term and long term drought conditions will impact these water users first. Both Companies have a right to water that is diverted from Cub River. By connecting CIC's Johnson-

Lamont pipeline to the CRIC's system, water can then be transferred from CIC, which has reservoir storage in Johnson and Lamont reservoirs, to CRIC which does not.

System Description

Water is diverted from the Cub River into a feeder canal that travels 7 miles until the water enters the south leg of the "y pipe" that serves a dual purpose of conveyance and penstock for the Glendale hydro facility. During irrigation season additional water is diverted from the Mink Creek which then travels 15 miles through the Reclamation Preston Bench Project and enters the north leg of the "y pipe" where it co-mingled with water originating in the Cub River. After irrigation water exits the hydro facility it flows either into the Glendale Reservoir or flows into the Johnson and Lamont Reservoirs via the Lamont fill ditch. Overflow from the Glendale is stored in the Foster Reservoir. Winter fill in Glendale/Foster includes overflow from the City of Preston culinary pipeline. CIC owns and operates the following reservoirs: Glendale, Foster, and Lamont, with storage capacities of 5,900 acre-feet, 3,350 acre-feet, 2,400 acre-feet, and Johnson Reservoir, 800 acre-feet. Prior to 1999 all water released from the reservoirs entered open ditch laterals for delivery to stockholders.

System Improvements

During 1999 the company began updating their below reservoir system by placing the Eastside Ditch that comes out of the Glendale into pipe. The project was followed with the 5 mile North Lateral pipeline. In 2006 the completed Johnson Lamont pipeline resulted in a quantitative water savings of 1,803 acre feet per year and 177,000 KW-hrs of energy was reclaimed and provided pressurized water to the Johnson Reservoir ditch shareholders. Building on the success of the previous pipeline projects the 7.5 miles of Fairview Lateral which carries water from the Foster Reservoir was completed in three phases. An addition pipeline from Glendale reservoir to the inlet structure for two laterals provided all users below the reservoirs with pressurized water.

The completed piped Fairview Lateral created a cross connection between Consolidated Irrigation and a branch of the Cub River Irrigation to facilitate water marketing and demonstrates the viability of water exchange between the two companies.

Past working relationships with Reclamation:

Preston Bench Project contract no IIr-1520 dated August 31, 1948 and contract NO 4-07-40-R0070 dated September 27, 1994.

Bureau of Reclamation Water 2025 program year 2005 (05-FC-40-2405) $300,000.00 was leveraged with shareholder assessments to retrofit the Lamont Reservoir, design, and convert 5.5 miles of open ditch to 4.4 miles of underground pressurized pipeline.

Bureau of Reclamation Water 2025-year 2008 (FC-08-FC-40-2827) $300,000.00 federal dollars were used to complete, for the irrigation season 2010, a 2.5 million dollar project consisting of phase 1 and phase 2 of the Fairview Lateral. This project replaced 7.5 miles of un-lined, earthen canals with 7.2 miles of high-pressure, plastic irrigation pipe.

Bureau of Reclamation ARRA funding sub grant with Idaho Water District #11- Bear River (R09AC40R12) provided $75,000.00 federal money for Fairview Lateral phase 3 interconnect that facilitates water marketing with the Cub River Irrigation. This project was completed in 2010.

Bureau of Reclamation ARRA funding sub grant with Idaho Water District #11-Bear River (R09AC40R12) provided $400,000.00 federal money for the Glendale project completed in 2011.

Bureau of Reclamation WaterSMART program year 2012 (R12AP40027) $1,453,181.00 funded a $3,538,513.00 project that replaced 6 miles of un-lined canals with 3.5 miles of HDPE plastic pipe and constructed a 500 kilowatt hydroelectric facility with the ability to generate 2,525,193 kilowatts hour per year. This project was completed September 2015.

Technical Project Description

Consolidated Irrigation Company recently updated our Water Management Conservation Plan. This involved obtaining data, recognizing issues, setting goals, identifying measures, and evaluating candidate water management measures to improve their efficiencies and management of water supplies. Accepting the growing scientific evidence that climate change is causing longer and more frequent drought has led us to a drought resiliency project.

We plan to install a Hi-Low pipeline at the end of the existing Johnson Lamont pipeline using the technology associated with pressure reducing/ sustaining "Cla-Valves". In this section 4 service connection that require the existing high pressure would relocate to 1,600 feet of new 12" 100psi pipe. The remaining 2 service connection that need low pressures would remain in the existing pipe. This would better manage the water by removing the need for constant adjustments and the aggravation associated with pressure reducing stations and such.

In addition to facilitate water transfer and better manage the Cub River decreed rights for Consolidated Irrigation Company and the neighboring Cub River Irrigation Company measuring stations would be installed on the Cub River and Cub River Canal. At the end of the low pipe an additional 100 feet 15" 100psi pipe would interconnect the existing infrastructure of the two companies.

Evaluation Criterion A - Project Benefits

This project will provide conveyance infrastructure that will facilitate the exchange of water between two irrigation companies, Consolidated Irrigation Company (CIC) and Cub River Irrigation Company (CRIC). CIC has the capability of storing decreed irrigation water from Cub River and Mink Creek into 4 reservoirs to supply shareholders with water throughout the season when natural precipitation is inadequate. CRIC does not have this capability and relies solely on natural stream flows from the Cub River.

This project would connect a CIC conveyance pipeline (Johnson Lamont) to a CRIC conveyance system (Palmer pipe), building the infrastructure to exchange water from CIC to CRIC. This connection would not only serve to exchange water during drought conditions, but also provide

CIC with the opportunity to better manage water within this section of their system that services several laterals.

• *Will the project make additional water supplies available?*

The proposed project does not create additional water supplies, but is intended to better manage water supplies from existing water rights. This project will allow for the transfer of 14 cubic feet per second (cfs) from CIC to CRIC. This number is determined by the size of the existing Johnson-Lamont pipeline and the rights delivered to the users.

• *How will the project build long-term resilience to drought? How many years will the project continue to provide benefits?*

The project will provide long-term resilience by allowing for water to be transferred to a service area of CRIC that have no storage capacity. These benefits will be seen for the duration of the pipelines lifespan and agreements between CIC and CRIC.

• How will the project improve the management of water supplies? For example, will the project increase efficiency or increase operational flexibility (e.g., improve the ability to deliver water during drought or access other sources of supply)? If so, how will the project increase efficiency or operational flexibility?

The project will increase both efficiency and operational efficiency. Interconnecting CIC's Johnson-Lamont pipeline to CRIC's system at the Palmer Pipeline, allows for water to be delivered to CIC's shareholders during stream flow decreases, which may occur more frequently and intensify during drought years. Currently during this situation CRIC tries to meet demands by pumping from the Bear River which incurs high pumping costs and pressure problems within their system. Connecting the two systems with this project allows for water to be delivered from reservoir storage to these users, eliminating the need for pumping. To ensure adherence to Idaho water rights this water will be exchanged back into the CIC system from the Cub River diversion, when prior appropriation doctrine allocated all the Cub River water to CRIC, allowing for a more efficient use through the Glendale hydroelectric generator which then can be stored in reservoirs below.

• *Will the project make new information available to water managers? If so, what is the information and how will it improve water management?*

The service areas of both CIC and CRIC are in an area of the Bear River Watershed that is at risk and vulnerable to drought. As described in the background section it is growing rapidly and is dominated by agriculture. Change in climate increases the risk of longer, more frequent droughts which present the potential for economic losses associated with hotter and drier conditions. These changes exacerbate the growing need for drought contingency mitigation projects on a regional scale. How will we recognize the signs in order to change our way of operating in time for it to make a difference and reduce the need for crisis management?

The project includes stream flow metering devices on the Cub River and the existing CIC weir below the diversion from Cub River. These measuring devices will give real time information of water levels and precise diversion amounts.

• *Will the project have benefits to fish, wildlife, or the environment? If so, please describe those benefits.*

As mentioned above the installed measuring devices will allow for precise measuring of water being diverted from the Cub River, this will eliminate any excess water from being diverted. This directly benefits fish, wildlife and riparian areas by providing more water to be kept in-stream.

• *What is the estimated quantity of water that will be better managed as a result of this project? How was this estimate calculated?*

Approximately 30,000 acre-feet annually of water is delivered to shareholders through CIC's system. This amount was provided from water delivery logs of the CIC's manager. The project itself will provide management benefits to almost the entire system including improved management within CIC's delivery system and storage capacity. In addition per the Utah Division of Water Rights and Idaho Department of Water Resources (UDWR 2016) this will assist CRIC in better managing 18,260 acre-feet per year

On a more local scale on the Johnson-Lamont pipeline, the project includes construction of a low pressure pipeline which parallels the existing pipeline. This low pressure line will then provide the line to interconnect between companies, and a line that supplies two shareholders. This low pressure line allows for water to be safely supplied to CRIC's system and two shareholders without exceeding their pressure limitations, and continue supplying high pressure through the existing line to three shareholders that require higher pressure. This project will better manage pressure and delivery of approximately 14 cfs through this part of the system.

• Provide a brief qualitative description of the degree/significance of anticipated water management benefits.

The benefits of better managing this water is very significant in that it accomplishes multiple goals with a single project, allows for transferring of water between irrigation companies, more efficiently manages pressure and delivery to shareholders, and includes precise monitoring of stream level and water available.

Evaluation Criterion B - Drought Planning & Preparedness

There is no plan that specifically addresses this particular project area on a local level. The Idaho Drought Plan provided by the Idaho Department of Water Resources (IDWR) offers resources for determining drought severity, drought problems, drought declaration and available state and federal assistance programs. This plan does not outline actions required to prepare for drought but outlines the responses required when drought is apparent.

The Idaho Drought Plan states "Unless a water shortage situation is of extreme magnitude, the safest approach is to let county and local governments determine their own response. There is an

existing and effective network of public agencies, water system managers, and experts who can assess their particular needs." (Idaho Department of Water Resources, 2001)

The lack of a drought mitigation planning from local and state government has left the decision to implement drought related projects to water managers. CIC exists "for the purpose of appropriating and/or owning rights to the use of the public waters of the State of Idaho" (Consolidated Irrigation Company, 2011). Decision makers for these entities use their expertise and available resources to determine courses of action needed to address the reliability of water within their systems. Both Consolidated Irrigation Company and Cub River Irrigation Company have been extremely proactive in increasing their delivery systems by piping open canals, creating pressurized laterals, and installing measuring devices for precision monitoring to increase water savings.

These projects have improved water conservancy and management allowing for saved amounts of water to be exchanged. CIC proposes this project as a drought preparation and water management measure to allow for the transfer of water in any applicable circumstance, and extremely useful in more severe drought conditions.

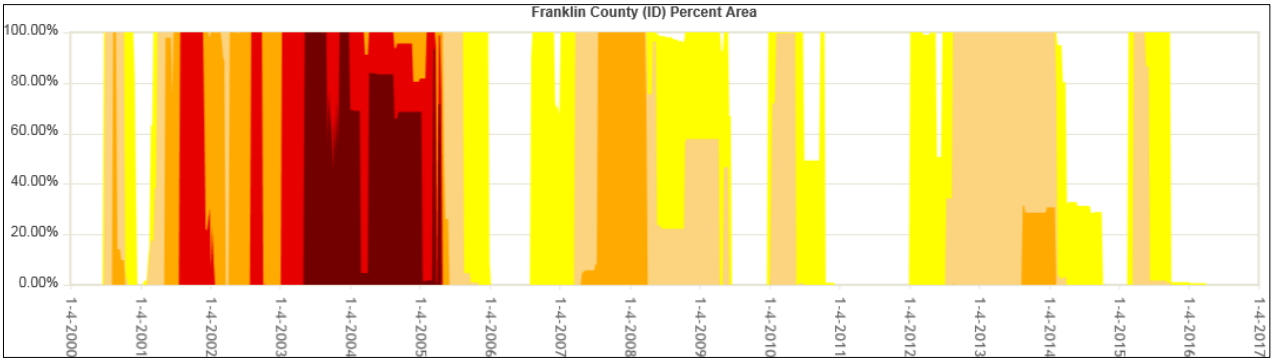


Figure 1. Drought Monitor Statistics Graph for Franklin County, Idaho (National Drought Mitigation Center, 2016)

Evaluation Criterion C - Severity of Actual or Potential Drought Impacts to be addressed by the Project

Drought conditions often vary in severity in this area and fluctuate on a month to month basis which can be seen in Figure 1 above. This graph from the USDA drought monitors indicates, with an increase in the red intensity, extreme and exception drought between years 2003 and 2005.

Environmental restrictions and cost makes creating or expanding storage capabilities an infeasible option. Improvements to the current system through better management and infrastructure in the delivery system have been identified as options to address water deficiencies during drought conditions.

Drought impacts vary with severity as shown in Figure 2 below. The capability of storing water

Drought Severity Classification

Category	Description	Possible Impacts	Ranges				
			Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: ▪ short-term dryness slowing planting, growth of crops or pastures Coming out of drought: ▪ some lingering water deficits ▪ pastures or crops not fully recovered	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	▪ Some damage to crops, pastures ▪ Streams, reservoirs, or wells low, some water shortages developing or imminent ▪ Voluntary water-use restrictions requested	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	▪ Crop or pasture losses likely ▪ Water shortages common ▪ Water restrictions imposed	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	▪ Major crop/pasture losses ▪ Widespread water shortages or restrictions	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	▪ Exceptional and widespread crop/pasture losses ▪ Shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

Short-term drought indicator blends focus on 1-3 month precipitation. Long-term blends focus on 6-60 months. Additional indices used, mainly during the growing season, include the USDA/NASS Topsoil Moisture, Keetch-Byram Drought Index (KBDI), and NOAA/NESDIS satellite Vegetation Health Indices. Indices used primarily during the snow season and in the West include snow water content, river basin precipitation, and the Surface Water Supply Index (SWSI). Other indicators include groundwater levels, reservoir storage, and pasture/range conditions.

Figure 2. (National Drought Mitigation Center, 2016)

is extremely important in combating drought of all drought severity. This project will enhance not only current use of the system, but create the needed infrastructure to connect existing systems which can then be used to combat drought conditions by providing shared storage capabilities.

Evaluation Criterion D - Project Implementation

The implementation of the proposed project will include five major tasks which include: Project Management, Environmental Compliance, Engineering, Construction, and Finalization. These major tasks will begin June 2016 and be completed by June 30, 2018.

Preliminary Hydraulic Engineering: The report from this study provided a comprehensive framework from which final design and construction budgets can be completed. Included are the following: -preliminary GPS survey, -hydraulic analysis and sign, -delineation of all users and locations, -establishment of alignments, -establishment of final design criteria, -construction planning, -institutional issues, -construction cost estimates, and -life-cycle cost analysis.

Final Design & Survey: The final design package will contain the construction drawings, specification, and operations manual. This report will be provided to reclamation for input

Construction: The Consolidated Irrigation Company is committed to constructing a Hi-Low pipeline at the end of the existing Johnson Lamont pipeline using the technology associated with pressure reducing/ sustaining "Cla-Valves". In this section 4 service connection that require the existing high pressure would relocate to 1,600 feet of new 12" 100psi pipe. The remaining 2 service connection that need low pressures would remain in the existing pipe. This would better manage the water by removing the need for constant adjustments and the aggravation associated with pressure reducing stations and such.

In addition to facilitate water transfer and better manage the Cub River decreed rights for Consolidated Irrigation Company and the neighboring Cub River Irrigation Company measuring stations would be installed on the Cub River and Cub River Canal. At the end of the low pipe an additional 100 feet 15" 100psi pipe would interconnect the existing infrastructure of the two companies.

The pipeline will be installed in the existing easement as much as possible. Trench excavation will avoid wetlands and be performed outside the irrigation season while the canal is not in operation. Care will be taken to ensure minimal utilities and road crossings with additional caution at these locations during construction. During this construction interim reports will be provided to reclamation for review and input.

Construction Inspection: The construction will include construction engineering for unforeseen conditions, inspection, and quality control. The company with the assistance of the FSWCD will do the on-site construction inspection. A project superintendent will be assigned by the company. This position will be on-site the majority of the time. The duties associated with this position include: Coordinate and supervise all subcontractors, construction and scheduling of work. Oversee all ordering and receiving of construction materials. Function as coordinator and liaison to property owners and stockholders regarding all construction activities and services to be provided by the irrigation company. Review and approve all invoices; assist with monitoring of project budget and bookkeeping. A report of these activities will be provided to reclamation for review and input.

Operation and Maintenance: A properly operated and maintained irrigation pipeline is an asset. This irrigation pipeline is designed and installed to transmit water to place of use. The estimated life span of this project is at least 25-50 years. The life of this pipeline can be assured and usually increased by developing and carrying out a good operation and maintenance program.

Project Management and reporting: FSWCD has administered all of the previous BoR grants. They are familiar with the federal forms and the ASAP financial reimbursement process. The staff with the Franklin SWCD will do the Program Performance Reports and the Fiscal reporting. Regular meeting with the board of directors will be held. During the annual meeting a report will be provided to the stockholders and waterusers.

Table 1-Schedule

Major Tasks	Milestones	Responsibility	Date
Project Management	Financial Assistance Review	BOR, CIC, FSWCD	1-3 months after award
	CIC Budget Adjustment	CIC	Fall 2016
	Agreements w/ Partners	CIC, WD13A, CRIC	Fall 2016
	Easements	CIC	Spring 2017
	Reporting & Coordination	FSWCD	As required
Environmental Compliance	Category exclusion probably or /FONSI/ROD	BOR, FSWCD, CIC	Prior to Construction
Engineering	Preliminary Screening	CIC	Completed 4/8/16
	Survey	CIC	Summer 2017
	Design	Engineer	Summer 2017
	Permits	CIC	Summer 2017
	Construction Inspections	FSWCD, CIC	During Installation
Construction	Procurement	CIC	Summer 2017
	Installation	CIC	Fall 2017
	Testing	CIC	Upon Completion
Finalization	Performance Measures	CIC, FSWCD WD13-a	Spring 2018
	Project acceptance	CIC	Winter 2017
	Final Report	FSWCD, CIC	90 days after grant end

Evaluation Criterion E - Nexus to Reclamation

The Reclamation Project known as the Preston Bench Project contract no IIr-1520 dated August 31, 1948 and contract NO 4-07-40-R0070 dated September 27, 1994 is located in Franklin County. This is within the planning area. This Reclamation project was for the Preston Mink Creek Irrigation Company who Combined with the Preston Whitney and is now known as Consolidated Irrigation Company.

In recent months the Upper Colorado Office, located in Provo Utah, has provided increased technical staff assistance to CIC. This interest, support, and commitment of resources both technical and financial demonstrates to us the desire to continue a relationship beneficial to both parties that began in 1948.

Performance Measures

To verify and document that the proposed water conservation project achieves the estimated water savings we will finalize and execute a monitoring plan that clearly defines the goal, encourages the use of appropriate analysis, takes into consideration cost-benefit, and increases the efficient use of management resources.

The fundamental part of our monitoring plan will be accurate measurement coupled with documentation that will create a historical record for today managers and future managers. A side effect associated with metering is the data obtained from the Cub River measuring devices is useful to the appropriation of the Cub River water district. Both CIC and CRIC along with about 60 other river right holders will use this information to manage irrigation and culinary water. Drought conditions will be easier to document and will be the impetus to begin drought mitigation practices in the Cub River Watershed.

To estimate our pre-project benefits we utilized proven accepted methods. We interviewed the knowledgeable people associated with the systems. That was the board of directors, managers, and watermasters. The watermaster has notebooks that measure flow in and out of the laterals and reservoirs.

We then contacted the local representatives from the Natural Resources Conservation Service (NRCS). They provided any previous studies done by their organization. The technical staff associated with the conservation districts used available technology such as GIS, Soil Surveys, IDWR water rights, and water accounting models. A site inspection was completed.

Preliminary engineering was obtained by working through the pipeline hydraulics based on Hazen-Williams formula. (ID-40) This provided estimated design outputs including pipe size and length, flow velocity, pressure rating, thrust blocks, and appurtenances.

Pre-project estimation is based on knowledge obtained from the company manager. Idaho Department of Water Resources completed a comprehensive study of the reliability of meters. This compared various types and manufacturers. They have endorsed magnetic meters as the best method of measuring in a pipeline. Magnetic meters have been installed at stockholder turnouts and reservoir outlets. A sophisticated measuring process is involved with the hydro

facility. The meters are vital to getting a quantifiable use of company water in the system and will heavily be used in the calculation of exchange of water. .

CIC managers use a Parshell flume to measure the Cub River canal after the point of diversion. This data is available if one is physically at the flume. Natural Fluctuations of the river makes this point the weak link in the chain. Managers cannot manually adjust the system as well as a SCADA driven measuring device and gates or provide the information electronically to the hydro facility. This causes a reduction in the efficiency of the generator and has a huge impact on the company management of water

We propose that in order to quantify the actual benefits of this project the following methods will be used:

1. The pipeline will be completed and inspected to ensure the capability of water transference between Consolidated Irrigation Company and Cub River Irrigation Company.
2. Using installed and existing measuring devices, stream flows, water transfers and storage between companies will be recorded and documented.

This information will be presented to the water district, providing them with the information so that they can continue to make effective water management decisions and build resilience to drought.

Environmental and Cultural Resources Compliance

The Johnson-Lamont pipeline was completed using Bureau of Reclamation funding and underwent an Environmental Compliance completed March 14, 2007.

The following questions have been answered to the best of our knowledge.

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

During construction soil and vegetation will be disturbed. Care will be taken to ensure that disturbance is minimized and no sediment is transported from the construction site into waterways using such methods as silt fences etc. The construction will take place in predominately agricultural land that will be reseeded into annual or perennial vegetation in the next crop cycle. If it is not agricultural land, it will be reseeded into perennial vegetation.

No species of concern were found within the project area, and will not be affected by this project. Please see Appendix C for “Species of Concern” map.

• 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.

There are no known wetlands or surface waters within the project area that fall under CWA jurisdiction. Please refer to Appendix D for "Wetlands" map.

• When was the water delivery system constructed?

The Johnson-Lamont pipeline was completed August, 2007.

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

The proposed project will not be modifying any individual irrigation system features.

• 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.

No buildings, structures, or features in the irrigation district are known to be listed by the National Register of Historic Places. Please see Appendix E for a map of listed places in the area. (National Park Services, U.S. Department of the Interior, 2016)

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

There are no known archeological sites in the proposed project area. Final determination of this will be made by Idaho State Historical Preservation Office (SHPO) prior to construction.

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

The proposed project will not have a disproportionately high or adverse effect on low income or minority populations. We project a benefit to these populations.

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

The proposed project will have no impact on tribal lands. No lands are located near the project site.

• 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?

This project is not anticipated to contribute to the introduction, continued existence, or spread of noxious weeds or invasive species in the area. We project a small benefit as any water leaving

Attachments

Letters of Support

Cub river irrigation submits the attached letter in support of this application

Letters of commitment

On March 2, 2016, in a regular meeting, the Franklin SWCD board of supervisors made an official motion that they would assist the Consolidated Irrigation Company to pursue a funding request to the Bureau of Reclamation and contribute 500 in office supplies and travel cost. Upon approval of funds, they will execute a cooperative agreement with the Consolidated Irrigation Company to detail the project management duties and responsibilities.

On March 7, 2016 at the annual stockholder meeting for the Cub River Water District 13-a the motion to "keep 2000 in the budget to pay for the rating station" was made and approved in the budget.

Official Resolution

On April 7, 2016, the Consolidated Irrigation Company board of supervisors in regular meeting met and reviewed the funding plan and voted to submit the required resolution(attached)

Budget Form (SF424C)

References

Consolidated Irrigation Company. (2011). *Bylaws*. Pres*ton, Idaho.*

Franklin Soil & Water Conservation District. (2001). *Water Management and Conservation Plan for the Preston, Riverdale, Mink Creek Irrigation Company*. LarWEST Engineering & Surveying, Funded by Bureau of Reclamation, Upper Colorado.

Hill, R. W. (1989). *Duty of Water Under the Bear River Compact: Field Verification of Empirical Methods for Estimating Depletion*. Research Report 125.

Idaho Department of Water Resources (IDWR). (2001). *Idaho Drought Plan with Federal Water-Related Drought Response Programs.*

Martin, Randy, 2009. *Sorting Out Cache Valley's Pm2.5 Problem* Department of Civil & Environmental Engineering, Utah State University Logan UT

National Drought Mitigation Center. (2016). *U.S. Drought Monitor Classification Scheme*. Retrieved from United States Drought Monitor: http://droughtmonitor.unl.edu/aboutus/classificationscheme.aspx

National Park Services, U.S. Department of the Interior. (2016). *Cultural_Resources_NRHP_Locations. National Register of Historical Places.*

Taylor, L. P. (1980). *Feasibility Study North Cache Water Development Project,* Preston Idaho. CH2M Hill, Boise Idaho.

USDA, S. C. (1976). Working Paper: *Irrigation Conveyance System Inventory Summary Bear River Basin Idaho*-Utah-Wyoming.

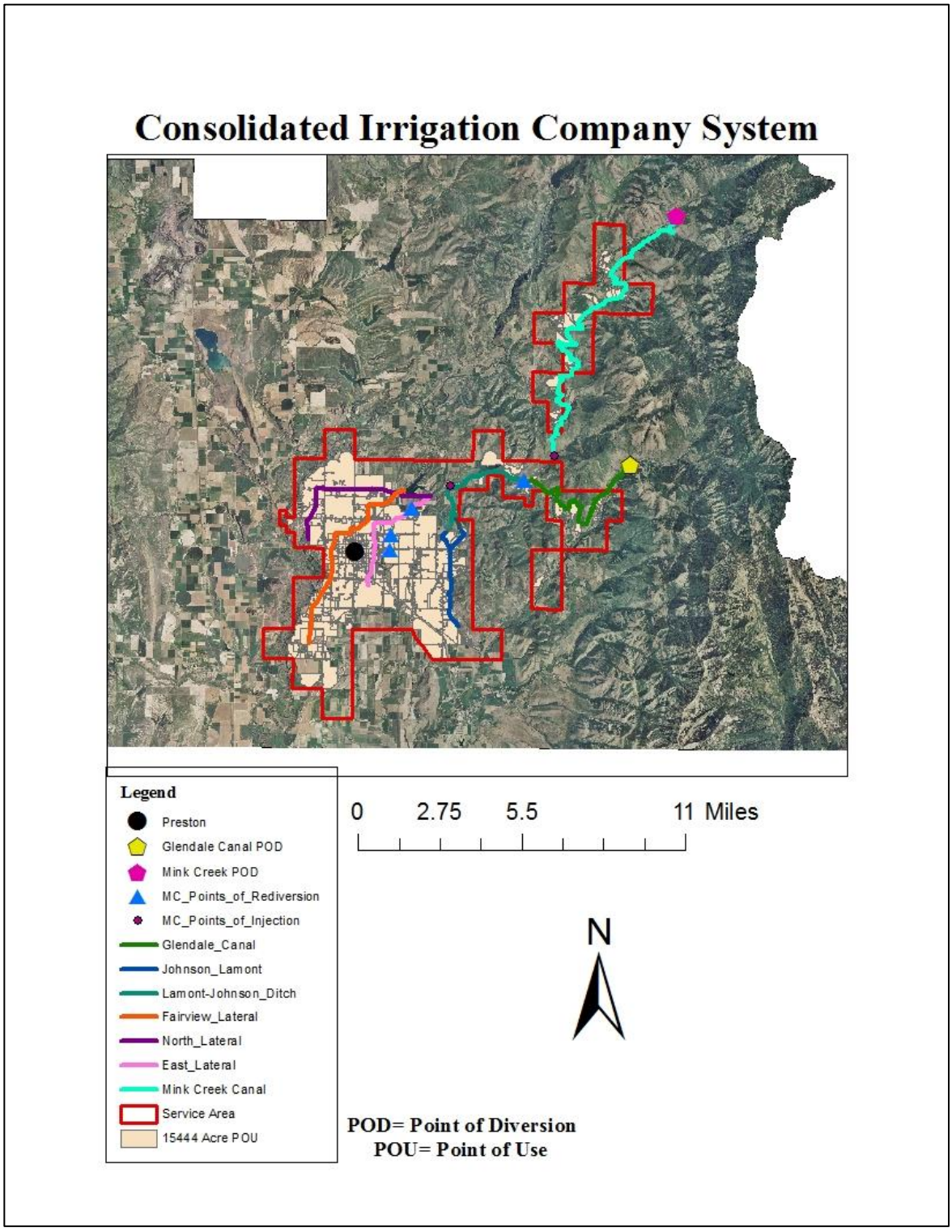
Utah Division of Water Resources(UDWR) January 1992 *State Water Plan Bear River Basin Plan.* Utah Board of Water Resources, Salt Lake City Utah.

Utah Division of Water (UDWR) rights (2016) *Cub River Irrigation Company water rights*, Salt LakeCityUT.http://www.waterrights.utah.gov/forms/waterCompanies.asp?companyId=0072&forPublicView=1

Wiki, (n.d.). Retrieved June 25, 2015, from https://en.wikipedia.org/wiki/Wasatch_Front

Appendices

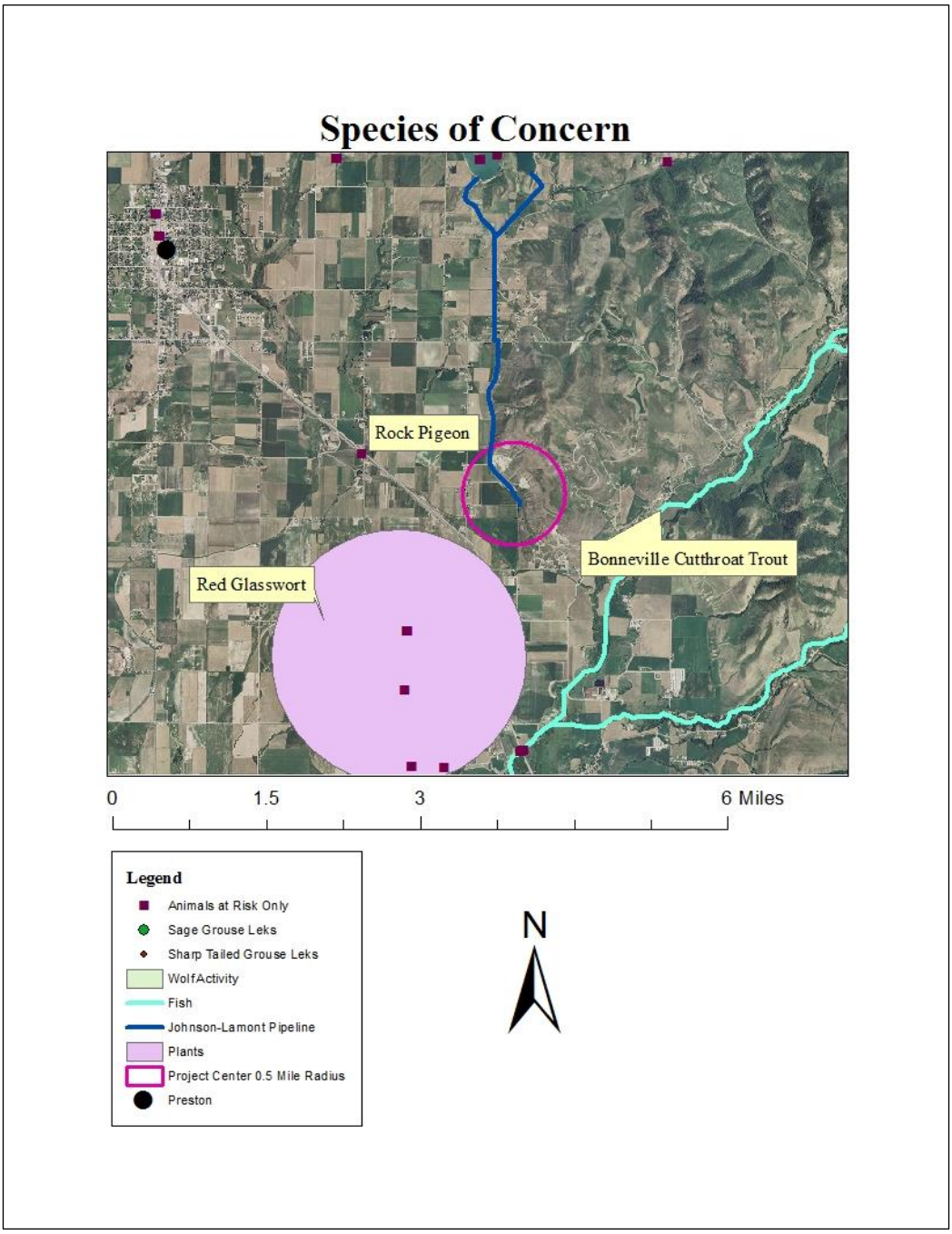
Appendix A



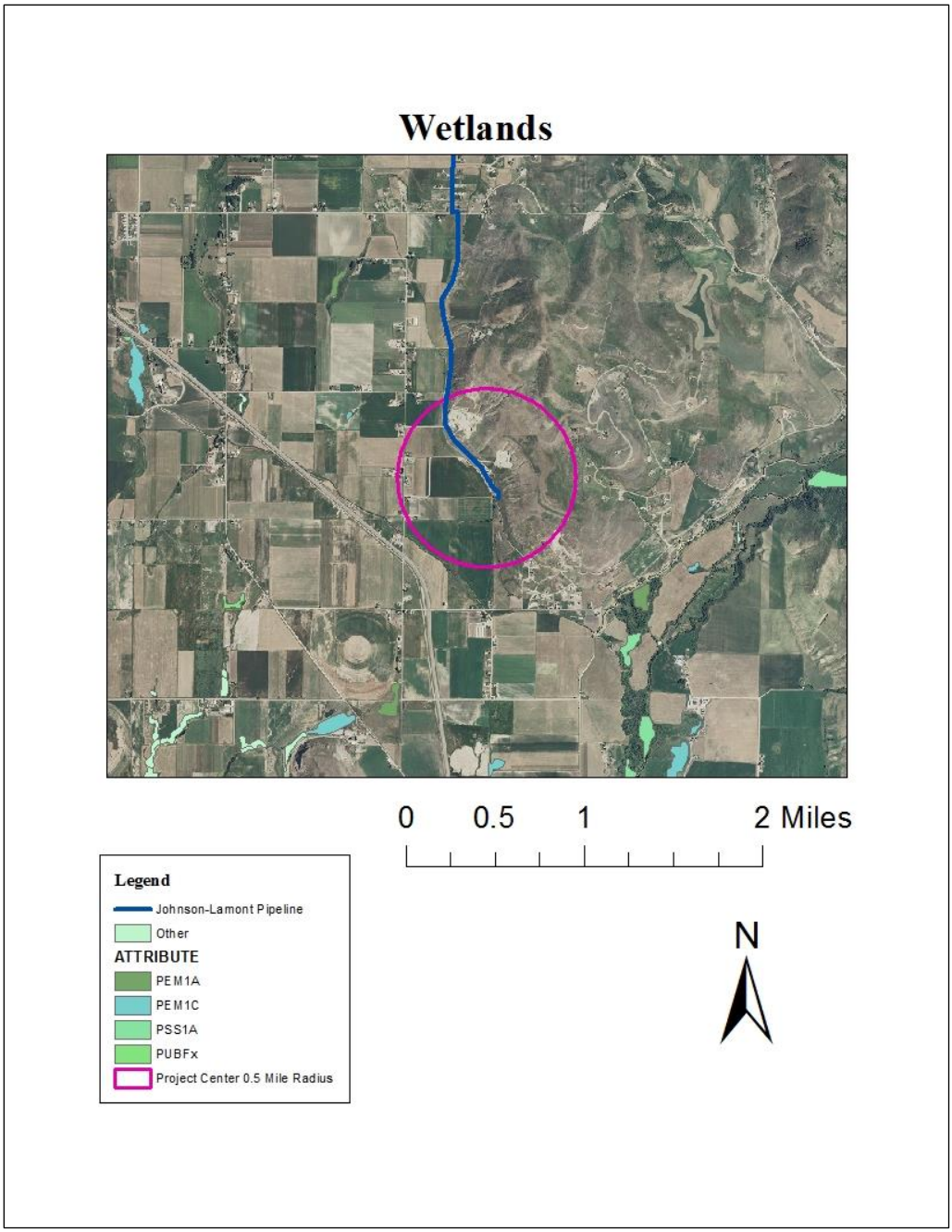
CONSOLIDATED IRRIGATION CO. WATER RIGHTS

	Water Right No.	Priority Date	Source	Tributary to	Benefical Use	Individual Diversion Rate Limitation (cfs)	Combined Diverstion Rate Limitation (cfs)	Volume Limitation (AFA)	Point of Diversion	Individual Acre Limitation	Combined Acre Limitations		
NATURAL FLOW	13-2	4/1/1882	Cub River	Bear River	Irrigation	30			Glendale Canal and Middle Ditch	3100			
	13-3	4/1/1882	Cub River	Bear River	Irrigation	25			Glendale Canal and Middle Ditch	9331	9331	12431	
	13-2104	3/14/1924	Cub River	Bear River	Irrigation	25			Glendale Canal and Middle Ditch	8410			
	13-271	5/7/1880	Worm Creek	Cub River	Irrigation	50		2000	SESW,Sec. 8, 15S, 40E				
	13-143	4/1/1929	Springs	Worm Creek	Irrigation	5		2133	Springs, SWSW Sec. 8, 15S, 40E		10449		
	13-2103	3/14/1924	Worm Creek	Cub River	Irrigation	25		10662	SESW,Sec. 8, 15S, 40E				
	13-2302	1/9/1962	Cub River	Bear River	Irrigation, Irrigation Storage, Irrigation from Storage	6.8		2282 (Irr) 730 (Stor., Irr. From Stor.)	NWNE Sec. 20, 15S, 40E	1226			
	13-7747	5/1/1888	Mink Creek	Bear River	Irrigation	30.13			SWNESE Sec. 28, 13S, 41E	3013			
	13-35	1/1/1882	No sources found for these rights, but presumably from Cub River because these rights are listed in the McEwan Decree		Stockwater, Domestic	4			Not specified in decree				15444.2
	13-36	1/1/1882			Stockwater, Domestic	3			Not specified in decree				
	13-37	1/1/1882			Stockwater, Domestic	2			Not specified in decree				
	13-38	1/1/1882			Stockwater, Domestic	3			Not specified in decree				
	The natural flow water rights from Cub River total 98.8 cfs. The natural flow water rights from Worm Creek total 75 cfs. The natural flow water rights from Springs tributary to Worm Creek total 5 cfs. The natural flow water rights from Mink Creek total 30.13 cfs. The GRAND TOTAL of all natural flow rights is 208.93 cfs.												
STORAGE RIGHTS	FOSTER RESERVOIR												
	13-2298	2/11/1957	Cub River	Bear River	Irrigation Storage, Irrigation from Storage			3355	Glendale Canal	4708.7			
	LAMONT RESERVOIR												
	13-2291	6/30/1947	Cub River	Bear River	Irrigation Storage, Irrigation from Storage			2407.5	Glendale Canal	3938			
	JOHNSON RESERVOIR												
	13-2022	9/17/1910	Worm Creek	Cub River	Irrigation, Irrigation Storage, Irrigation from Storage	10	20	4265 (Irr.)	NWSE, Sec. 10, 15S, 40E	1559			
	13-2102	9/18/1923				10							
	13-2287	9/18/1923				10							
	GLENDALE RESERVOIR												
	13-2288	3/14/1924	Worm Creek	Cub River	Irrigation, Irrigation Storage, Irrigation from Storage	215		6000	NESESW Sec. 8, 15S, 40E	15708.9 Storage water from these rights can be used to irrigate an additional 264.9 acres beyond the 15444.2 combined limitation on the rest of the water rights.			
	13-2288A	12/15/1924	Cub River	Bear River					Glendale Canal				
	13-2108	12/15/1924	Worm Creek	Cub River					NESESW Sec. 8, 15S, 40E				

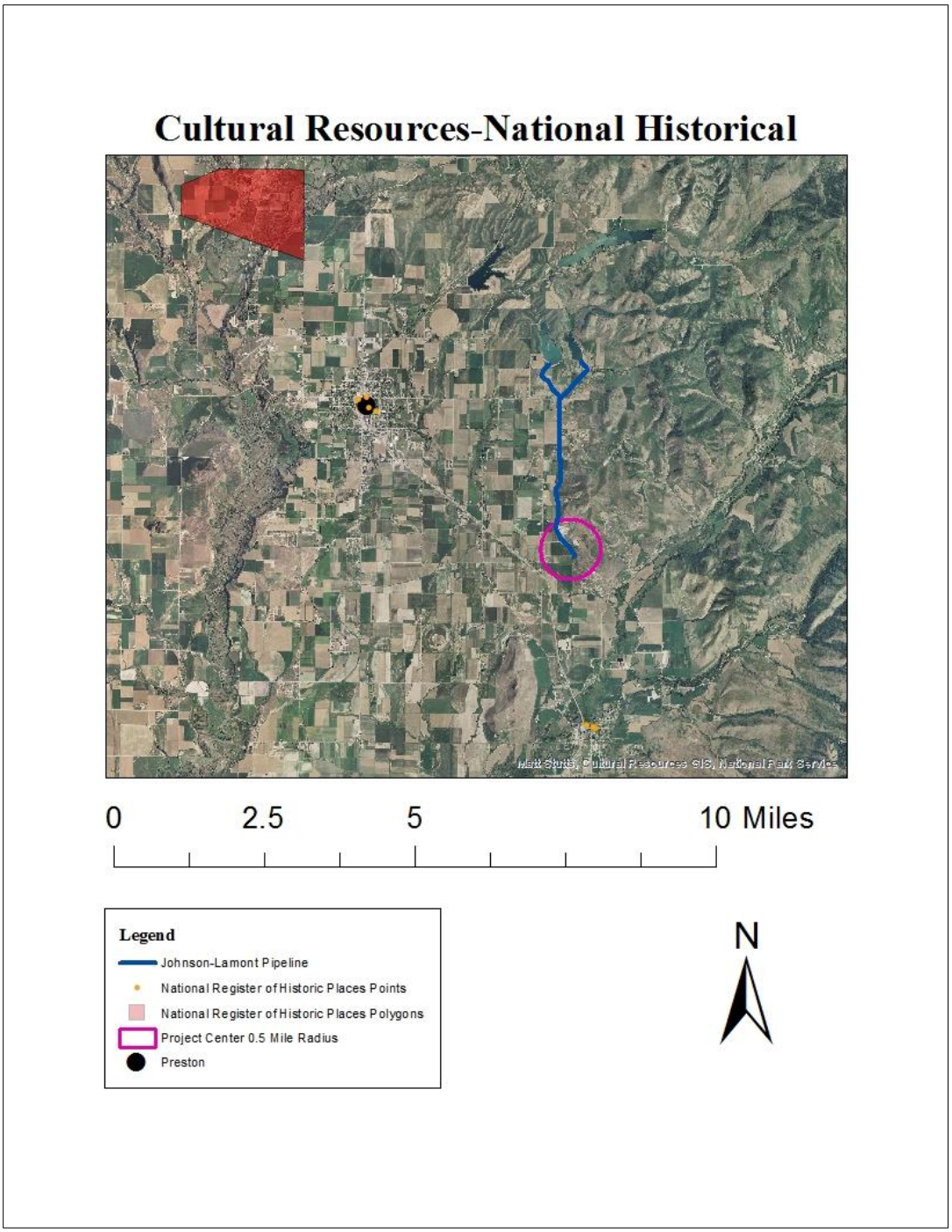
Appendix C


Species of Concern
Rock Pigeon
Red Glasswort
Bonneville Cutthroat Trout
0
1.5
3
6 Miles
Legend
Animals at Risk Only
Sage Grouse Leks
Sharp Tailed Grouse Leks
WolfActivity
Fish
Johnson-Lamont Pipeline
Plants
Project Center 0.5 Mile Radius
Preston
N

Appendix D


Wetlands
0
0.5
1
2 Miles
N
Legend
Johnson-Lamont Pipeline
Other
ATTRIBUTE
PEM1A
PEM1C
PSS1A
PUBFx
Project Center 0.5 Mile Radius

Appendix E


Cultural Resources-National Historical
0
2.5
5
10 Miles
Legend
Johnson-Lamont Pipeline
National Register of Historic Places Points
National Register of Historic Places Polygons
Project Center 0.5 Mile Radius
Preston
N

Franklin Soil & Water Conservation District
98 East 800 North Suite #5
Preston ID 83263
(208) 852-0562 Ext. 5 email: Lyla.Dettmer@franklinSWCD.net

March 2, 2016

Consolidated Irrigation Company
Lyle Porter
P.O. Box 311
Preston ID 83263

Dear Mr. Porter,

The Franklin SWCD is in full support of the grant opportunities with the Bureau of Reclamation Drought resiliency project grant. The function of the conservation district is to take available technical, financial, and educational resources whatever their source, and focus or coordinate them so that they meet the needs of the local landuser for conservation of soil, water, and related resources. We feel that this grant will help us in reaching that goal.

The Franklin Soil & Water Conservation District will provide $275.00 in office supplies and we calculate 500 miles @.55 a mile is $275.00 for a total of $500.00towards the implementation of this grant. We will also work to complete a revised agreement detailing our responsibilities and tasks related to this grant and ensure that these are completed in a timely manner.

Sincerely

Lyla Dettmer
District Manager

State of Idaho
DEPARTMENT OF WATER RESOURCES
900 N Skyline Dr., Ste A, Idaho Falls, Idaho 83402-1718
Phone: (208) 525-7161 FAX: (208) 525-7177 www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

March 24, 2016

Franklin County Treasurer / Auditor
39 W Oneida
Preston ID 83263

RE: Water District No. 13A

Dear Treasurer / Auditor:

Enclosed please find copies of the Adopted Budget and Minutes of the above Water District. They have been read and approved by this office.

If you have any questions concerning this matter, please feel free to contact this office.

Respectfully submitted,

Dennis M Dunn

Dennis Dunn
Sr. Water Resource Agent

WATER DISTRICT 13A ****MINUTES*** ANNUAL MEETING
MARCH 7, 2016 PRESTON IDAHO

PRESENT: Janet and Mr. Price, John Balls, Robert Swainston, Phil Smith, Kirk Iverson, Lyle Porter, Dennis Dunn. Seth Wheatley. Eldean Holliday, Brian Jensen, Lyla Dettmer, Luke Nieslanic, Gib Hull, Mary Roberts, Lewis Hampton, Alan Smith,. Brent Glover, Maxine Waddoups

Brian Jensen chairman for the 2015 meeting introduced the meeting and Maxine Waddoups read the minutes from the March 2, 2015 meeting. Motion was made 2nd and passed to accept the minutes as read.

Chairman was re-nominated as Brian Jensen, motion was made 2nd and passed.
Maxine Waddoups was nominated as Secretary, motion was made 2nd and passed.

Credentials committee was appointed as: Seth Wheatley, Lewis Hampton, Robert Swainston.

Kirk Iverson, river water master, gave the watermaster report for the 2015 irrigation season. He explained his job. He measures where and how much water is being used and then reports this to the state. The State requires measuring devices and locking headgates. This requirement was mandated by the state about 3 years ago. It was mentioned that water users need to communicate with the watermaster Kirk Iverson. Kirk will try and contact individuals regarding measuring devices. His job is basically keeping track and monitoring water use.

Lyla discussed the Budget and the water master wages. Motion was made to keep the wages the same for the watermaster and the assistant water watermaster. Motion was made to hire Kirk Iverson as watermaster. Motion was made 2nd and passed. A motion was also made that watermaster duties are to continue on a year round basis, motion was made seconded and passed.
Assistant watermaster will be hired at a later date.

Adivosry committee was appointed as; Lyle Porter, Alan Smith, Lewis Hampton.
The advisory committee was assigned to hire the assistant watermaster. They would talk to Casey Clark and Regan Wheeler to see who would be more available to do this job.

Treasure was elected as Lyla Dettmer. Motion was made 2nd and passed. A motion was also made to have her office the Franklin County Soil Conservation District collect the funds for the water district 13A, this motion was seconded and passed. Lyla discussed budget how much was collected and how much was spent. Budget needs to be adjusted next year for workcomp and social security wages. She also discussed that 4 years of data has been collected so far, since her office has started keeping track of our district. She also said that $3500.00 was paid out for cloud seeding.

Brian discussed the measuring device that needs to be installed on the Cub River. The measuring device may be able to get installed this year.

Each water district participates in the Cloud Seeding program. Our budget is $1500 for cloud seeding. The product has been bought and we are about 1 year ahead in purchasing the product, so this should keep our payments ahead for the year.

Luke discussed the cloud seeding program. He discussed where the seeding stations are at, and how they are monitored all through the season, and resituated if needed.

Lyle Porter mentioned that when the gauging station is installed that it will have to be re-rated and this will have to be charged for. The FCSWCD has done a few measurements, but they still owe us a high water year measurement. Next year we need to keep about $2000.00 in the budget to pay for the rating station.

A motion was made 2nd and passed to accept the Budget at presented.

Motion was made that FCSWD has the authority to collect the assessments and have the payments due by April 1st when water rights start. Motion was made 2nd and passed.

Minimum payments were explained.

Motion was made to adjourn.
Meeting adjourned at 2:30.

Signed, Maxine Waddoups

Maxine Waddoups, Secretary
Water District 13A

Consolidated Irrigation Company
33 S. 1st E
Preston, Idaho 83263

4/8/2016

To the Bureau of Reclamation,

On behalf of Consolidated Irrigation Company, I, Brian Jensen (President) is submitting this official resolution authorized by the Consolidated Irrigation Company board of directors to commit to the financial and legal obligations associated with the receipt of WaterSMART grant financial assistance if the application is accepted by the Bureau of Reclamation.

We would like to thank you for your time and effort in providing assistance in improving water management and infrastructure that will help address concerns of drought conditions.

Sincerely,

Consolidated Irrigation Company

Brian Jensen (President)

Cub River Irrigation

P.O. 215 Lewiston UT 84321

4/9/2016

Brian Jensen

Preston ID 83263

Dear Mr. Jensen

I appreciate you making the grant application to reclamation that will benefit both of our companies and the cub river water district.

I agree to work together to finalize an agreement to utilize the connector pipe from your Whitney lateral to our Palmer pipe

Sincerely

Howard D Nelson'

Secretary