WaterSMART

Water and Energy Efficiency Grants for FY 2014

Response to Funding Opportunity Announcement No. R14AS00001
Funding Group II

Upper High Creek Canal Enclosure and Hydropower Development Project

Richmond Irrigation Company
Richmond, Utah

Submitted by:

Terry Spackman
President
Richmond Irrigation Company
P.O. Box 156
Richmond, UT 84333
Phone: (435) 770-1800
brookskidmore@gmail.com

Eric J. Franson, P.E.
Project Engineer
Franson Civil Engineers
1276 South 820 East, Suite 100
American Fork, Utah 84003
Phone: (801) 756-0309
Fax: (801) 756-0481
EFranson@fransoncivil.com

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TECHNICAL PROPOSAL

Executive Summary

The executive summary should include:

- *The date, applicant name, city, county, and state.*
- *A one paragraph project summary that specifies the work proposed, including how project funds will be used to accomplish specific project activities and briefly identifies how the proposed project contributes to accomplishing the goals of this FOA (see Section III.B, "Eligible Projects" in the FOA).*
- *State the length of time and estimated completion date for the project.*
- *Whether or not the project is located on a Federal facility.*

Estimated Start Date: September 1, 2014

Estimated End Date: May 1, 2017

Applicant's Name: Richmond Irrigation Company

Project Location: Richmond, Cache County, Utah

Project Title: Upper High Creek Canal Enclosure and Hydropower Development

Project Summary:

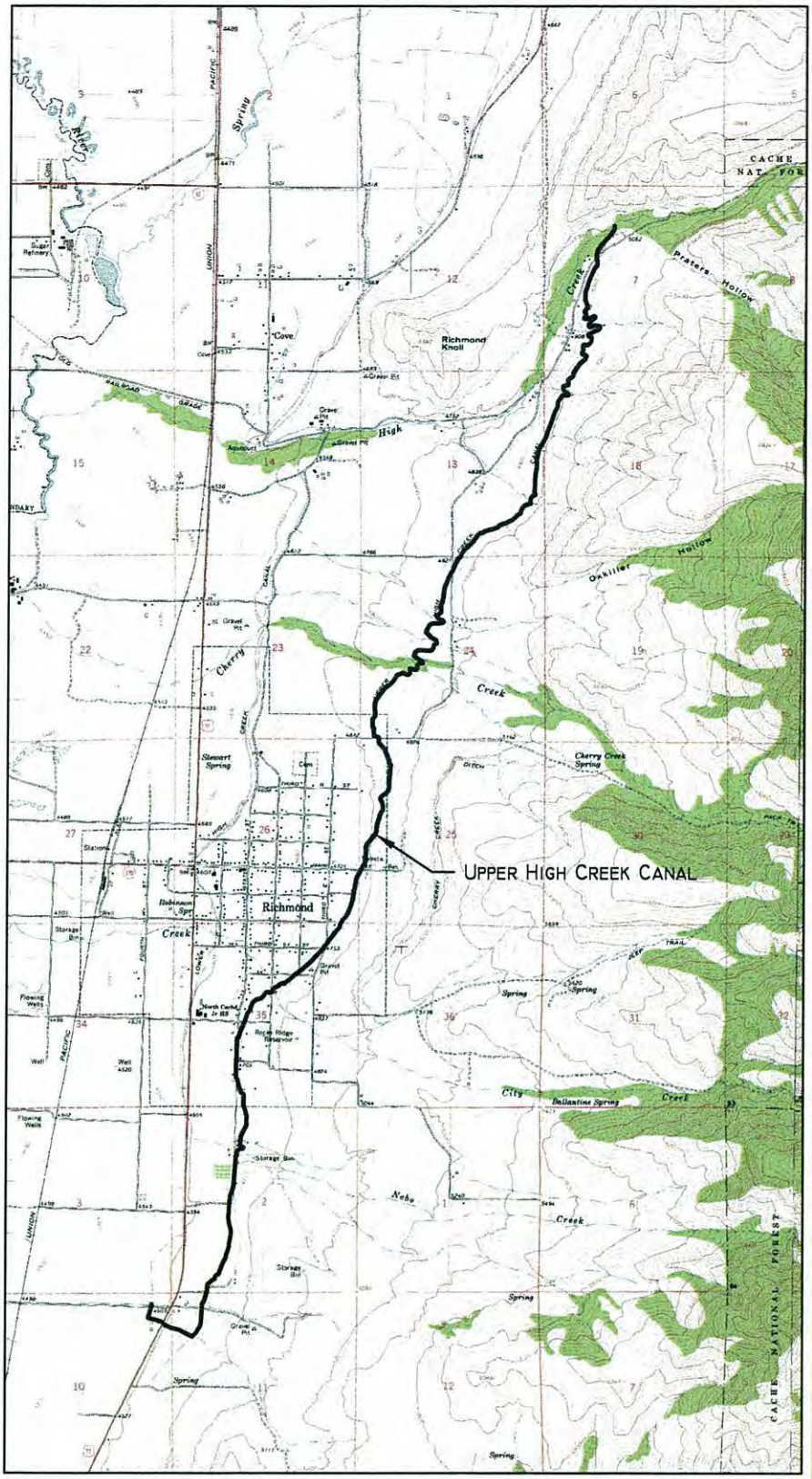
The Richmond Irrigation Company provides irrigation water to approximately 6,000 acres of agricultural land. The Upper High Creek Canal is one of the primary conveyance canals owned by the irrigation company. The purpose of this project is to enclose approximately 8 miles of the Upper High Creek Canal and construct hydropower facilities to take advantage of the energy that will need to be dissipated. The canal has a capacity of 40 cfs and diverts water from High Creek. Water records from the irrigation company indicate that the canal loses nearly 50% of the water diverted through seepage and evaporation. The significant water losses have a negative impact on company shareholders, Richmond City, and the general local economy. A grant from Reclamation would make this project financially feasible and it is unlikely that the project will move forward without Reclamation's assistance. This project contributes to accomplishing the goals of this FOA by conserving approximately 4,800 acre-feet of water annually, producing a significant amount of hydropower, and increasing water delivery to an environmentally sensitive area.

This project is not located on a Federal Facility.

Background Data

Provide a map of the area showing the geographic location (include the State, county, and direction from nearest town).

County Map



Project Area Map

FRANSON CIVIL ENGINEERS	DATE: JANUARY 13, 2014 SCALE: Fig 1_Location Map.dwg H:\CLIENT\9-North Utah Area\Richmond Irrig. Co\Drawings LAYOUT: Fig 1_Project & County Maps	RICHMOND IRRIGATION COMPANY FUNDING APPLICATION	FIGURE 1 PROJECT AREA MAP AND COUNTY MAP

As applicable, describe the source of water supply, the water rights involved, current water uses (i.e., agricultural, municipal, domestic, or industrial), the number of water users served, and the current and projected water demand. Also, identify potential shortfalls in water supply. If water is primarily used for irrigation, describe major crops and total acres served.

Richmond Irrigation Company is a nonprofit, mutual irrigation company that provides water to agricultural users and a secondary water system for Richmond City. The company owns several water rights. The land attached to those water rights totals 6,151.74 acres in Cache County. Water is diverted from High Creek, Cub River, MapleHollow Spring, Cherry Creek, and several underground water wells. The proposed project is to enclose the Upper High Creek Canal, which is one of the primary conveyance canals owned by the irrigation company. The Upper High Creek Canal diverts approximately 9,600 acre-feet per year from High Creek and it is approximately 8 miles in length. Water records from the irrigation company indicate that the canal loses nearly 50% of the water diverted through seepage and evaporation. This project is anticipated to conserve approximately 4,800 acre-feet of water. The primary crop irrigated is alfalfa. The water rights owned by the irrigation company that are diverted into the Upper High Creek Canal are shown in the table below.

Table 1: Water Rights diverted into the Upper High Creek Canal

Water Right	Source	Flow (cfs)	Type	Priority
25-7062	High Creek	9.1	Decree	06/01/1860
25-7063	High Creek	21.7	Decree	07/01/1860
25-7067	High Creek	7.0	Decree	05/01/1860
25-4933	High Creek	39.2	Decree	05/01/1860

In addition, describe the applicant's water delivery system as appropriate. For agricultural systems, please include the miles of canals, miles of laterals, and existing irrigation improvements (i.e., type, miles, and acres). For municipal systems, please include the number of connections and/or number of water users served and any other relevant information describing the system.

Richmond Irrigation Company owns two large conveyance facilities, the Upper High Creek Canal and the High Creek Canal. This project proposes piping the larger canal – the Upper High Creek Canal. From the Upper High Creek Canal there are 6 piped laterals that distribute water to shareholders. As part of this project, meters will be installed on these laterals to improve water management and efficiency. The company also owns and rents a total of 5 wells to supplement water needs during the late irrigation season.

The Upper High Creek Canal is 8 miles in length and has a capacity of 40 cfs. It is estimated that approximately 9,600 acre-feet of water is diverted into the canal annually, and 4,800 acre-feet (50%) is lost annually to seepage and evaporation.

If the application includes renewable energy or energy efficiency elements, describe existing energy sources and current energy uses.

It is anticipated that two small hydropower plants will be installed along the pipeline. Further evaluation will be required to determine the best location for the power facilities. Preliminary estimates show that these two small turbines would have a combined capacity of 300 kilowatts. This could result in nearly 1,620,000 kilowatt-hours of energy generated from a clean and renewable source.

In addition, the project will reduce the amount of power required to pump from five existing wells. On average years, the irrigation company begins pumping from the wells at the beginning of July. It is anticipated that the project will delay the need of pumping for 23 days during average conditions. The average annual power cost for pumping the wells between July and October is $33,000. Eliminating the need for pumping during most of the month of July will conserve nearly $10,000 per year in energy cost, which would be equal to approximately 2,750,000 kilowatt-hours of energy.

Identify any past working relationships with Reclamation. This should include the date(s), description of prior relationships with Reclamation, and a description of the projects(s).

There has not been any direct working relationship between Richmond Irrigation Company and Reclamation.

Technical Project Description

The technical project description should describe the work in detail, including specific activities that will be accomplished as a result of this project. This description shall have sufficient detail to permit a comprehensive evaluation of the proposal.

If a grant from Reclamation is received, the irrigation company will finalize the loan from the Utah Division of Water Resources to begin the project. Once funding is secured, an engineering design report will be prepared to finalize the best alignment options, pipe sizes, location and size of hydropower units, and determine all the required permits. Then, an environmental and cultural review will be done by a registered environmental firm. Once environmental clearance is obtained, the engineering design and construction documents will be prepared. It is anticipated that the pipeline will follow the existing canal corridor. Preliminary engineering design shows that the pipeline would vary in size from 30-inch to 12-inch in diameter. It is anticipated that two small hydropower plants would be installed along the pipeline. These plants will generate power from energy that needs to be dissipated.

Evaluation Criteria

Evaluation Criterion A: Water Conservation

Up to 28 points may be awarded for a proposal that will conserve water and improve efficiency. Points will be allocated to give consideration to projects that are expected to result in significant water savings.

Subcriterion No. A.1 – Water Conservation:

For projects with quantifiable and sustained water savings, please respond to Subcriterion No. 1(a) – Quantifiable Water Savings described in this subsection. If the project does not result in quantifiable water savings but will improve water management, please respond to Subcriterion No. 1(b) – Improved Water Management described in this subsection. If the project has separate components that will result in both quantifiable water savings and improved water management, an applicant may respond to both Subcriteria No. A.1(a) and (b). However, an applicant is limited to 20 points total under both Subcriteria No. A.1(a) and (b).

Subcriterion No. A.1(a) – Quantifiable Water Savings

*Up to **20 points** may be allocated based on the quantifiable water savings expected as a result of the project.*

***Describe the amount of water saved.** 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. Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations. Please be sure to consider the questions associated with your project type (listed below) when determining the estimated water savings, along with the necessary support needed for a full review of your proposal (please note, the following is not an exclusive list of eligible project types. If your proposed project does not align with any of the projects listed below, please be sure to provide support for the estimated project benefits, including all supporting calculations and assumptions made).*

This project is anticipated to conserve 4,800 acre-feet of water per year. During the beginning of the season through the beginning of July, the irrigation company diverts 40 cfs into the Upper High Creek Canal, which is the maximum capacity of the canal. Starting in July to the end of the season, flows diverted decrease to 78.2% of all the flows available in High Creek, which by this time of the year is much less than 40 cfs.

A Utah Water Right Gaging Station was installed on High Creek upstream of the Upper High Creek Canal diversion. The station recorded flows for approximately 20 years during the 1940's and 1980's. These flows were evaluated to determine the approximate diversions into the Upper High Creek Canal. This data is shown in Appendix B.

The Richmond Irrigation Company Water Master conducted inflow/outflow tests throughout the last several years to measure seepage rates. Flow measurements were taken using existing flumes and using the area-velocity approach. His measurements indicated that the canal is losing nearly 50% of its flows through seepage and evaporation. This is not surprising as the soil in the area is sandy-silt, and numerous gravel pits are located within a three-mile radius from the canal. Of the total water conserved (4,800 acre-feet), it is anticipated that 2,800 acre-feet will remain in High Creek for downstream water users and for environmental benefits. The remaining 2,000 acre-feet will be additional supply to meet shortages of the irrigation company.

Table 2: Potential Water Conservation Amount

Month	Average Monthly Flow in High Creek (AF)	Average Monthly Flow Diverted (AF)	Total Losses (AF)
April	1930	1260	630
May	6940	2480	1240
June	6585	2400	1200
July	2525	1830	915
August	1090	820	410
September	700	530	265
October	350	270	140
Total	**20,120**	**9,600**	**4,800**

In addition, all applicants should be sure to address the following:

- *What is the applicant's average annual acre-feet of water supply?*

The Richmond Irrigation Company has water rights for 24,606.96 acre-feet per year from High Creek, Cub River, MapleHollow Spring, Cherry Creek, and underground water wells. This is based on the company irrigating 6,151.74 acres with a 4 acre-feet/acre duty. The average water diverted from High Creek at the Upper High Creek Canal diversion is 9,600 acre-feet per year as summarized in Table 2 above and shown in more detail in Appendix B.

- *Where is that water currently going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground, etc.)?*

Water currently lost in the system is seeping into the ground and evaporating to the atmosphere.

- *Where will the conserved water go?*

A total of 4,800 acre-feet of water will be conserved. Of this, a maximum of 2,000 acre-feet will be used by the irrigation company to remediate shortages. The remaining 2,800 acre-feet will stay in the High Creek and flow through the Bear River into the Bear River Migratory Bird Refuge.

Please include a specific quantifiable water savings estimate; do not include a range of potential water savings.

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

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 water savings will be equal to the amount of water that is currently lost through seepage and evaporation.

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.

As indicated above, the Richmond Irrigation Company Water Master conducted inflow/outflow tests throughout the last several years to measure seepage rates. Flow measurements were taken using the area velocity method. His measurements indicated that the canal is losing nearly 50% of its flows through seepage and evaporation.

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?)

The canal will be enclosed with HDPE pipe. With good construction practices, the losses due to seepage and evaporation will be near zero.

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?

The loss reductions are going to be 600 acre-feet per mile each year. This was determined by dividing the total 4,800 acre-feet of conserved water by the 8 miles of canal that will be enclosed.

e) How will actual canal loss seepage reductions be verified?

A meter will be installed at the inlet of the canal and flows can be compared with estimated historical flows. The total diverted flows should be 2,800 acre-feet less than historical flows.

f) Include a detailed description of the materials being used.

Preliminary design indicates that the canal will be enclosed using a 32-inch to 12-inch HDPE pipe. Diversion structure, isolation valves, flow measurements, and possibly SCADA for automation will be used to improve water management and efficiency.

Subcriterion No. A.1(b) – Improved Water Management

*Up to **5 points** may be awarded if the proposal will improve water management through measurement, automation, advanced water measurement systems, through implementation of a renewable energy project, or through other approaches where water savings are not quantifiable.*

Describe the amount of water better managed. *For projects that improve water management but which may not result in measurable water savings, state the amount of water expected to be better managed, in acre-feet per year and as a percentage of the average annual water supply. (The average annual water supply is the amount actually diverted, pumped, or released from storage, on average, each year. This does not refer to the applicant's total water right or potential water supply.) Please use the following formula:*

$$\frac{\textit{Estimated Amount of Water Better Managed}}{\textit{Average Annual Water Supply}} = \frac{9{,}600 \text{ acre-feet}}{9{,}600 \text{ acre-feet}} = 100\%$$

All water diverted by the Upper High Creek Canal will be better managed because all water will be conveyed through a pipe network instead of open ditches and the canal. Meters will be installed to main lines and turnouts, which will improve the system operator's ability to manage the water. The meters will allow for an accurate accounting of where all the water is going within the system. These accurate measurements will allow operators to easily detect water leaks and ensure that irrigators are not over watering their fields.

Subcriterion No. A.2 – Percentage of Total Supply

Up to 4 additional points may be allocated based on the percentage of the applicant's total average water supply (i.e., including all facilities managed by the applicant) that will be conserved directly as a result of the project.

Provide the percentage of total water supply conserved: State the applicant's total average annual water supply in acre-feet. Please use the following formula:

$$\frac{\textit{Estimated Amount of Water Conserved}}{\textit{Average Annual Water Supply}} = \frac{4{,}800 \text{ acre-feet}}{9{,}600 \text{ acre-feet}} = 50\%$$

Based on estimated diversion records and seepage testing, it is anticipated that 50% of the total average annual water supply will be conserved.

Subcriterion No. A.3 – Reasonableness of Costs

Up to 4 additional points may be awarded for the reasonableness of the cost for the benefits gained.

Please include information related to the total project cost, annual acre-feet conserved (or better managed), and the expected life of the improvement. Use the following calculation:

$$\frac{\textit{Total Project Cost}}{\textit{(Acre-Feet Conserved, or Better Managed x Improvement Life)}}$$

Failure to include this required calculation will result in no score for this section.

For all projects involving physical improvements, specify the expected life of the improvement in number of years and provide support for the expectation (e.g. manufacturer's guarantee, industry

accepted life-expectancy, description of corrosion mitigation for ferrous pipe and fittings, etc.) Failure to provide this information may result in a reduced score for this section.

All the water used by Richmond Irrigation Company will be better managed through the system. In addition, the project will conserve approximately 4,800 acre-feet of water annually. It is anticipated that the pipe used will be HDPE, which has an industry accepted life-expectancy of 50 years. Corrosion resistant fittings will be used to increase life expectancy of all fittings and appurtenances.

$$\frac{\textit{Total Project Cost}}{\textit{AF Conserved or Better Managed x Improvement life}} = \frac{\$4,750,000}{9,600*50} = \$9.90$$

The calculation yields a cost of $9.90 for every acre-foot per year of water conserved and better managed.

Evaluation Criteria B: Energy Water Nexus

*Up to **16 points** may be awarded based on the extent to which the project increases the use of renewable energy or otherwise results in increased energy efficiency.*

For projects that include construction or installation of renewable energy components, please respond to Subcriterion No. B.1 – Implementing Renewable Energy Projects Related to Water Management and Delivery. If the project does not implement a renewable energy project but will increase energy efficiency, please respond to Subcriterion No. B.2 – Increasing Energy Efficiency in Water Management. If the project has separate components that will result in both implementing a renewable energy project and increasing energy efficiency, an applicant may respond to both. However, an applicant may receive no more than 16 points total under both Subcriterion No. B.1 and B.2.

Subcriterion No. B.1 – Implementing Renewable Energy Projects Related to Water Management and Delivery

Up to 16 points may be awarded for projects that include construction or installation of renewable energy components (i.e., hydroelectric units, solar-electric facilities, wind energy systems, or facilities that otherwise enable the use of renewable energy). Projects such as small-scale solar resulting in minimal energy savings or production will be considered under Subcriterion No. 2 below.

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

It is anticipated that hydropower units will be installed along the pipeline at locations where it can easily be connected to the local power grid. Two small hydroelectric units will be installed. One unit will be located in the 18-inch lateral serving Coveville and Webster, and the other unit will be

located in the mainline (see Appendix G). The capacity for each unit is shown in the table below. The hydroelectric capacity was calculated assuming a turbine and generator efficiency of 70%.

Table 3: Hydroelectric Capacity

Hydroelectric Unit	Available Dynamic Head (ft)	Available Flow (cfs)	Hydroelectric Capacity (kW)
Unit 1	260	8 (Winter) 5 (Summer)	120 (Winter) 75 (Summer)
Unit 2	180	17	180

The project has potential for more hydroelectric production in several canal laterals that drop 200 feet in elevation. These additional hydroelectric units will have to be evaluated in more detail during the design phase of the project. It is anticipated that this project will be completed in two phases. The first phase will consist of enclosing the canal and installing meters at the proposed hydropower facility locations. Flow records will be recorded for an entire irrigation season. Once good flow records are obtained, phase two of the project (hydroelectric units) will be constructed.

Describe the amount of energy generated. *For projects that implement renewable energy systems, state the estimated amount of energy that the system will generate (in kilowatt hours per year). Please provide sufficient detail supporting the stated estimate, including all calculations in support of the estimate.*

Power will be generated year round on Unit 1. Unit 2 will only generate power during the irrigation season. Assuming the irrigation season is 180 days, the total energy generated is 1,620,000 kilowatt hours per year.

Unit 1 - 180 days x 24 hours/day x 120 kilowatts = 518,400 kilowatt-hours
Unit 1 - 180 days x 24 hours/day x 75 kilowatts = 324,000 kilowatt-hours
Unit 2 - 180 days x 24 hours/day x 180 kilowatts = 777,600 kilowatt-hours

Total = 1,620,000 kilowatt-hours

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

- *Expected environmental benefits of the renewable energy system*
- *Any expected reduction in the use of energy currently supplied through a Reclamation project*
- *Anticipated beneficiaries, other than the applicant, of the renewable energy system*
- *Expected water needs of the renewable energy system*

By producing renewable energy and connecting to the local electric grid, the irrigation company will receive power sale revenue to help offset costs of operating and maintaining the system. In

addition, it is anticipated that the costs associated with pumping five existing wells will decrease. Currently, the irrigation company begins pumping from the wells at the beginning of July. After the project is completed, the pumping of the wells is not anticipated to start until the last week of July. This will provide the irrigation company with approximately $10,000 in savings from energy costs associated with the pumping of wells.

Subcriterion No. B.2 – Increasing Energy Efficiency in Water Management

*If the project is not implementing a renewable energy component, as described in Subcriterion No. B.1 above, up to **4 points** may be awarded for projects that address energy demands by retrofitting equipment to increase energy efficiency and/or through water conservation improvements that result in reduced pumping or diversions.*

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

- *Please provide sufficient detail supporting the calculation of any energy savings expected to result from water conservation improvements. If quantifiable energy savings are expected to result from water conservation improvements, please provide sufficient details and supporting calculations. If quantifying energy savings, please state the estimated amount in kilowatt hours per year.*

As stated previously, the pumping of five wells will be decreased. The irrigation company owns and rents a total of five wells. On an average year, the company starts using the wells on July 1to offset water shortages. It is anticipated that piping the canal will delay the need for pumping for nearly a month. Piping the canal will reduce water losses and provide additional water to the shareholders late in the season. Pumping of wells will be reduced by nearly a third. In addition, providing pressurized water to users near the canals will eliminate the need of pumping to operate wheel lines and pivots. Also, farmers currently flood irrigating will likely convert to sprinkler irrigation.

- *Please describe the current pumping requirements and the types of pumps (e.g., size) currently being used. How would the proposed project impact the current pumping requirements?*

Pumping of the five existing wells will be reduced. The amount of power savings associated with reduced pumping will vary from year to year based on the amount of water in High Creek that will be available for diversion by the irrigation company. However, based on an average year, it is anticipated that as much as 2,750,000 kilowatt-hours could be conserved. This would equal to approximately $10,000 in annual savings for the irrigation company.

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

Energy savings would be from the reduced pumping of five wells near the point of diversion. Energy produced by installing small hydroelectric units along the proposed pipeline will be based on the point of diversion.

- *Does the calculation include the energy required to treat the water?*

Water will be used for irrigation. It is anticipated that a traveling screen will be installed at the pipe inlet. Power usage for the traveling screen is anticipated to be minimal. No other treatment will be required.

- *Will the project result in reduced vehicle miles driven, in turn reducing carbon emissions? Please provide supporting details and calculations.*

Piping the canal will result in reduced maintenance and operation. The water master would not need to drive the canal alignment as frequently for safety and other inspection needs. In addition, there would not be a need for burning the canal to eliminate encroaching vegetation. All these activities will reduce carbon emissions.

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

Electric valves, controls, and meters will be operated from hydropower that is generated by the system. Meters located at remote locations will be powered by solar panels.

Evaluation Criteria C: Benefits to Endangered Species

*Up to **12 points** may be awarded for projects that will benefit federally-recognized candidate species or up to **12 points** may be awarded for projects expected to accelerate the recovery of threatened species or engendered species, or addressing designated critical habitat.*

Projects that benefit both federally-listed endangered species and federally-recognized candidate species will receive additional consideration under this criterion. Please see <http://www.fws.gov/endangered/index.html> for a complete listing of federally-listed threatened or endangered species and federally-recognized candidate species in your area.

For projects that will directly benefit federally-recognized candidate species, please include the following elements:

1) *Relationship of the species to water supply*

The High Creek System drains into the Cub River, which drains into the Bear River and terminates at the Great Salt Lake. Prior to entering the Great Salt Lake, diversions are made to a migratory bird refuge operated by the U.S. Fish and Wildlife Service. Historically, the refuge has had some difficulty in diverting the necessary water supply to maintain a healthy ecosystem, sometimes resulting in outbreaks and disease. By leaving 2,800 acre-feet in the Bear River system, additional supplies would be available to those species that rely on the bird refuge. There are 2 species of birds that are listed as federally recognized candidate species; the Yellow-billed Cuckoo, and the Greater sage-grouse.

2) *Extent to which the proposed project would reduce the likelihood of listing or would otherwise improve the status of the species*

The increased water supply would directly lead to an improved habitat for the candidate species and reduce likelihood of disease at the bird refuge.

For projects that will directly accelerate the recovery of threatened species or endangered species or address designated critical habitats, please include the following elements:

1) *How is the species adversely affected by a Reclamation project?*
2) *Is the species subject to a recovery plan or conservation plan under the Endangered Species Act?*
3) *What is the extent to which the proposed project would reduce the likelihood of listing or would otherwise improve the status of the species*

The Arctic Peregrine Falcon is listed as a "Recovery" species. Although a specific recovery plan is not listed, the description of the benefits to the Bear River Migratory Bird Refuge will aid in the recovery of the Arctic Peregrine Falcon as well.

Evaluation Criteria D: Water Marketing

*Up to **12 points** may be awarded for projects that propose water marketing elements, with maximum points for projects that establish a new water market.*

*Note: Water marketing does **not** include an entity selling conserved water to an existing customer. This criterion is intended for the situation where an entity that is conserving water uses water marketing to make the conserved water available to meet other existing water supply needs or uses.*

***Briefly describe any water marketing elements included in the proposed project.** Include the following elements:*

1) *Estimate amount of water to be marked*
2) *A detailed description of the mechanism through which water will be marketed (e.g., individual sale, contribution to an existing market, the creation of a new water market, or construction of a recharge facility*
3) *Number of users, types of water use, etc. in the water market*
4) *A description of any legal issues pertaining to water marketing (e.g., restrictions under reclamation law or contracts, individual project authorities, or State water laws)*
5) *Estimated duration of the water market*

State laws prohibit the sale or lease of water rights that are designated for a specific plot of land, unless the land itself is sold and taken out of production. As such, the water conserved will not be available to lease or sale. The conserved water will alleviate current shortages for other water users. The irrigation company may have supplemental water rights that may be sold according to state law. Legal counsel will be sought before any rights are sold or marketed.

Evaluation Criteria E: Other Contributions to Water Supply Sustainability

*Up to **14 points** may be awarded for projects expected to contribute to a more sustainable water supply. This criterion is intended to provide an opportunity for the applicant to explain how the project relates to a WaterSMART Basin Study, how the project could expedite future on-farm improvements, or how the project will provide other benefits to water supply sustainability within the basin. An applicant may receive the maximum 14 points under this criterion based on discussion of one or more of the numbered sections below.*

1) *Points may be awarded for projects that address an adaptation strategy identified in a WaterSMART Basin Study.*

   Proposals that provide a detailed description of how a project is addressing an adaptation strategy specifically identified in a Basin Study (i.e., a strategy to mitigate the impacts of water shortages resulting from climate change, drought, increased demands, or other causes) may receive maximum points under this criterion. Applicants should provide as much detail as possible about the relationship of the proposed project to the adaptation strategy identified in the Basin Study, including, but not limited to, the following:

   (a) *Identify the specific WaterSMART Basin Study where this adaptation strategy was developed. Describe in detail the adaptation strategy that will be implemented through this WaterSMART Grant project, and how the proposed WaterSMART Grant project would help implement the adaptation strategy.*
   (b) *Describe how the adaptation strategy and proposed WaterSMART Grant project will address the imbalance between water supply and demand identified by the Basin Study.*
   (c) *Identify the applicant's level of involvement in the Basin Study (e.g., cost-share partner, participating stakeholder, etc.)*
   (d) *Describe whether the project will result in further collaboration among Basin Study partners.*

   Through the WaterSMART Basin Study Program, Reclamation is working with State and local partners, as well as other stakeholders, to comprehensively evaluate the ability to meeting future water demands within a river basin. The Basin Studies allow Reclamation and its partners to evaluate potential impacts of climate change to water resources within a particular river basin, and to identify adaptation strategies to address those impacts. For more information on Basin Studies, please visit: <www.usbr.gov/WaterSMART/bsp>.

This project does not fall within one of the areas that have a completed WaterSMART Basin Study. However, the Bear River Basin is an important river basin that is included in both the Utah and Idaho State Plans.

2) *Points may be awarded for projects that describe in detail how they will directly expedite future on-farm irrigation improvements, including future on-farm improvements that may be eligible for NRCS funding. Please address the following:*

a) *Include a detailed listing of the fields and acreage that may be improved in the future.*
b) *Describe in detail the on-farm improvements that can be made as a result of this project. Include discussion of any planned or ongoing efforts by farmers/ranchers that receive water from the applicant.*
c) *Provide a detailed explanation of how the proposed WaterSMART Grant project would help to expedite such on-farm efficiency improvements.*
d) *Fully describe the on-farm water conservation or water use efficiency benefits that would result from the enabled on-farm component of this project. Estimate the potential on-farm water savings that could result in acre-feet per year. Include support or backup documentation for any calculations or assumptions.*
e) *Projects that include significant on-farm irrigation improvements should demonstrate the eligibility, commitment, and number or percentage of shareholders who plan to participate in any available NRCS funding programs. Applicants should provide letters of intent from farmers/ranchers in the affected project areas.*
f) *Describe the extent to which this project complements an existing or newly awarded AWEP project.*

Note: On-farm water conservation improvements that complement the water delivery improvement projects selected through this FOA may be considered for NRCS funding and technical assistance in FY 2014 to the extent such assistance is available. Complementing NRCS Farm Bill programs include the Environmental Quality Incentive Program (EQIP) and Agricultural Water Enhancement Program (AWEP), which are the primary programs that address water quantity and water quality conservation practices. For more information, including application deadlines and a description of available funding, please contact your local NRCS office or visit <www.nrcs.usda.gov>for further contact information in your area.

The Richmond Irrigation Company provides irrigation water to 6,151.74 acres. Historically, the Upper High Creek Canal has diverted 9,600 acre-feet annually. Only 2-3% of shareholders still flood irrigate their fields. This indicates that slightly less than 100 acres could be converted to sprinkler irrigation. Because the project is still in its early stages, the flood irrigators have not started coordinating with NRCS for funding for on-farm improvements. Richmond Irrigation Company will provide assistance to shareholders wanting to acquire NRCS assistance for their on-farm improvements.

3) *Points may be awarded for projects that include other benefits to water supply sustainability.*

Projects that do not address a need/adaptation strategy identified in a Basin Study or do not help expedite future on-farm irrigation improvements, may receive maximum points under this criterion by thoroughly explaining additional project benefits. Please provide sufficient explanation of the additional expected project benefits and their significance. Additional project benefits may include, but are not limited to, the following:

(a) Will the project make water available to address a specific concern? For example:

i. *Will the project address water supply shortages due to climate variability and/or heightened competition for finite water supplies (e.g. population growth or drought)? Is the river, aquifer or other source of supply over-allocated?*
ii. *Will the project market water to other users? If so, what is the significance of this (e.g., does this help stretch water supplies in a water-short basin)?*
iii. *Will the project make additional water available for Indian tribes?*
iv. *Will the project help to address an issue that could potentially result in an interruption to the water supply if unresolved? (e.g., will the project benefit endangered species to maintain an adequate water supply)? Are there endangered species within the basin or other factors that may lead to heightened competition for available water supplies among multiple water uses?*
v. *Will the project generally make more water available in the water basin where the proposed work is located?*

The Bear River Basin covers three states: Utah, Wyoming, and Idaho. Within these three states, there are countless irrigation companies, municipalities, and individual users all vying for the same water. Any water conservation measures will improve relations within the basin.

(b) Does the project promote and encourage collaboration among parties?

i. *Is there widespread support for the project?*
ii. *What is the significance of the collaboration/support?*
iii. *Will the project help to prevent a water-related crisis or conflict?*
iv. *Is there frequently tension or litigation over water in the basin?*
v. *Is the possibility of future water conservation improvements by other water users enhanced by completion of this project?*

The project will require collaboration from several entities including Richmond City, Cache County, Reclamation, and the State of Utah. The Board of Directors in the Richmond Irrigation Company has voted to implement the project. With Utah being the second driest state in the country, water conservation projects are widely supported throughout the state. Other entities in the basin have piped their canals and Richmond Irrigation Company is following their good example. Water conservation is a top priority in the Utah State Water Plan.

(c) Will the project increase awareness of water and/or energy conservation and efficiency efforts?

i. *Will the project serve as an example of water and/or energy conservation and efficiency within a community?*
ii. *Will the project increase the capability of future water conservation or energy efficiency efforts for use by others?*
iii. *Does the project integrate water and energy components?*

This project will integrate water conservation and clean energy production. The project will conserve a large amount of water that will set an example of water conservation and clean energy production to the local and surrounding communities. As Richmond Irrigation Company has followed the example of other companies that have improved their systems to conserve water,

other entities will likewise follow the example of Richmond Irrigation Company. The reduction in pumping, investment on clean energy, reduced maintenance and operation costs, and a more reliable supply of water is a win situation for the shareholders, the local community, and the surrounding region.

Evaluation Criteria F: Implementation and Results

*Up to **10 points** may be awarded for the following:*

Subcriterion No. F.1 – Project Planning

Points may be awarded for proposals with planning efforts that provide support for the proposed project.

Does the project have a Water Conservation Plan, System Optimization Review (SOR), and/or district or geographic area drought contingency plans in place? Does the project relate/have a nexus to an adaptation strategy developed as part of a WaterSMART Basin Study? *Please self-certify, or provide copies of these plans where appropriate, to verify that such a plan is in place. 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.

Richmond Irrigation Company does not have a Water Conservation Plan. However, this project is in compliance with the Utah State Water Plan. A Water Conservation Plan will be prepared as it is required for obtaining funds from the State of Utah.

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

A preliminary design has been done by Franson Civil Engineers to be used in the funding acquisition portion of the project. Preliminary pipe size, pipe lengths, estimated costs, water savings, and energy production estimates have been prepared.

(3) Describe how the project conforms to and meets the goals of any applicable State or regional water plans, and identify any aspect of the project that implements a feature of an existing water plan(s).

The Utah State Water Plan for the Bear River Basin emphasizes water conservation and efficient management of developed water supplies as key strategies in providing for the present and future water needs in the state. The specific goals met include water conservation, water use efficiency, protection of state river systems, and the expansion of hydropower capacity and generation to meet the need for affordable and renewable energy resources.

Subcriterion No. F.2 – Readiness to Proceed

Points may be awarded based upon the extent to which the proposed project is capable of proceeding upon entering into a financial assistance agreement.

Describe the implementation plan of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. (Please note, under no circumstances may an applicant begin any ground disturbing activities—including grading, clearing, and other preliminary activities—on a project before environmental compliance is complete and Reclamation explicitly authorizes work to proceed).

The project is ready to move forward if the grant is awarded. The remaining funding will be secured from the Utah Division of Water Resources. A loan application is currently on file with the Utah Division of Water Resources. The application is pending the award of the grant application. Once funding is secured, the design work will begin immediately thereafter. A detailed schedule showing major tasks, milestones, and dates is shown in Appendix F.

Please explain any permits that will be required, along with the process for obtaining such permits.

An environmental clearance and a FERC conduit exemption for the small hydropower development will be required before construction can begin. The environmental clearance is not expected to have any major issues. Preliminary check of the National Register of Historic Places and the National Wetlands Inventory showed no apparent issues. A stream alteration permit from the State of Utah will also be required for modification to the existing diversion structure and for two natural stream crossings. Coordination with Cache County and the Utah Department of Transportation will also be required for some small road crossings.

Subcriterion No. F.3 – Performance Measures

Points may be awarded based on the description and development of performance measures to quantify actual project benefits upon completion of the project.

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (i.e., water saved, marketed, or better managed, or energy saved). For more information calculating performance measure, see Section VIII.A.1 "FY2014 WaterSMART Water and Energy Efficiency Grants: Performance Measures"

Note: All WaterSMART Grant applicants are required to propose a "performance measure" (a method of quantifying the actual benefits of their project once it is completed). A provision will be included in all assistance agreements with WaterSMART Grant recipients describing the performance measure, and requiring the recipient to quantify the actual project benefits in their final report to Reclamation upon completion of the project. If information regarding project benefits is not available immediately upon completion of the project, the financial assistance agreement may be modified to remain open until such information is available and until a Final Report is submitted. Quantification of project benefits is an important means to determine the

relative effectiveness of various water management efforts, as well as the overall effectiveness of WaterSMART Grants.

Water meters will be installed to measure the amount of water diverted into the Upper High Creek Pipeline. Meter readings should show the amount of water conserved when compared to the historical estimates. The power generated will be connected and sold to the local power supplier. Power meters will clearly show the amount of energy generated. Both water conserved and power produced will be reported in the final report submitted to Reclamation.

Evaluation Criteria G: Additional Non-Federal Funding

*Up to **4 points** may be awarded to proposals that provide non-Federal funding in excess of 50 percent of the project costs. State the percentage of non-Federal funding provided.*

$$\frac{\textit{Non-Federal Funding}}{\textit{Total Project Cost}} = \frac{\$3,750,000}{\$4,750,000} = \mathbf{79\%}$$

Evaluation Criteria H: Connection to Reclamation Project Activities

*Up to **4 points** may be awarded if the proposed project is in a basin with connections to Reclamation project activities. No points will be awarded for proposals without connection to a Reclamation project or Reclamation activity.*

1) *How is the proposed project connected to Reclamation project activities?*
2) *Does the applicant receive Reclamation project water?*
3) *Is the project on Reclamation project lands or involving Reclamation facilities?*
4) *Is the project in the same basin as a Reclamation project or activity?*
5) *Will the work contribute water to a basin where a Reclamation project is located?*

The project has no direct ties to a Reclamation project. However, there are numerous Reclamation projects within the County and the Bear River Basin including, but not limited to, the Hyrum Project, Newton Project, Middle Ditch Water Conservation and Renewable Energy Project, West Lewiston Pressurized Irrigation Project, Preston Bench Project, and the Preston-Whitney Interconnect Project.

PERFORMANCE MEASURES

All WaterSMART Grant applicants are required to propose a method (or "performance measure") of quantifying the actual benefits of their project once it is completed. Actual benefits are defined as water actually conserved, marketed, or better managed, as a direct result of the project. Quantifying project benefits is an important means to determine the relative effectiveness of various water management efforts, as well as the overall effectiveness of WaterSMART Grants.

Environmental and Cultural Resources Compliance

To allow Reclamation to assess the probable environmental impacts and costs associated with each application, all applicants must respond to the following list of questions focusing on the NEPA, ESA, and NHPA requirements. Please answer the following questions to the best of your knowledge. If any question is not applicable to the project, please explain why. Additional information about environmental compliance is provided in Section IV.D.4, "Budget Proposal," under the discussion of "Environmental and Regulatory Compliance Costs," and in Section VIII.B., "Overview of Environmental Compliance Requirements."

Note: Applicants proposing a Funding Group II project must address the environmental compliance questions for their <u>entire</u> project, <u>not</u> just the first one-year phase.

If you have any questions, please contact your regional or area Reclamation office (see http://www.usbr.gov/main/regions.html) with questions regarding ESA compliance issues. You may also contact Dean Marrone, WaterSMART Program Coordinator, at 303-445-3577, for further information.

Note, if mitigation is required to lessen environmental impacts, the applicant may, at Reclamation's discretion, be required to report on progress and completion of these commitments. Reclamation will coordinate with the applicant to establish reporting requirements and intervals accordingly.

Under no circumstances may an applicant begin any ground-disturbing activities (including grading, clearing, and other preliminary activities) on a project before environmental compliance is complete and Reclamation explicitly authorizes work to proceed. This pertains to all components of the proposed project, including those that are part of the applicant's non-Federal cost share. Reclamation will provide a successful applicant with information once environmental compliance is complete. An applicant that proceeds before environmental compliance is complete may risk forfeiting Reclamation funding under this FOA.

1) *Will the project impact the surrounding environment (i.e. 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.*

The proposed pipe alignment will follow the existing canal. There will be minimal, short-term impacts associated with installing the pipe and hydropower facilities. All land surface disturbances would be confined to the proposed pipe alignment area and small staging areas adjacent to the pipeline. Contract documents will outline the responsibility of the contractor relative to dust control, air and water pollution during construction activities. Minimal environmental disturbance is anticipated and all work will be performed in previously disturbed areas.

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

There are 3 birds, 1 fish, 2 flowering plants, and 2 mammals listed as being present in Cache Valley that are known to be Federal threatened or endangered species, or designated in a critical habitat. The proposed project will not have any negative effects on plants or animals listed.

3) *Are there wetlands or other surface water 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 project may have.*

The National Wetlands Inventory has been searched and there will not be any construction within wetland areas. There are no anticipated impacts to wetlands or surface water that falls under CWA jurisdiction as "waters of the United States."

4) *When was the water delivery system constructed?*

It is unknown exactly when the Upper High Creek Canal was constructed, but the associated water rights have a priority date of 1860. The canal was likely constructed shortly thereafter.

5) *Will the 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 open canal will be replaced with a pressurized pipe. All headgates, flumes and other features will be replaced or abandoned.

6) *Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the Nation 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.*

The Upper High Creek Canal is not on the National Register of Historic Places database.

7) *Are there any know archeological sites in the proposed project area?*

There are no archeological known sites in the area.

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

The project will not adversely affect low income or minority populations.

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

The project will not affect tribal lands.

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

The project will not contribute to the spread of noxious weeds.

Required Permits or Approvals

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

Applicants proposing renewable energy components to Federal facilities should note that some power projects may require FERC permitting or a Reclamation Lease of Power Privilege. To complete a renewable energy project within the time frame required of this FOA, it is recommended that an applicant has commenced the necessary permitting process prior to applying. To discuss questions related to projects that propose renewable energy development, please contact Mr. Josh German at 303-445-2839 or jgerman@usbr.gov.
Note that improvements to Federal facilities that are implemented through any project awarded funding through this FOA must comply with additional requirements. The Federal government will continue to hold title to the Federal facility and any improvement that is integral to the existing operations of that facility. Please see Section III.H1. Reclamation may also require additional reviews and approvals prior to award to ensure that any necessary easements, land use authorizations, or special permits can be approved consistent with the requirements of 43 CFR 429, and that the development will not impact or impair project operations or efficiency.

An environmental clearance and a FERC conduit exemption for the small hydropower development will be required before construction can begin. The permits are not expected to have any major issues. Preliminary check of the National Register of Historic Places and the National Wetlands Inventory showed no apparent issues. A small hydro conduit exemption will be pursued for this project. A stream alteration permit from the State of Utah will also be required for modification to the existing diversion structure and minor stream crossings. All the required permits should be relatively easy to obtain.

Official Resolution

Include an official resolution adopted by the applicant's board of directors or governing body, or for state government entities, an official authorized to commit the applicant to the financial and legal obligations associated with receipt of WaterSMART Grant financial assistance, verifying:

- *The identity of the official with legal authority to enter into agreement*
- *The board of directors, governing body, or appropriate official who has reviewed and supports the application submitted*
- *The capability of the applicant to provide the amount of funding and/or in-kind contributions specified in the funding plan*
- *That the applicant will work with Reclamation to meet established deadlines for entering into a cooperative agreement*

An official resolution meeting the requirements set forth above is mandatory.

The signed Official Resolution is shown in Appendix A.

Project Budget

The project budget includes: (1) Funding Plan and Letters of Commitment, (2) Budget Proposal, (3) Budget Narrative and (4) Budget Form.

Funding Plan and Letters of Commitment

Describe how the non-Reclamation share of project costs will be obtained. Reclamation will use this information in making a determination of financial capability.

Project funding provided by a source other than the applicant shall be supported with letters of commitment from these additional sources. This is a ***mandatory requirement****. Letters of commitment shall identify the following elements:*

(1) The amount of funding commitment
(2) The date the funds will be available to the applicant
(3) Any time constraints on the availability of funds
(4) Any other contingencies associated with the funding commitment

Commitment letters from third party funding sources should be submitted with your project application. If commitment letters are not available at the time of the application submission, please provide a timeline for submission of all commitment letters. Cost share funding from sources outside the applicant's organization (e.g., loans or state grants), should be secured and available to the applicant prior to award.

Reclamation will not make funds available for a WaterSMART Grants project until the recipient has secured non-Federal cost-share. Reclamation will execute a financial assistance agreement once non-Federal funding has been secured or Reclamation determines that there is sufficient

evidence and likelihood that non-Federal funds will be available to the applicant subsequent to executing the agreement.

A loan will be acquired from the Utah Division of Water Resources. The application has been submitted and is on file pending an award of a grant to supplement the total project costs. The loan will only be finalized if funding from Reclamation is granted. Letters of commitment from the board will be submitted as soon as they are available, but no later than June 1, 2014.

The funding plan must include all project costs, as follows:

1) *How you will make your contribution to the cost share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant (e.g. reserve account, tax revenue, and/or assessments).*

The total project cost is $4,750,000. Richmond Irrigation Company has applied for a loan from the Utah Division of Water Resources for $3,200,000. The loan will be paid back with assessments to the water users. If the $1,000,000 grant requested by this application is not approved, it is unlikely that this project will be implemented. Richmond Irrigation Company shareholders cannot afford to borrow all the money for the project. If a grant is awarded, Richmond Irrigation Company will finalize the loan from the Utah Division of Water Resources. The irrigation company will contribute $550,000 towards the project.

2) *Describe any in-kind costs incurred before the anticipated project start date that you seek to include as project costs. Include:*

(a) What project expenses have been incurred

Engineering costs associated with preliminary design and funding procurement.

(b) How they benefitted the project

These costs allowed the irrigation company to explore funding options and set a plan for the implementation of the project.

(c) The amount of the expense

The irrigation company signed a contract for $8,000 with Franson Civil Engineers for preliminary analysis and to complete the funding applications to Reclamation and the Utah Division of Water Resources.

(d) The date of cost incurrence

Cost was incurred between October 2013 and January 2014.

3) *Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment.*

The total of $3,200,000 will be provided by the Utah Division of Water Resources. The letters of commitment will be submitted as soon as a decision is made by the Utah Division of Water Resources, but no later than June 1, 2014. The loan application is scheduled to be approved at the Utah Division of Water Resources Board Meeting on March 19, 2014.

4) *Describe any funding requested or received from other Federal partners. Note: Other sources of Federal funding may not be counted towards the applicant's 50-percent cost share unless otherwise allowed by statute.*

No other applications for funds have been requested from any other Federal funding agency.

5) *Describe any pending funding requests that have not yet been approved, and explain how the project will be affected if such funding is denied.*

If funds are not secured from Reclamation or the Utah Division of Water Resources, the project will not move forward.

Please include the following chart to summarize your non-Federal and other Federal funding sources.

Table 4: Summary of non-Federal and Federal funding sources

Funding Sources	Funding Amount
Non-Federal Entities	
1. Utah Division of Water Resources	$3,200,000
2. Richmond Irrigation Company	$550,000
Non-Federal Subtotal	$3,750,000
Other Federal Entities	
1. N/A	
Other Federal Subtotal	$0
Requested Reclamation Funding	$1,000,000
Total Project Funding	**$4,750,000**

Table 5: Funding Group II Request

	Funding Group II Request		
	Year 1 (FY 2014)	Year 2 (FY 2015)	Year 3 (FY 2016)
Funding Requested	$250,000	$500,000	$250,000

Budget Proposal

The project budget shall include detailed information on the categories listed below (in the Budget Narrative Section) and must clearly identify all project costs and the funding source(s) (i.e. Reclamation or other funding sources). Unit costs shall be provided for all budget items including the cost of work to be provided by contractors. ***Lump sum costs are not acceptable.*** *Additionally, applicants shall include a narrative description of the items included in the project budget. It is strongly advised that applicants use the budget format (below) or a similar format that provides this information.*

Table 6: Probable Cost Estimate

Budget Item Description	Computation		Quantity Type	Total Cost
	$/Unit	Quantity		
Legal Services	$200/hr	100	Hours	$20,000
Environmental Services	$150/hr	200	Hours	$30,000
Engineering Services	See Appendix C			$310,000
Construction Management	See Appendix C			$220,000
Construction Contract	See Appendix D			$4,150,000
Reclamation Reporting	$100/hr	200	Hours	$20,000
Total Project Costs				**$4,750,000**

Budget Narrative

Submission of a budget narrative is mandatory. An award will not be made to any applicant who fails to fully disclose this information. The Budget Narrative provides a discussion of, or explanation for, items included in the budget proposal. The types of information to describe in the narrative include, but are not limited, to those listed in the following subsections.

Richmond Irrigation Company board members and employees will not earn a salary, wages, fringe benefits or reimbursements from funding obtained to implement this project. All contributions by Richmond Irrigation Company board members and employees will be volunteered or funded by the company's general fund and be in-kind contributions to the project.

All funding secured from Reclamation and the Utah Division of Water Resources will be used to pay contractual agreements for implementing the project, including the construction contract and fees for legal, engineering, and environmental services as described below.

Contractual

Identify all work that will be accomplished by subrecipients, consultants, or contractors, including a breakdown of all tasks to be completed, and a detailed budget estimate of time, rates, supplies, and materials that will be required for each task. If a subrecipient, consultant, or contractor is

proposed and approved at time of award, no other approvals will be required. Any changes or additions will require a request for approval. Identify how the budgeted costs for subrecipients, consultants, or contractors were determined to be fair and reasonable.

All funding for the project will used to pay consultants and construction contractors and subcontractors. These include legal services, engineering services, environmental services, and construction services. Detailed tasks to be completed, estimated time, rates, supplies, and materials for each task is outlined in the Appendix as follows:

1) Appendix C – Engineering Services
2) Appendix D – Construction Services
3) Appendix E – Environmental Services

Environmental and Regulatory Compliance Costs

Applicants must include a line item in their budget to cover environmental compliance costs. "Environmental compliance costs" refer to costs incurred by Reclamation or the recipient in complying with environmental regulations applicable to a WaterSMART Grant, including costs associated with any required documentation of environmental compliance, analyses, permits, or approvals. Applicable Federal environmental laws could include NEPA, ESA, NHPA, and the CWA, and other regulations depending on the project. Such costs may include, but are not limited to:

- *The cost incurred by Reclamation to determine the level of environmental compliance required for the project*
- *The cost incurred by Reclamation, the recipient, or a consultant to prepare any necessary environmental compliance documents or reports*
- *The cost incurred by Reclamation to review any environmental compliance documents prepared by a consultant*
- *The cost incurred by the recipient in acquiring any required approvals or permits, or in implementing any required mitigation measures*

The amount of the line item should be based on the actual expected environmental compliance costs for the project. However, the minimum amount budgeted for environmental compliance should be equal to at least 1-2 percent of the total project costs. If the amount budgeted is less than 1-2 percent of the total project costs, you must include a compelling explanation of why less than 1-2 percent was budgeted.

How environmental compliance activities will be performed (e.g., by Reclamation, the applicant, or a consultant) and how the environmental compliance funds will be spent, will be determined pursuant to subsequent agreement between Reclamation and the applicant. If any portion of the funds budgeted for environmental compliance is not required for compliance activities, such funds may be reallocated to the project, if appropriate.

The environmental costs are shown in Appendix E.

Reporting

Recipients are required to report on the status of their project on a regular basis. Failure to comply with reporting requirements may result in the recipient being removed from consideration for funding under future funding opportunities. Include a line item for reporting costs (including final project and evaluation costs).

A total of $20,000 was budgeted for coordination with Reclamation. This amount would include the costs to create a final construction report and finalize repayment agreements, quarterly construction reports, annual project performance reports, and to coordinate requests for reimbursement. This work will be performed by the consulting engineering firm selected to design the system.

Total Cost

Indicate total amount of project costs, including the Federal and non-Federal cost-share amounts.

The estimated total project cost is $4,750,000.

Budget Form

In addition to the above-described budget information, the applicant must complete an SF-424A, Budget Information—Nonconstruction Programs, or an SF-424C, Budget Information—Construction Programs.

Forms SF-424C and SF-424D are enclosed with the application for federal assistance SF-424.

Appendix A

Signed Official Resolution

OFFICIAL RESOLUTION
OF THE
RICHMOND IRRIGATION COMPANY

RESOLUTION NO. 2014 - 1

WHEREAS, the United States Department of the Interior, Bureau of Reclamation has announced the *WaterSMART Water and Energy Efficiency Grants* in order to prevent water supply crises and ease conflict in the western United States, and has requested proposals from eligible entities to be included in the WaterSMART Program, and

WHEREAS, the Richmond Irrigation Company has need for funding to complete an irrigation project that will enclose the Upper High Creek Canal and develop hydroelectric power along the new pipeline. The project is intended to conserve water, produce renewable energy and efficiently deliver water to its shareholders.

NOW, THEREFORE, BE IT RESOLVED that the Richmond Irrigation Company Board of Directors agrees and authorizes that

1. The Richmond Irrigation Company has reviewed and supports the proposal submitted;

2. The applicant is capable of providing the amount of funding and/or in-kind contributions, specified in the funding plan; and

3. If selected for a WaterSMART Grant, the applicant will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

DATED: 1-9-14

Terry Spackman
President, Richmond Irrigation Company

ATTEST:

Eric Franson, P.E.
Project Manager, Franson Civil Engineers

Appendix B

Water Savings Calculations

Richmond Irrigation Company

Water Savings Calculation

Day	April				May				June				July				August				September				October			
	CFS	DIV	AF	CON	CFS	DIV	AF	CON	CFS	DIV	AF	CON	CFS	DIV	AF	CON	CFS	DIV	AF	CON	CFS	DIV	AF	CON	CFS	DIV	AF	CON
1	22				71	56	80	40	149	117	80	40	68	53	80	40	23	18	36	18	13	10	20	10	12	9	19	9
2	22				76	59	80	40	146	114	80	40	66	52	80	40	23	18	36	18	13	10	20	10	12	9	19	9
3	23				84	66	80	40	140	109	80	40	64	50	80	40	22	17	34	17	13	10	20	10	12	9	19	9
4	24				92	72	80	40	142	111	80	40	61	48	80	40	22	17	34	17	13	10	20	10	12	9	19	9
5	25				90	70	80	40	142	111	80	40	59	46	80	40	21	16	33	16	13	10	20	10	12	9	19	9
6	28				90	70	80	40	140	109	80	40	56	44	80	40	21	16	33	16	13	10	20	10	12	9	19	9
7	31				92	72	80	40	137	107	80	40	54	42	80	40	20	16	31	16	13	10	20	10	12	9	19	9
8	34				92	72	80	40	132	103	80	40	52	41	80	40	20	16	31	16	13	10	20	10	11	9	17	9
9	33				90	70	80	40	128	100	80	40	50	39	78	39	20	16	31	16	12	9	19	9	11	9	17	9
10	33				90	70	80	40	121	95	80	40	49	38	76	38	19	15	29	15	12	9	19	9	11	9	17	9
11	34				91	71	80	40	121	95	80	40	46	36	71	36	19	15	29	15	12	9	19	9	12	9	19	9
12	38				92	72	80	40	115	90	80	40	44	34	68	34	18	14	28	14	12	9	19	9	12	9	19	9
13	39				97	76	80	40	111	87	80	40	42	33	65	33	18	14	28	14	12	9	19	9	11	9	17	9
14	41				103	81	80	40	110	86	80	40	41	32	64	32	18	14	28	14	12	9	19	9	11	9	17	9
15	45	35	70	35	110	86	80	40	109	85	80	40	39	30	60	30	18	14	28	14	12	9	19	9	11	9	17	9
16	49	38	76	38	114	89	80	40	108	84	80	40	38	30	59	29	17	13	26	13	11	9	17	9	11			
17	56	44	80	40	116	91	80	40	109	85	80	40	37	29	57	29	17	13	26	13	11	9	17	9	11			
18	60	47	80	40	114	89	80	40	108	84	80	40	35	27	54	27	17	13	26	13	12	9	19	9	12			
19	59	46	80	40	116	91	80	40	104	81	80	40	34	27	53	26	17	13	26	13	11	9	17	9	11			
20	59	46	80	40	116	91	80	40	100	78	80	40	33	26	51	26	16	13	25	12	11	9	17	9	11			
21	59	46	80	40	120	94	80	40	97	76	80	40	32	25	50	25	16	13	25	12	11	9	17	9	11			
22	61	48	80	40	129	101	80	40	96	75	80	40	31	24	48	24	16	13	25	12	11	9	17	9	11			
23	64	50	80	40	127	99	80	40	94	74	80	40	30	23	47	23	16	13	25	12	11	9	17	9	11			
24	65	51	80	40	129	101	80	40	91	71	80	40	29	23	45	22	15	12	23	12	11	9	17	9	11			
25	65	51	80	40	131	102	80	40	87	68	80	40	28	22	43	22	15	12	23	12	11	9	17	9	11			
26	64	50	80	40	140	109	80	40	83	65	80	40	27	21	42	21	15	12	23	12	11	9	17	9	11			
27	64	50	80	40	156	122	80	40	80	63	80	40	27	21	42	21	14	11	22	11	11	9	17	9	11			
28	66	52	80	40	159	124	80	40	77	60	80	40	26	20	40	20	14	11	22	11	11	9	17	9	11			
29	68	53	80	40	158	124	80	40	73	57	80	40	26	20	40	20	14	11	22	11	11	9	17	9	11			
30	69	54	80	40	161	126	80	40	70	55	80	40	25	20	39	19	14	11	22	11	11	9	17	9	12			
31					153	120	80	40					24	19	37	19	14	11	22	11					11			
			1266	**633**			**2480**	**1240**			**2400**	**1200**			**1870**	**935**			**852**	**426**			**549**	**275**			**270**	**135**

CFS = Average cubic feet per second
DIV = Available for diversion into Upper High Creek Canal (cfs)
AF = Daily acre-feet diverted into Upper High Creek Canal
CON = Amount of potential conserved water in acre-feet

Canal capacity	40 cfs
Percent available for diversion	78.2%
Seepage rate	50%

Total Acre-Feet Diverted =	**9,686**
Total Acre-Feet Conserved =	**4,843**

Source: USGS Gaging Station 10099000 High Creek Near Richmond, Utah

Appendix C

Probable Cost for Engineering Services

(Engineering Design and Construction Management)

Richmond Irrigation Company

Probable Cost Opinion for Engineering Services

(Rate Table Attached)

Task Description	Hours By Personnel Category								Total Hours	Total Labor Charges	Other Direct Costs	Total Fee
	1	2	3	4	6	7	14	15				
	Principal	Project Manager	Senior Engineer	Staff Engineer	Engineer I	Designer	Office Assistant	Clerk				
Phase 1 - Project Management & Coordination												
Task 1. General Project Management Tasks	10	40					10		60	$7,570	$500	$8,070
Task 2. Client Coordination Meetings	20	15		10					45	$6,170	$730	$6,900
Task 3. Environmental Coordination	10	10		10			10		40	$4,500	$200	$4,700
Task 4. Coordination with Division of Water Resources	10	10					10		30	$3,490	$100	$3,590
Task 5. Coordination with Shareholders	10	10							20	$2,920	$100	$3,020
Task 6. Permits Acquisitions (FERC, UDOT, Stream Alteration)	10	10		20		40	10		90	$9,230	$4,000	$13,230
Task 9. Loan Closing & Legal Coordination	10	10					10		30	$3,490	$2,000	$5,490
SUBTOTAL	**80**	**105**	**0**	**40**	**0**	**40**	**50**	**0**	**315**	**$37,370**	**$7,630**	**$45,000**
Phase 2 - Engineering Design												
Task 1. Design Team Management	20	50	10	50		5	20		155	$17,735	$100	$17,835
Task 2. Site Visits/Surveying		40	10	40		20			110	$12,500	$3,000	$15,500
Task 3. Design Criteria Contract	10	20	10	20			10		70	$8,030	$65	$8,095
Task 4. Coordination with Client & Shareholders	10	80	10	80			20		200	$22,820	$0	$22,820
Task 5. Hydraulic Analysis and Model	10	20	10	80		40			160	$17,240	$0	$17,240
Task 6. Surge Analysis and Protection	10	10	10	20					50	$6,100	$0	$6,100
Task 7. Air-Valves Sizing	10	10	10	20					50	$6,100	$0	$6,100
Task 8. Pressure Reducing Station Mechanical Design	10	10	10	40					70	$8,120	$0	$8,120
Task 9. Pressure Reducing Station Structural Design	10	10	10	60					90	$10,140	$0	$10,140
Task 10. Inlet Structure Design (Trash Rack, Sediment)	10	10	10	80					110	$12,160	$0	$12,160
Task 11. Stream Crossing Design	10	10	10	40					70	$8,120	$0	$8,120
Task 12. Road Crossing Design and Coordination	10	10	10	40					70	$8,120	$0	$8,120
Task 13. Construction Drawings Draft	10	20	20	80		300	20		450	$43,720	$1,000	$44,720
Task 14. Construction Drawings Final	10	20	20	80		300	20		450	$43,720	$1,000	$44,720
Task 15. Construction Specifications	10	20	40	80			20		170	$18,140	$1,000	$19,140
Task 16. Bid & Award Coordination	10	40	40	10			20	20	140	$14,810	$1,260	$16,070
SUBTOTAL	**160**	**380**	**240**	**820**	**0**	**665**	**130**	**20**	**2,415**	**$257,575**	**$7,425**	**$265,000**
Phase 3 - Construction Management												
Task 1. Construction Team Management	80	100		100			20		300	$37,320	$0	$37,320
Task 2. On-Site Observation and Documentation		40		1000					1,040	$106,440	$4,000	$110,440
Task 3. Submittal Reviews		20		40					60	$6,760	$500	$7,260
Task 4. Contractor Coordination		50		200					250	$27,000	$0	$27,000
Task 5. Record Drawings Preparation	5	20		40		60	80		205	$17,680	$400	$18,080
Task 6. O&M Manual	5	20		40		40	10	30	145	$13,360	$370	$13,730
Task 7. Project Closeout	0	10		20			40	10	80	$6,170	$0	$6,170
SUBTOTAL	**90**	**260**	**0**	**1440**	**0**	**100**	**150**	**40**	**2,080**	**$214,730**	**$5,270**	**$220,000**
Project Totals	**330**	**745**	**240**	**2300**	**0**	**805**	**330**	**60**	**4,810**	**$509,675**	**$20,325**	**$530,000**

FRANSON CIVIL ENGINEERS
FEE SCHEDULE – 2014

This Fee Schedule applies to services rendered during the current year. A new Schedule will be issued at the beginning of each year. These fees include overhead and profit.

Personnel

Classification	2014
Principal	$156
Senior Manager	$136
Senior Engineer	$116
Senior Field Manager	$113
Staff Engineer	$101
Senior Designer	$93
Engineer I	$86
Reports Writer/Editor	$85
Designer	$84
Engineering Assistant	$81
Engineering Intern	$70
Office Assistant	$57
Clerk	$51

Expenses

Expenses incurred for the project will be invoiced at direct cost. Standard rates for selected common direct expenses are as follows:

	2014
Mileage (IRS mileage rate + $0.10)	$0.66/mile
Copy/Print – 8.5x11	$0.04/page
Copies – 11x17	$0.08/page
Color Copy/Print	$0.25/page
Oversize copies/prints	$1.00/sq. ft.

Appendix D

Probable Cost for Construction Services

Richmond Irrigation Company

Upper High Creek Canal Enclosure and Hydropower Development

ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
Phase 1 - Upper High Creek Canal Enclosure				
Mobilization	1	EA	$300,000.00	$300,000
32" Dia. HDPE Pipe, DR 32.5	8,840	LF	$75.00	$663,000
28" Dia. HDPE Pipe, DR 32.5	12,025	LF	$64.00	$769,600
24" Dia. HDPE Pipe, DR 26	4,050	LF	$60.00	$243,000
18" Dia. HDPE Pipe, DR 32.5	4,320	LF	$35.00	$151,200
18" Dia. HDPE Pipe, DR 17	2,000	LF	$49.00	$98,000
16" Dia. HDPE Pipe, DR 32.5	660	LF	$32.00	$21,100
12" Dia. HDPE Pipe, DR 32.5	5,240	LF	$28.00	$146,700
Inlet Structure with Trash Screen	1	EA	$75,000.00	$75,000
Inlet Measurement Structure	1	EA	$30,000.00	$30,000
Outlet Structure	1	EA	$20,000.00	$20,000
Pressure Reducing Station (Ready for Hydropower Units)	2	EA	$125,000.00	$250,000
Large Lateral Meters	9	EA	$15,000.00	$135,000
30" Isolation Butterfly Valve	1	EA	$20,000.00	$20,000
24" Isolation Butterfly Valve	1	EA	$15,000.00	$15,000
18" Isolation Butterfly Valve	3	EA	$10,000.00	$30,000
12" Isolation Butterfly Valves for Laterals	4	EA	$7,000.00	$28,000
10" Isolation Gate Valves for Laterals	3	EA	$5,000.00	$15,000
6" Isolation Gate Valve for Laterals	1	EA	$5,000.00	$5,000
8" Isolation Butterfly Valves for Laterals	3	EA	$4,000.00	$12,000
6" Air Valves	1	EA	$7,400.00	$7,400
3" Air Valves	15	EA	$3,000.00	$45,000
Stream Crossings (Cherry Creek, City Creek)	2	EA	$30,000.00	$60,000
Paved Road Crossings	20	EA	$15,000.00	$300,000
			Subtotal	**$3,440,000**
Phase 2 - Hydropower Development				
Delivery, Installation, Onsite Support by Manufacturer	1	EA	$50,000.00	$50,000
Turbine Assembly	2	EA	$80,000.00	$160,000
Generator Assembly (480V, 3 Ph, 60 Hz)	2	EA	$60,000.00	$120,000
Automation Components	2	EA	$175,000.00	$350,000
Connection to Local Grid	2	EA	$15,000.00	$30,000
			Subtotal	**$710,000**
			Construction Subtotal	**$4,150,000**
			Legal/Bonding	**$20,000**
			Environmental Compliance & Permits	**$30,000**
			Engineering Design & Construction Management	**$530,000**
			Reporting & Coordination with Reclamation	**$20,000**
			Total	**$4,750,000**

Appendix E

Probable Cost for Environmental Services

(Environmental and Cultural Resources Compliance)

Richmond Irrigation Company

Probable Cost Estimate for Environmental Services

ITEM DESCRIPTION	HOURS	UNIT COST	TOTAL COST
Fieldwork - Archaeological Inventory			
Project Manager	100	$70.00	$7,000
Staff Archaeologist	100	$60.00	$6,000
		Subtotal	**$13,000**
Report Production, Site Forms & Maps			
Principal Investigator	100	$75.00	$7,500
Staff Archaeologist	100	$60.00	$6,000
		Subtotal	**$13,500**
Direct Costs			
SHPO - Division of State History File Search	1	$130.00	$130
Mileage	4,500	$0.56	$2,520
Field Equipment	15	$50.00	$750
Reproduction and Postage	4	$25.00	$100
		Subtotal	**$3,500**
		Total	**$30,000**

Appendix F

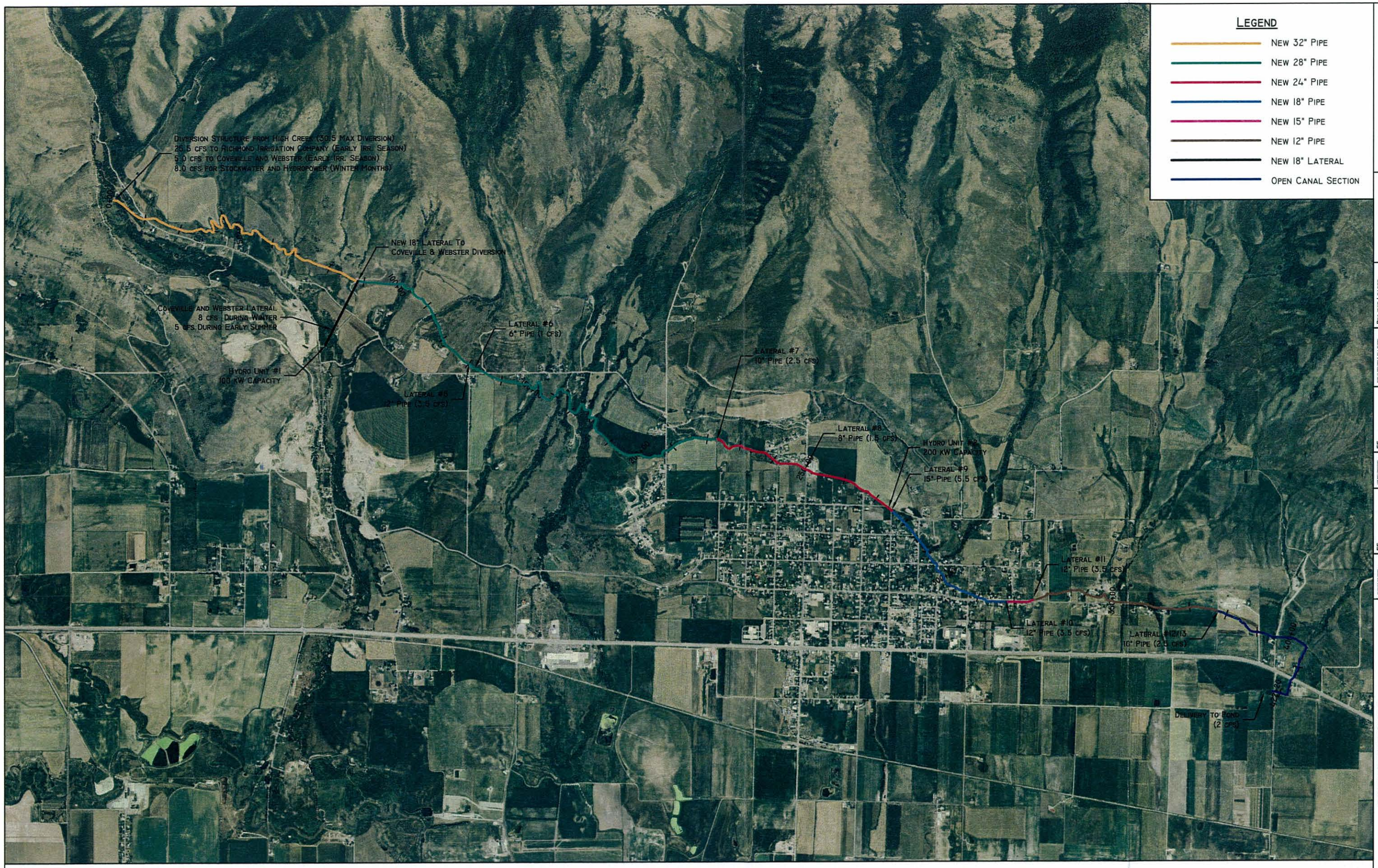
Proposed Schedule

Richmond Irrigation Company
PROJECT SCHEDULE

Phase	2014 SEP	OCT	NOV	DEC	2015 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	2016 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	2017 JAN	FEB	MAR	APR	MAY
Irrigation Season (No Construction)																																	
Contract Signed with Reclamation																																	
Loan Committed by the UDWRe																																	
Phase 1 - PM and Preliminary Work																																	
General Project Management Tasks																																	
Client Coordination Meetings																																	
Environmental Coordination																																	
Coordination with Division of Water Resources																																	
Shareholders Coord. and Preliminary Analysis																																	
Permits Acquisitions																																	
Loan Closing & Legal Coordination																																	
Phase 2 - Engineering Design							Phase 1													Phase 2													
Design Team Management																																	
Site Visits/Surveying																																	
Design Criteria Contract																																	
Coordination with Client & Shareholders																																	
Hydraulic Analysis and Model																																	
Surge Analysis and Protection																																	
Air-Valves Sizing																																	
Pressure Reducing/Hydroelectric Units Mech.																																	
Pressure Reducing/Hydroelectric Units Struct.																																	
Inlet Structure Design (Trash Rack, Sediment)																																	
Stream Crossing Design																																	
Road Crossing Design and Coordination																																	
Construction Drawings Draft																																	
Construction Drawings Final																																	
Construction Specifications																																	
Bid & Award Coordination																																	
Phase 3 - Construction Management															Phase 1														Phase 2				
Construction Management																																	
Construction Services for Phase 1																																	
Construcition Services for Phase 2																																	
Record Drawings																																	
O&M Manual																																	

Appendix G

Proposed Pipeline System



C CANAL AND ROAD ALIGNMENTS

NOT TO SCALE

FRANSON CIVIL ENGINEERS
1276 South 820 East, Suite 100
American Fork, UT 84003
T 801 756-0309 F 801 756-0481

DESIGNER: EF | CHECKED: EF
DRAFTSMAN: CHR | REVIEWED: REVIEWED
PROJECT LEADER: | PRINT DATE: January 15, 2016

NO.	DATE	INITS.	REVISIONS DESCRIPTION

RICHMOND IRRIGATION COMPANY

UPPER HIGH CREEK CANAL
PROJECT SITE MAP - AERIAL VIEW

JOB NO. Project Maps.dwg
H:\CLIENT\9-North Utah Area\Richmond Irrig. Co\Drawings

PROJECT NAME LAYOUT: Overall Project-Aerial

SHEET
---- OF ----