WaterSMART

Water and Energy Efficiency Grants for FY 2015

Response to Funding Opportunity Announcement No. R15AS00002

Funding Group I

WELBY JACOB CANAL WATER EFFICIENCY PROJECT

Salt Lake and Utah Counties, Utah

Welby Jacob Water Users Company
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TABLE OF CONTENTS

Appendices

TECHNICAL PROPOSAL AND EVALUATION CRITERIA

1. 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.*

Application Date:	January 16, 2015
Estimated Start Date:	July 1, 2015
Estimated End Date:	October 31, 2016
Applicant's Name:	Welby Jacob Water Users Company
Project Location:	Salt Lake and Utah Counties, Utah
Project Title:	Welby Jacob Canal Water Efficiency Project

Project Summary:

The Welby Jacob Canal Water Efficiency Project is a collaborative effort to improve water efficiency in Salt Lake and Utah Counties in the State of Utah. The water supply for these counties is quickly reaching its maximum capacity, and the population of the area is expected to continue to grow. The Utah Division of Water Resources estimates that water demand will exceed supply in 15 to 20 years. The Welby Jacob Water Efficiency Project could help meet a portion of this shortfall by saving 6,755 acre-feet of water through measurement of diversions at canal head gates using telemetry, automation of a pond level control system, and installation of water measurement devices on laterals.

This project consists of the installation of 75 measurement structures with SCADA equipment on the Welby Jacob Canal system. Included in the 75 proposed sites are 8 strategic locations on the main canal where a SCADA system will allow the water masters of the Welby Canal and Jacob Canal to monitor the levels and flows within the canals. The remaining measurement locations will be on the turnouts from the canals. The SCADA system will allow Welby Jacob Water Users Company (WJWUC) to track all water flowing into and out of their canals which will allow them to better manage their water system. By better managing annual water deliveries of 29,300 acre-feet, and saving 6,755 acre-feet, the project would meet the goals of this FOA. The project has close ties to Reclamation's Deer Creek Reservoir, the Provo River, and Utah Lake which will benefit the endangered June Sucker.

2. Background Data

Location

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

The Welby Canal runs north and is located in Salt Lake County on the west side of the Jordan River. The Jacob Canal is also on the west side of the Jordan River, but runs south into Utah County. Both canals begin on the Camp Williams Military Base in Utah. See Location Map.

Applicant's Water Supply

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.

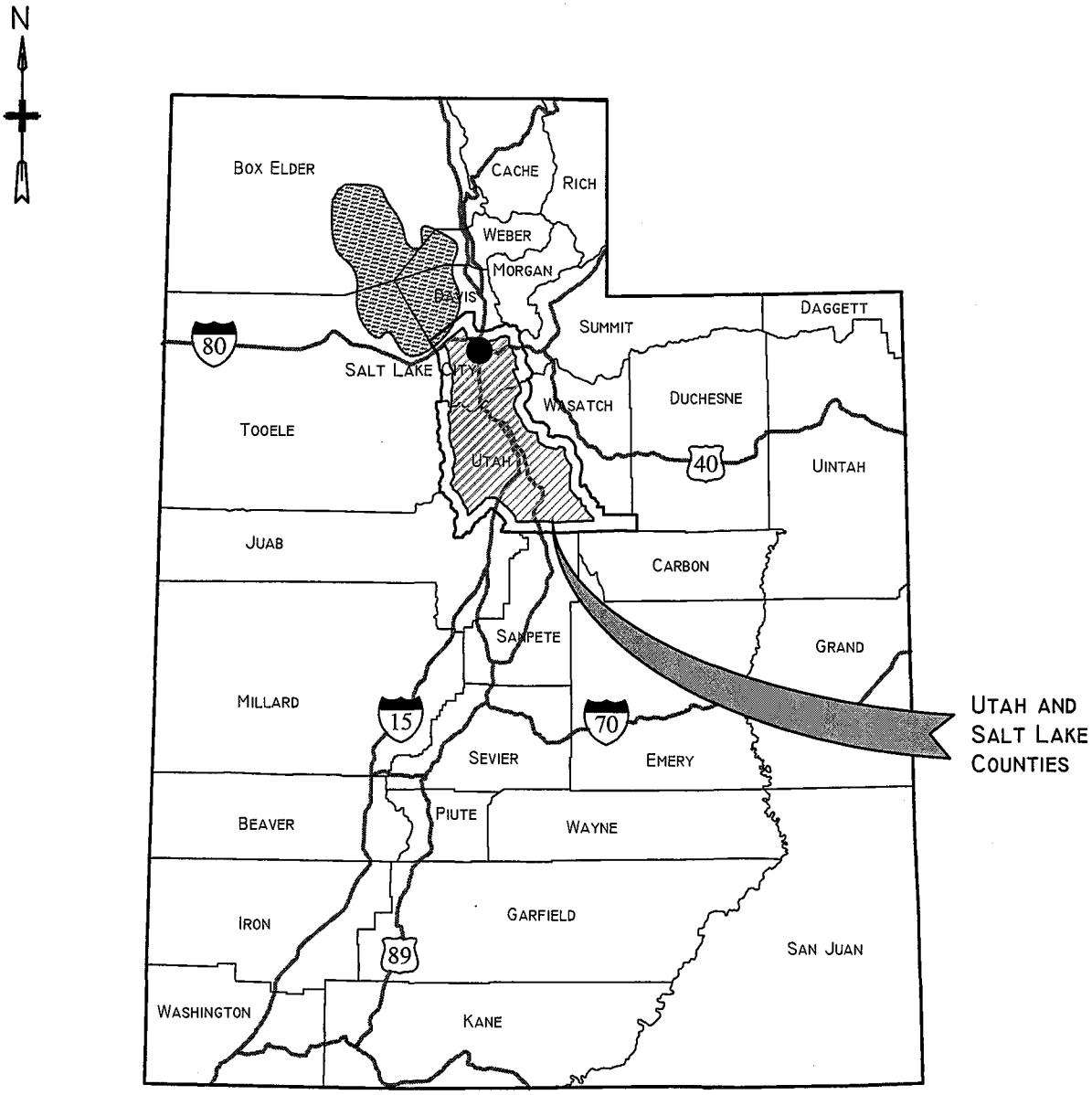
WJWUC was formed in 1987 with the purpose of providing irrigation water to farmers in Salt Lake and Utah Counties. It has a six-member Board of Directors, and serves approximately 580 water users. It continues to provide water to farmers, but also provides water to many cities for use in their secondary water systems. WJWUC will be the contracting entity with Reclamation for this WaterSMART grant.

WJWUC receives approximately 29,300 acre-feet from a combination of sources. Depending on the water year and current water demands, WJWUC may get its water from Utah Lake through the Jordan River by way of the Jordan Narrows Pumping Plant, or from Deer Creek Reservoir by way of the Provo River and the Provo Reservoir Canal. WJWUC serves approximately 8,155 acres of land in Salt Lake and Utah Counties. Of this acreage, approximately 60% is agricultural, with the major crops being hay, wheat, and corn. The remainder of the acreage is residential housing with water from the canal system being used for city secondary systems.

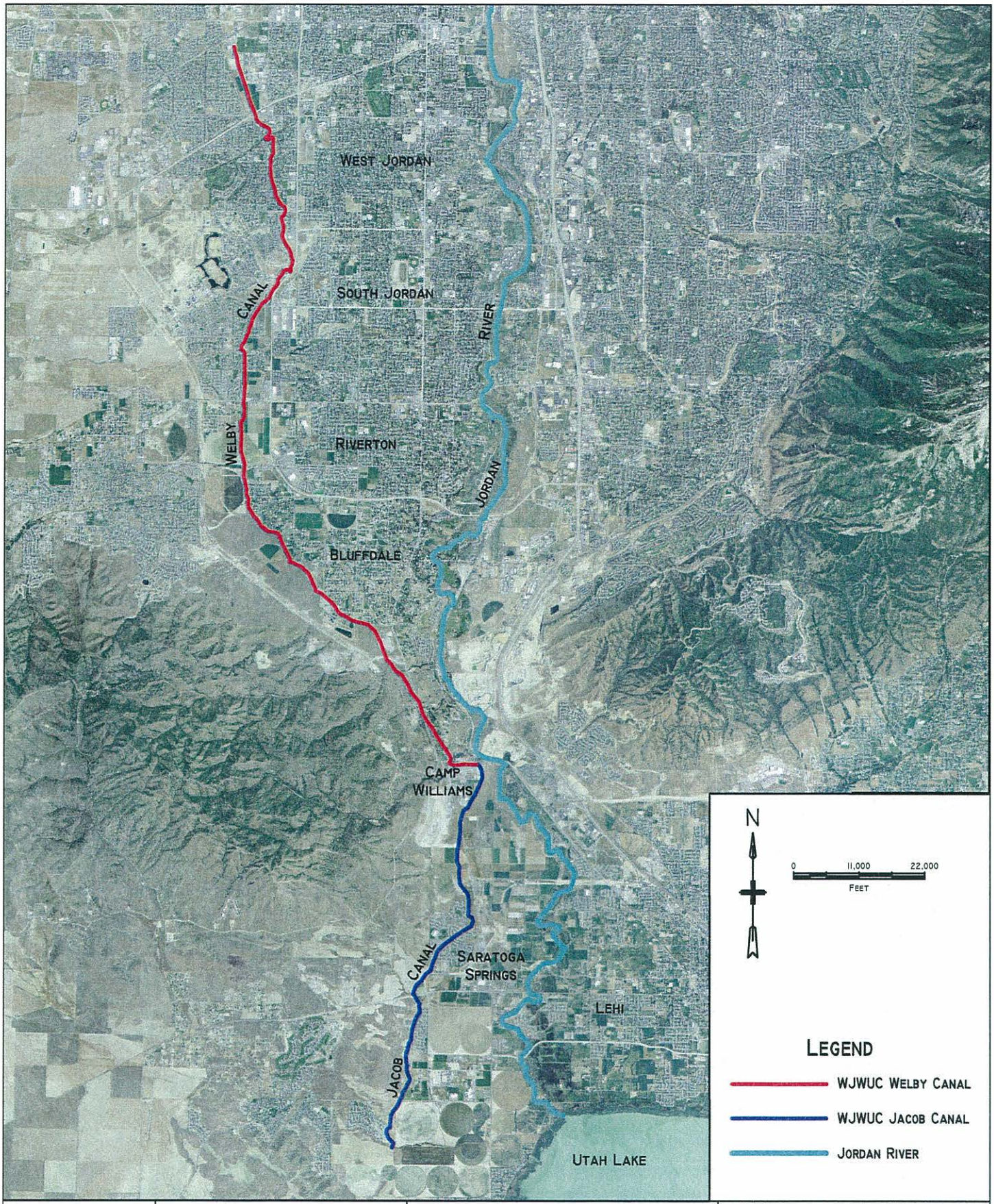
Describe Water Delivery System

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.

WJWUC has two canals, both starting near the Camp Williams Military Base. The Welby Canal flows north through Salt Lake County. It provides water to agricultural water users and the municipalities of Bluffdale City, Riverton City, South Jordan City, and West Jordan City before it ends in the City of West Jordan, Utah. The Jacob Canal flows south through Utah County and ends in Saratoga Springs City, Utah. Both of these canals were built in conjunction with the Provo River Project, and continue to receive water from the Bureau of Reclamation from Deer Creek Reservoir and the Provo River. The Welby Canal is approximately 11.5 miles long, and the Jacob canal is approximately 7.5 miles long.



FRANSON CIVIL ENGINEERS	DATE: JANUARY 14, 2015 SCALE: NOT TO SCALE Cover Sheet.dwg \\Franson\Data\CLIENT\2-Central Utah Area\WelbyJacob\CU.115 WJWUC SCADA & Change App Study\2015 WaterSMART\Drawings LAYOUT: Model	WELBY JACOB WATER USERS COMPANY WATER EFFICIENCY PROJECT WELBY JACOB CANAL	WATERSMART LOCATION MAP



FRANSON CIVIL ENGINEERS

DATE: JANUARY 14, 2015

SCALE:

Welby Jacob Canal Map.dwg

\\Franson\Data\CLIENT\2-Central Utah Area\WelbyJacob\CU.115 WJWUC SCADA & Change App Study\2015 WaterSMART\Drawings

LAYOUT: Welby Jacob Canals - 8.5x11

WELBY JACOB WATER USERS COMPANY

WATER EFFICIENCY PROJECT
WELBY JACOB CANAL

WATERSMART
CANAL ALIGNMENT

Renewable Energy or Energy Efficiency

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

When water for the canals is provided through the Jordan Narrows Pumping Plant, the full flow of the canals is pumped from the Jordan River. In order to pump this volume of water, a significant amount of electrical power is used. Any efficiency to the system added by this project would immediately reduce the power consumption of the pumping plant.

The majority of the water users along the canals pump their water into pressurized systems so that sprinklers can be used for irrigation. Many users have converted their individual water systems from flood irrigation to sprinkler systems for increased efficiency. This project will allow WJWUC to accurately monitor flows from the canals, which will allow them to manage water use and assure that over-pumping is not occurring.

Power for the individual measurement sites will be provided by solar panels.

Prior Work with Reclamation

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).

The Welby Jacob Canal was built in conjunction with the Bureau of Reclamation's Provo River Project, and the canals were originally part of the Provo Reservoir Water Users Company (PRWUC) distribution system. PRWUC receives water from Reclamation originating from Deer Creek Reservoir and the Provo River. In 1987, Salt Lake County Water Conservancy District (SLCWCD), now known as Jordan Valley Water Conservancy District (JVWCD), purchased approximately 40,000 acre-feet of Utah Lake water rights from various canal companies. Using this water, they entered into an agreement with the canal companies whereby JVWCD would deliver water to the canals through a pumping plant on the Jordan River and would use the higher quality Provo River water for culinary use in their system. Up until this time, the canal system was still part of PRWUC. At the time of this agreement, a new company was formed called the Welby Jacob Water Users Company (WJWUC) to take care of water distribution on the west side of the Jordan River. Due to the agreement with JVWCD, they now have the option to deliver Jordan River water or Provo River water to the WJWUC canal system.

3. 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, WJWUC will proceed to finalize components of telemetry, metering, and preparation of scopes of work for the material and/or services needed. An environmental and cultural review will be done by a registered environmental firm. Once environmental clearance is obtained, the construction will commence.

Table 1: Project Components by Canal

LOCATION	PROJECT COMPONENTS
Welby Canal	
1. Main Canal Measurement	4 Telemetry Sites
2. Canal Turnout Measurement	55 Telemetry Sites and New Flow Control Structures
3. End of Canal Pond	1 Telemetry and Gate Automation Site
Jacob Canal	
1. Main Canal Measurement	2 Telemetry Sites
2. Canal Turnout Measurement	13 Telemetry Sites and New Flow Control Structures

Additional details of the individual sites can be found in Appendix D.

4. 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 – Quantifiable Water Savings

Up to 24 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).*

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

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

  WJWUC typically supplies approximately 29,300 acre-feet of water to its shareholders.

- *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 is currently lost in the system through seepage into the ground, through evaporation to the atmosphere, through overuse by shareholders, and spilled at the end of the water delivery system.

- *Where* will the conserved water go?

The conserved water would be kept in Deer Creek Reservoir or Utah Lake. The water would be saved for use by shareholders later in the year if it is needed.

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

The total water conserved is estimated to be 6,755 acre-feet. See Appendix B for Water Savings Calculations.

Please address the following questions according to the type of project you propose for funding.

***(4) SCADA and Automation:** SCADA and Automation components can provide water savings when irrigation delivery system operational efficiency is improved to reduce spills, over-deliveries, and seepage. Applicants proposing municipal metering projects should address the following:*

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

The water savings of 6,755 acre-feet will be equal to the amount of water that is currently lost through overuse by shareholders and spilling at the end of the canal. Average annual water savings have been estimated through the experience and knowledge of the water managers of the system. The estimate was calculated based on several scenarios that cause system inefficiencies which are not controllable by the water managers. These include a sudden decrease of water use due to a rain event, water users shutting off their turnouts without notification to the water manager, and overuse by individual shareholders.

During a sudden rain event, the majority of the water users will turn off their turnouts and the water that they would have used continues down the canal and flows out the overflow and back to the Jordan River. In order to estimate the losses by this mechanism, an average of 2 rain events per month was used for each of the 6 months of the water season. An approximate overflow loss of 85 acre-feet per event was used to come up with a total annual loss of 1,020 acre-feet.

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

Water users on the Welby Canal do not take their water on turns, but are allowed to open and close their head gates as needed to meet their water demands. The water managers of the canal do their best to balance the supply with the current demand by manually monitoring the water levels at key locations. This entails driving to these locations and visually checking the depth of the canal. If a water user using a large amount of water shuts off his turnout, or if several smaller users turn off their water at around the same time, then that water will flow down the canal and out the overflow on the end. The water managers monitor the end of the canal often to try to minimize spills, but unexpected shutoffs can happen late at night or just after a check by the managers. If this happens approximately twice a week, with an average spill of 15 acre-feet, the total loss over the water season would be approximately 775 acre-feet.

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

By using the SCADA system to measure the flows at each turnout on the canals, the water for each water user will be known and can be managed. There are currently approximately 24,346 active shares in the company; each representing an acre-foot of water. The Jordan Narrows Pumping Plant delivered 29,300 acre-feet of water to the canals last year. This means that overuse of water from the canals was approximately 4,960 acre-feet in 2014. This number is still within the overall water right of the Welby and Jacob Canals, and at least some of this use was knowingly allowed by the company. The SCADA system will allow them to quantify who is overusing water and they can then make informed management decisions as to who is beneficially using this extra water and who may be wasting it.

(d) Will canal seepage be reduced through improved system management? If so, what is the estimated amount and how was it calculated?

N/A

(e) How will actual water savings be verified upon completion of the project?

The water savings will be verified by using the data provided by the new SCADA system to create a baseline. The pumping records from the Jordan Narrows Pumping Plant can also be compared to the records from previous years. Between the SCADA records and the pumping records, it can be determined if the water was better managed and if there was overall water savings.

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:*

$$\frac{\text{Estimated Amount of Water Conserved}}{\text{Average Annual Water Supply}} = \frac{\text{6,755 acre-feet}}{\text{29,300 acre-feet}} = 23.0\%$$

All water diverted by WJWUC will be better managed as a result of more accurate water measurements. Water losses are based on the long years of experience of those that operate the rivers and canal systems.

Evaluation Criterion 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 Subcriteria 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 (e.g., 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. B.2 below.*

This project does not include construction or installation of renewable energy components.

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.*

  Estimated savings for this project are 6,755 acre-feet. Jordan Valley Water Conservancy District (JVWCD) operates the pumps for the WJWUC system. They report that to pump an acre-foot of water to the Welby or Jacob Canal, it takes 357.5 kWh. This would equate to a savings of 2.4 million kWh per year.

- *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?*

  In order to supply sufficient flow to the canals, JVWCD operates up to eight pumps with sizes ranging from 600HP to 1500HP. The amount of reduced flow would allow them to use one less pump for most of the water year. This would equate to significant power savings, but would also simplify operation and lower their maintenance costs.

- *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.*

  The energy savings originate from the pumps at the head of the canal, which is the point of diversion.

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

  The water is for irrigation and secondary water systems and is not treated.

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

Telemetry, water meters, and gate automation will result in reduced maintenance and operation. The water master will not need to drive the canal alignment and back roads as frequently for safety, change in gate setting, and other inspection needs.

Solar Panels will be used on each of the 75 SCADA sites to charge the batteries for the meters and telemetry equipment.

Evaluation Criterion 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 endangered species, or addressing designated critical habitat.

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

- *What is the relationship of the species to water supply?*

  N/A

- What is the extent to which the proposed project would reduce the likelihood of listing or would otherwise improve the status of the *species*?

  N/A

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

(1) How is the species adversely affected by a Reclamation project?

The habitat for the June Sucker is Utah Lake, and one of the prime spawning grounds for this species has historically been the Provo River. Flows in the river and into Utah Lake are controlled by Jordanelle and Deer Creek Reservoirs. The species was listed due to habitat alteration including change of natural flow events in the Provo River, and reduced annual lake level stability.

(2) Is the species subject to a recovery plan or conservation plan under the Endangered Species Act?

The June Sucker Recovery Plan was finalized by the U.S. Fish and Wildlife Service in 1999.

(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?

Water for the WJWUC system is either supplied from Deer Creek Reservoir through the Provo Reservoir Canal system or from Utah Lake though the Jordan River. Utah Lake is the habitat for the June Sucker and the Provo River is a spawning ground for the endangered species. This project would improve the status of the species by allowing

conserved water to remain in the Provo River and Utah Lake systems, and giving river commissioners and operators operational flexibility that could allow them to benefit the species.

Evaluation Criterion D: Water Marketing

Up to 12 points may be awarded for projects that propose developing 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:*

- *Estimated amount of water to be marketed.*
- *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.*
- *Number of users, types of water use, etc. In the water market.*
- *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).*
- *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 but other water uses could be achieved under a contractual water delivery agreement. The conserved water will alleviate current shortages for water users.

Marketing is not a direct function of the WJWUC Board. The Board's function is to assure the delivery of water and maintain the canals as a delivery system. Water shares are privately owned and bought and sold at fair market value. Recent years have seen a number of municipalities or other non-private entities purchasing shares for use in secondary water systems for parks, golf courses, and residences.

Evaluation Criterion 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 1) how the project relates to a completed WaterSMART Basin Study; 2) how the project could expedite future on-farm improvements; 3) how the project will build resiliency to drought; and/or 4) 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.

Subcriterion E.1 – Addressing Adaptation Strategies in a WaterSMART Basin Study

Up to 14 points may be awarded for projects that address an adaptation strategy identified in a completed WaterSMART Basin Study.

Proposals that provide a detailed description of how a project is addressing an adaptation strategy specifically identified in a completed 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:

- *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.*
- *Describe how the adaptation strategy and proposed WaterSMART Grant project will address the imbalance between water supply and demand identified by the Basin Study.*
- *Identify the applicant's level of involvement in the Basin Study (e.g., cost-share partner, participating stakeholder, etc.)*
- *Describe whether the project will result in further collaboration among Basin Study partners.*

This project does not fall within one of the areas that have a completed WaterSMART Basin Study. However, the project area is located within an area that receives water through a trans-basin diversion from the Duchesne River in the Colorado River Basin. Water is diverted from the Duchesne River into the Provo River system by way of the Duchesne Tunnel. The Bureau of Reclamation recently completed a Water Supply and Demand Study (year 2012). Duchesne County is located in the Uintah Basin of Utah, which was identified in the Colorado River Basin Study as an area that needed additional water savings to meet long term water needs. The project will meet some of these water needs and will result in additional collaboration by the entities that are included in this WaterSMART application.

This WaterSMART project will address water supply shortages and will make more water available to the water users in the Duchesne River Basin. The Duchesne River contributes to flows in the Colorado River.

Subcriterion E.2 – Expediting Future On-Farm Irrigation Improvements

Up to 14 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.

If the proposed projects will help expedite future on-farm improvements please address the following:

- *Include a detailed listing of the fields and acreage that may be improved in the future.*
- *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.*
- *Provide a detailed explanation of how the proposed WaterSMART Grant project would help to expedite such on-farm efficiency improvements.*
- *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.*
- *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.*
- *Describe the extent to which this project complements an existing or newly awarded NRCS funded project.*

Many of the irrigated areas have already converted to sprinkler systems for their on-farm irrigation methods.

Subcriterion E.3 – Building Drought Resiliency

Up to 14 points may be awarded for projects that will build long-term drought resilience in an area affected by drought.

If the proposed project will make water available to alleviate water supply shortages resulting from drought, please address the following:

- *Explain in detail the existing or recent drought conditions in the project area. Describe the severity and duration of drought conditions in the project area. Describe how the water source that is the focus of this project (river, aquifer, or other source of supply) is impacted by drought.*

  According to the United States Drought Monitor, Utah has been in a moderate to severe drought since 2012. The levels of both Utah Lake and Deer Creek Reservoir have been below average since 2012.

- *Describe the impacts that are occurring now or are expected to occur as a result of drought conditions. Provide a detailed explanation of how the proposed WaterSMART Grant project will improve the reliability of water supplies during times of drought.*

  Installation of a SCADA system will allow the canal managers to measure water supplied at each turnout, which will in turn allow them to manage their water supplies in drought conditions. Proper management will help all water users to maximize their crop yields during drought conditions.

Subcriterion E.4 – Other Water Supply Sustainability Benefits

Up to 10 Points may be awarded for projects that include other benefits to water supply sustainability.

Projects may receive up to 10 points under this sub-criterion by thoroughly explaining additional project benefits, not already described above. 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:

- *Will the project make water available to address a specific concern? For example:*
  - *Will the project directly address a heightened competition for finite water supplies and over-allocation (e.g., population growth)?*
  - *Describe how the water source that is the focus of this project (river, aquifer, or other source of supply) is impacted by climate variation.*
  - *Will the project help to address an issue that could potentially result in an interruption to the water supply if unresolved?*

  This project is located in a drought prone area and is in an area where water resources are currently over allocated. Due to population growth that is expected to continue for the foreseeable future, additional water is always in demand, and the water conserved by this project could help alleviate some of this demand. In addition, the drought conditions of the area have lowered levels of Deer Creek and Utah Lake, and conserved water would remain in these storage reservoirs.

- *Will the project make additional water available for Indian tribes?*

  No, the project will not make water available for Indian tribes.

- *Will the project make water available for rural or economically disadvantaged communities?*

No, the project will not make water available for rural or economically disadvantaged communities.

- *Does the project promote and encourage collaboration among parties?*
  - *Is there widespread support for the project?*
  - *What is the significance of the collaboration/support?*
  - *Will the project help to prevent a water-related crisis or conflict?*
  - *Is there frequently tension or litigation over water in the basin?*
  - *Is the possibility of future water conservation improvements by other water users enhanced by completion of this project?*

Utah Lake and Deer Creek Reservoir are the main water sources for various canal companies and communities. Because these water sources are shared, any improvement to the system will benefit the other users also. Direct support for the project has come from the shareholders including the five cities that receive water from the canal. JVWCD also supports the project since they manage the pumps that supply water to the canals.

The cities and other water users will pay for the project through payment of increased annual assessments.

Better management of the canal system can help avoid conflicts between water users within the company and between WJWUC and other entities that share the same water sources. The information from the SCADA system will be online and available to the water users so they can monitor their own use and know that the usage status of other water users on the system. Having the option of using conserved water late in the summer of drought years will help avoid conflicts between shareholders.

Installation of a SCADA system will allow the canal managers to monitor the levels of the canals more frequently and to alarm the canals for potentially dangerous situations. With developments being built on both sides of the canals, the potential for flooding of homes and other property damage increases, and tension between homeowners and WJWUC have resulted. The SCADA system would help ease these tensions.

If water users see that they typically use more water than their shares entitle them to, they will be motivated to conserve water within their own systems to maximize their use of the water from the canal.

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

This project will conserve 6,755 acre-feet of water and will be an example of water conservation to the local and surrounding communities. The support for this project by the shareholders of WJWUC and other entities that use WJWUC water is an indication of their desire to implement improved measurement of their water deliveries to move toward better water conservation. The reduced maintenance and operation costs and a more

reliable supply of water is a win-win situation for the shareholders, the local communities, and surrounding region.

Evaluation Criterion 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.

The entities do not have a Water Conservation Plan. However, approximately 70% of the on-farm irrigation systems have converted to sprinkler irrigation systems. The telemetry, water metering, and gate automation as part of this WaterSMART application will promote district-wide improvements in managing their annual water deliveries of 24,346 acre-feet.

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, Basin Study, drought contingency plan, or other planning efforts done to determine the priority of this project in relation to other potential projects.

A preliminary estimate of costs for the metering, telemetry, and gate automation, and a new control structure, has been completed by Franson Civil Engineers and the entities to be used in the funding acquisition portion of the project.

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

The Utah State Water Plan 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 project in this WaterSMART application will be in harmony with the State of Utah's water conservation goals by conserving 6,755 acre-feet.

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. 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 of this application.

Please explain any permits that will be required, along with the process for obtaining such permits. Identify and describe any engineering or design work performed specifically in support of the proposed project.

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. The footprint of the telemetry, gate automation, new flow control structure, and installation of water meters is negligible.

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 (e.g., water saved, marketed, or better managed, or energy saved).

With the installation of telemetry, water metering, gate automation, and a new flow control structure, WJWUC will now know how much water passes through the main diversion point. With the records provided by each water user of their diversions, the canal water masters can compare the flow at the measuring points to see the difference and calculate the water savings from what has taken place historically.

Subcriterion No. F.4 – Reasonableness of Costs

Points may be awarded based on the reasonableness of the cost for the benefits gained.

Please include information related to the total project cost, annual acre-feet conserved, energy capacity, or other project benefits and the expected life of the improvement(s).

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.).

All the water deliveries will be better managed through the system. In addition, the project will conserve approximately 6,755 acre-feet of water annually. It is anticipated that the telemetry systems, new flow control structure, and automation of the diversion structure will last for 50 years with only minor repairs.

$$\frac{\text{Total Project Cost}}{\text{AF Conserved x Improvement life}} = \frac{\$511,535}{(6,755)*50} = \$1.51$$

The calculation yields a cost of $1.51 for every acre-foot per year of water conserved.

$$\frac{\text{Total Project Cost}}{\text{Better Managed x Improvement life}} = \frac{\$511,535}{(29,300)*50} = \$0.35$$

The calculation yields a cost of $0.35 for every acre-foot per year of water better managed.

Evaluation Criterion 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.

$$\frac{\text{Non-Federal Funding}}{\text{Total Project Cost}} = \frac{\$281,345}{\$511,535} = 55\%$$

Evaluation Criterion 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?

The Welby and Jacob Canals were built in conjunction with the Bureau of Reclamation's Provo River Project, and the canals were originally part of the PRWUC distribution system. The Welby and Jacob Canals receive water from the Bureau of Reclamation originating from Deer Creek Reservoir and the Provo River.

(2) Does the applicant receive Reclamation project water?

Yes

(3) Is the project on Reclamation project lands or involving Reclamation facilities?

No

(4) Is the project in the same basin as a Reclamation project or activity?

Yes

(5) Will the proposed work contribute water to a basin where a Reclamation project is located?

Yes

(6) Will the project help Reclamation meet trust responsibilities to Tribes?

No

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.

1. Environmental and Cultural Resources Compliance

To allow Reclamation to assess the probable environmental and cultural resources 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.

Note: Applicants proposing a Funding Group II project must address the environmental and cultural resources compliance questions for their entire project, not just the first one-year phase.

(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.

There will be minimal disturbance with the installation of telemetry, water metering, gate automation, and new flow measurement structures. 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 threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

According to the U.S. Fish and Wildlife Endangered Species list for Utah County, the June Sucker is found in the Provo River and in Utah Lake which are connected to the water supply system for the WJWUC. This project will allow WJWUC to be more efficient in their water deliveries and use so that the conserved water can remain in Utah Lake to help promulgate the endangered fish species.

(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 the Clean Water Act (CWA) jurisdiction as "waters of the United States."

(4) When was the water delivery system constructed?

Much of the network of main canals and laterals were constructed in the early 1900's. The emergence of converting from on-farm flood irrigation to sprinkler irrigation has taken place in the last 20 years.

(5) *Will the project result in any modification of or effects to, individual features of an irrigation system (e.g., head gates, 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.*

Individual head gates on the canals will not be affected by the installation of the SCADA system. There will be several small flumes that will be installed on the canal turnouts and laterals with the telemetry system for WJWUC. Any new measurement structures installed will be on the pipe or ditch outside of the main canal. The measurement sites along the main canal will be placed at existing structures or existing road crossings.

(6) *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.*

There are no buildings or features in the project area listed on the National Register of Historic Places database.

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

There are no known archeological sites in the area. However, a cultural resource specialist will be hired to conduct a survey before construction begins.

(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. However, the project would enhance the economic benefits to the area.

(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.

2. 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.

An environmental clearance will be required before construction can begin. The permit 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. All of the required permits should be relatively easy to obtain.

3. 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*

An official resolution meeting set forth above is mandatory. If the applicant is unable to submit the official resolution by the application deadline because of the timing of board meetings or other justifiable reasons, the official resolution may be submitted up to 30 days after the application deadline.

The signed Official Resolution is shown in Appendix A.

4. Project Budget

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 Grant 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.

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 $511,500. WJWUC is ready to proceed forward providing funding from their existing cash reserves. The funds for this project will be provided from WJWUC savings as well as from the yearly operating budget. Part of these funds will be recovered from assessments to shareholders over the next several years.

(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*

Incurred project expenses include the engineering costs associated with preliminary design, cost estimating, and funding procurement.

(b) *How they benefitted the project*

These costs allowed the entities to explore funding options and establish a plan for the implementation and funding of the project.

(c) *The amount of the expense*

The expense amounts to $18,225.

(d) *The date of cost incurrence*

The costs were incurred between July 2014 and January 2015.

(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 $281,345 will be provided by WJWUC. No other funding partners will be involved in the project.

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

No other applications for funding 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.*

Besides the funding being applied for currently from Reclamation, there are no other pending funding requests.

Please include the following chart to summarize your non-Federal and other Federal funding sources. Denote in-kind contributions with an asterisk (*). Please ensure that the total Federal funding (Reclamation and all other Federal sources) does not exceed 50 percent of the total estimated project cost.

Table 2: Summary of non-Federal and Federal Funding Sources

Funding Sources	Funding Amount
Non-Federal Entities	
1. WJWUC	$281,345
Non-Federal Subtotal	$281,345
Federal Entities	
1. Reclamation	$230,190
Federal Subtotal	$230,190
Requested Reclamation Funding	$230,190
Total Project Funding	**$511,535**

For applicants submitting a proposal under Funding Group II, please include the following chart to summarize your Federal funding request by year.

Table 3: Funding Group I Request

Funding Group I Request		
	Year 1 (FY 2015)	**Year 2 (FY 2016)**
Funding Requested	$210,475	$19,715

Budget Proposal

The project budget shall include detailed information on the categories listed below and must clearly identify all project costs. Unit costs shall be provided for all budget items including the cost of work to be provided by contractors. Additionally, applicants shall include a narrative description of the items included in the project budget, including the value of in-kind contributions of goods and services provided to complete the project. It is strongly advised that applicants use the budget proposal format shown below or a similar format that provides this information. If selected for award, successful applicants must submit detailed supporting documentation for all budgeted costs.

Table 4: Funding Sources

Funding Sources	Percent of Total Project Costs	Total Cost by Source
Recipient Funding	55%	$281,345
Reclamation Funding	45%	$230,190
Total	**100%**	**$511,535**

Table 5: Budget Proposal

Budget Item Description	Computation	Total Cost
Project Manager and Reclamation Reporting	See Appendix C	$39,425
Environmental Services	See Appendix E	$11,810
Engineering and Construction Management	See Appendix C	$59,800
Construction and Materials	See Appendix D	$400,500
Total Project Costs		**$511,535**

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. Include the value of in-kind contributions of goods and services and sources of funds provided to complete the project. The types of information to describe in the narrative include, but are not limited, to those listed in the following subsections.

Officials of the WJWUC will not earn a salary, wages, fringe benefits or reimbursements from funding obtained to implement this project. All contributions will be funded by the company's general fund, or be in-kind contributions to the project.

All funding secured from Reclamation 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 in Tables 4 and 5.

Salaries and Wages

Indicate program manager and other key personnel by name and title. Other personnel may be indicated by title alone. For all positions, indicate salaries and wages, estimated hours or percent of time, and rate of compensation proposed. The labor rates should identify the direct labor rate separate from the fringe rate or fringe cost for each category. All labor estimates, including any proposed subcontractors, shall be allocated to specific tasks as outlined in the recipient's technical project description. Labor rates and proposed hours shall be displayed for each task.

Clearly identify any proposed salary increases and the effective date.

Generally, salaries of administrative and/or clerical personnel will be included as a portion of the stated indirect costs. If these salaries can be adequately documented as direct costs, they should be included in this section; however, a justification should be included in the budget narrative.

The billing rates for Franson Civil Engineers are shown in Table 6.

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.

Table 6: Franson Civil Engineers Billing Rate by Labor Category

Labor Category	Billing Rate	Labor Category	Billing Rate
Principal	$160	Reports Writer/Editor	$88
Senior Manager	$140	Designer	$87
Senior Engineer	$120	Engineering Assistant	$83
Senior Field Manager	$116	Engineering Intern	$72
Staff Engineer	$104	Office Assistant	$59
Senior Designer	$96	Clerk	$53
Engineer 1	$89		

See Appendix C for the full engineering manpower and cost estimate for all design work and construction management tasks.

Construction contractors have not yet bid on this project; therefore, no salary and wage data are available for construction. The construction cost estimate is based on the engineer's estimate of probable construction costs.

Fringe Benefits

Indicate rates/amounts, what costs are included in this category, and the basis of the rate computations. Indicate whether these rates are used for application purposes only or whether they are fixed or provisional rates for billing purposes. Federally approved rate agreements are acceptable for compliance with this item.

No Fringe Costs are included. The basis of the billing rate computation shown previously in Table 7 for Franson Civil Engineers' is as follows:

Table 7: Average Billing Rates and Fringe Benefits

Average Billable Rate	$99.00
Wage Percent	30%
Benefits	15%
Overhead	40%
Profit	15%

Travel

Include purpose of trip, destination, number of persons traveling, length of stay, and all travel costs including airfare (basis for rate used), per diem, lodging, and miscellaneous travel expenses. For local travel, include mileage and rate of compensation.

There will be no lodging or per diem expenses. The engineer will visit the site during the design phase, and periodically visit the site during construction. Charges related to travel will only be the result of travel by vehicle for site visits and construction observation. The charge will be at the IRS mileage rate plus $0.10, which calculates to be $0.68 per mile. The total direct expenses for traveling are shown in the engineering manpower estimate enclosed in Appendix D.

Equipment

Itemize costs of all equipment having a value of over $5,000 and include information as to the need for this equipment, as well as how the equipment was priced if being purchased for the agreement. If equipment is being rented, specify the number of hours and the hourly rate. Local rental rates are only accepted for equipment actually being rented or leased for the project. If equipment currently owned by the applicant is proposed for use under the proposed project, and the cost to use that equipment is being included in the budget as in-kind cost share, provide the rates and hours for each piece of equipment owned and budgeted. These should be ownership rates developed by the recipient for each piece of equipment. If these rates are not available, the U.S. Army Corp of Engineer's recommended equipment rates for the region are acceptable. Blue book, Federal Emergency Management Agency (FEMA), and other data bases should not be used.

Not included.

Materials and Supplies

Itemize supplies by major category, unit price, quantity, and purpose, such as whether the items are needed for office use, research, or construction. Identify how these costs were estimated (i.e., quotes, past experience, engineering estimates or other methodology).

Costs for supplies are included in the engineering manpower estimate shown in Appendix C. These costs are for printing and copying construction drawings, specifications, reports, letters, permits and other documents related to the project. The cost for printing is as follows:

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

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 be used to pay consultants, 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 Appendices as follows:

1) Appendix C – Engineering Services
2) Appendix D – Construction Services and Material
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). Please see Section VI. E. 2 "Program Performance Reports". for information on types and frequency of reports required.

Once the SCADA system is installed, a full analysis of the water system efficiency and operation will be performed. The report will assess the hydraulic capacity of the canal, determine losses in the system, analyze the operation with respect to the pumping system that supplies water to the canal, and suggest operational changes or changes to the physical facilities to maximize the efficiency of the system. The analysis of the system and final report including all reporting to USBR will cost approximately $39,425. 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 Franson Civil Engineers, the firm selected to design the system, and therefore is included in the Probable Cost Estimate for Engineering Services as shown in Appendix C.

Other

Any other expenses not included in the above categories shall be listed in this category, along with a description of the item and what it will be used for. No profit or fee will be allowed.

N/A

Indirect Costs

Show the proposed rate, cost base, and proposed amount for allowable indirect costs based on the applicable OMB circular cost principles (see Section III.E., "Cost Sharing Requirement") for the recipient's organization. It is not acceptable to simply incorporate indirect rates within other direct cost line items.

If the recipient has separate rates for recovery of labor overhead and general and administrative costs, each rate shall be shown. The applicant should propose rates for evaluation purposes, which will be used as fixed or ceiling rates in any resulting award. Include a copy of any federally approved indirect cost rate agreement. If a federally approved indirect rate agreement is not available, provide supporting documentation for the rate. This can include a recent recommendation by a qualified certified public accountant (CPA) along with support for the rate calculation.

If you do not have a federally approved indirect cost rate agreement, or if unapproved rates are used, explain why, and include the computational basis for the indirect expense pool and corresponding allocation base for each rate. Information on "Preparing and Submitting Indirect Cost Proposals" is available from Interior, the National Business Center, and Indirect Cost Services, at www.doi.gov/ibc/services/Indirect_Cost_Services/index.cfm.

N/A

Total Costs

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

The estimated total project cost is $511,535.

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. These forms are available at <http://apply07.grants.gov/apply/FormLinks?family=15>.

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
Welby Jacob Water Users Company

RESOLUTION NO. 2015 - 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 Welby Jacob Water Users Company has need for funding to complete the Welby Jacob Canal Water Efficiency Project.

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

1. The Board of Directors 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: January 14, 2015
D.L.

Darryl Lehmitz
Darryl Lehmitz, President

ATTEST:

Jennifer Watkins

Appendix B

Water Savings Calculations

WJWUC WaterSmart Savings Calculations

Rain Event

		Bottom Width	Side Slopes	Height	Hydraulic Depth	Roughness Coeff.	Slope	Flow Rate	Velocity	Average Volume
		ft	ft/ft	(ft)	(ft)			(ft^3/sec)	(ft/sec)	acft
				y	D or y_h	n	S_o	Q	V	
Lower flows before event-105cfs	Mile 1-5	8	0.57	3.80	3.14	0.03	0.0010	105.75	2.74	23.38
Rain starts	Mile 6-10	7	0.57	3.70	3.01	0.03	0.0010	88.62	2.63	20.40
Everyone turns their water off	Mile 11-15	5	0.57	4.00	3.05	0.03	0.0010	73.61	2.53	17.62
Assume 24 hour turnoff	Mile 16-20	4	0.57	3.70	2.75	0.03	0.0010	52.50	2.33	13.67
Canal is shut off but still drains	Mile 21-End	3	0.57	3.20	2.32	0.03	0.0010	31.52	2.05	9.33
Average Depth/Volume per foot										

84.4	Acre-feet per Occurance
6	Months-Water Season
2	Occurances per Month
1020	af/yr wasted

Normal Shut Off Event

Large user shuts off without notifying watermaster	15	cfs
That amount gets wasted at the end of the canal	15	af per instance
Runs for 12 hours	774	af/yr wasted

Overpumping

Water Rights - amount legally available	40000	acre-feet
Current active shares	24346	acre-feet
Inactive water rights-Inactive Shares	15654	acre-feet
Actual Use - Pumped by JVWCD	29307	acre-feet
Overuse	4961	acre-feet

Summary		
Rain Event	1020	acre-feet
Normal Shut Off Event	774	acre-feet
Overpumping	4961	acre-feet
Total Water Savings	6755	acre-feet

Appendix C

Probable Cost for Engineering Services

(Engineering Design and Construction Management)

MANPOWER AND COST ESTIMATE

Client: WJWUC
Project: Water Efficiency Project

Description: Create a SCADA System for the Welby Jacob Canal System to Improve Efficiency and Facilitate Water Management

Personnel Assigned

1. Principal
2. Senior Manager
3. Senior Engineer
4. Senior Field Manager
5. Staff Engineer
6. Engineer I
7. Senior Designer
8. Reports - Writer/Editor
9. Designer
10. Engineering Assistant
11. Engineering Intern
12. CAD Operator
13. Technician
14. Office Assistant
15. Clerk

Task Description	Hours By Personnel Category										Total Hours	Total Labor Charges	Other Direct Costs	Total Fee
	1	3	3	5	4	7	10	14	8	14				
	EF	LP	VH	AV	BP	LF	TA	VLH	CM	JW				
01 - Funding and Project Management														
Task 1. Planning and Client Coordination	2		10								12	$1,472	$0	$1,472
Task 2. Board Meetings			12				4		4		20	$2,056	$100	$2,156
Task 3. Cost Estimating	1		15				4		2		22	$2,390	$0	$2,390
Task 4. Alternative Analysis			20			4	10				34	$3,502	$100	$3,602
Task 5. Funding Applications	2		40			10	20		10		82	$8,352	$250	$8,602
SUBTOTAL	**5**	**0**	**97**	**0**	**0**	**14**	**38**	**0**	**16**	**0**	**170**	$17,772	**$450**	**$18,222**
02 - Engineering Design														
Task 1. Existing Site Assessment				15							15	$1,515	$0	$1,515
Task 2. Site Planning			10	10			4				24	$2,494	$0	$2,494
Task 3. Coordination with SCADA Subcontractor			4	10							14	$1,474	$0	$1,474
Task 4. Hydraulic Design			30	20							50	$5,500	$0	$5,500
Task 5. Design Drawings			10	10		40	4				64	$6,214	$0	$6,214
Task 6. Technical Specifications			20						10		30	$3,170	$0	$3,170
SUBTOTAL	**0**	**0**	**74**	**65**	**0**	**40**	**8**	**0**	**10**	**0**	**197**	$20,367	**$0**	**$20,367**
03 - Construction Services														
Task 1. Create Bid Documents and Contract Specifications			15				4		10		29	$2,914	$200	$3,114
Task 2. Bid and Award Construction Contracts			10				10		10		30	$2,820	$100	$2,920
Task 3. Engineering Construction Observation			5		80		20				105	$11,240	$500	$11,740
Task 4. Contract Administration			5	20			10				35	$3,410	$0	$3,410
SUBTOTAL	**0**	**0**	**35**	**20**	**80**	**0**	**44**	**0**	**20**	**0**	**199**	$20,384	**$800**	**$21,184**
Project Totals	**5**	**0**	**206**	**85**	**80**	**54**	**90**	**0**	**46**	**0**	**566**	**$58,523**	**$1,250**	**$59,773**

FRANSON
CIVIL ENGINEERS

MANPOWER AND COST ESTIMATE

Client: WJWUC
Project: Change Application Study

Description: Determine the limit of shares that can be change ordered out of the Welby Jacob Canal System before it negatively affects other water users.

Personnel Assigned

1. Principal
2. Senior Manager
3. Senior Engineer
4. Senior Field Manager
5. Staff Engineer
6. Engineer I
7. Senior Designer
8. Reports - Writer/Editor
9. Designer
10. Engineering Assistant
11. Engineering Intern
12. CAD Operator
13. Technician
14. Office Assistant
15. Clerk

Task Description	Hours By Personnel Category										Total Hours	Total Labor Charges	Other Direct Costs	Total Fee
	1	3	3	5	4	9	10	14	8	14				
	EF	LP	VH	AV	BP	CR	TA	VLH	CM	JW				
01 - Determine Hydraulic Capacity														
Task 1. Coordination with Water Master on Critical Outlets			6	3			2				11	$1,161	$0	$1,161
Task 2. Measure Critical Outlets			4	16							20	$2,080	$0	$2,080
Task 3. Monitor Canal Water Levels			4	36							40	$4,100	$0	$4,100
Task 4. Create Flow Model of Outlets	2	4	24	8			2				40	$4,530	$0	$4,530
Task 5. Determine Hydraulic Capacity			8								8	$928	$0	$928
SUBTOTAL	**2**	**4**	**46**	**63**	**0**	**0**	**4**	**0**	**0**	**0**	**119**	$12,799	**$0**	**$12,799**
02 - Determine Canal Losses														
Task 1. Research Existing Flow Studies			10				4				14	$1,484	$0	$1,484
Task 2. Determine Losses in Canal			4								4	$464	$0	$464
Task 3. Determine Canal Losses			16								16	$1,856	$0	$1,856
SUBTOTAL	**0**	**0**	**30**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**34**	$3,804	**$0**	**$3,804**
03 - Determine Supply Variability and Efficiency														
Task 1. Coordination with Metro on Pump Capabilities			4	8			4				16	$1,596	$0	$1,596
Task 2. Determine Variables and Constraints				2							2	$202	$0	$202
Task 3. Incorporate Pump Capabilities into Other Models			8	24							32	$3,352	$0	$3,352
Task 4. Determine Supply Variability and Efficiency	2	4	2	8							16	$1,816	$0	$1,816
SUBTOTAL	**2**	**4**	**14**	**42**	**0**	**0**	**4**	**0**	**0**	**0**	**66**	$6,966	**$0**	**$6,966**
04 - Analyze Results														
Task 1. Analysis of System Losses and Efficiency	1	4	8	8			4				25	$2,680	$0	$2,680
Task 2. Determine System Inefficiencies			4	2							6	$666	$0	$666
Task 3. Write Summary Report of Results	2	4	4	24		16		2	6	2	60	$5,746	$200	$5,946
Task 4. Review by ULDC Board and Attorney			2								2	$232	$0	$232
Task 5. Revise Report and Finalize			4	8		8		1	1		22	$2,086	$200	$2,286
Task 6. Report Results to USBR			2						1		3	$317	$200	$517
SUBTOTAL	**3**	**8**	**24**	**42**	**0**	**24**	**4**	**3**	**8**	**2**	**118**	$11,727	**$600**	**$12,327**
													Contingencies (10%)	$3,529.60
Project Totals	**7**	**16**	**114**	**147**	**0**	**24**	**16**	**3**	**8**	**2**	**337**	**$35,296**	**$600**	**$39,426**

FRANSON CIVIL ENGINEERS
FEE SCHEDULE – 2015

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	2015
Principal	$160
Senior Manager	$140
Senior Engineer	$120
Senior Field Manager	$116
Staff Engineer	$104
Senior Designer	$96
Engineer I	$89
Reports Writer/Editor	$88
Designer	$87
Engineering Assistant	$83
Engineering Intern	$72
Office Assistant	$59
Clerk	$53

Expenses

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

	2015
Mileage (IRS mileage rate + $0.10)	$0.68/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 and Materials

Welby Canal

	Turnout ID	Description	Manager	Address	Existing Measurement Configuration	Site Type	SCADA Equip and Install	Sensor Type	Meter Size	Sensor Cost	ADS Manhole	Meas. Structure	Labor	Site Subtotal
1	Mainline 1	Existing measurement structure at head of canal			Existing Flume	4	$ 1,750	None	-	$ -	$ -	$ -	$ -	$ 1,750
2	1	Camp Williams Pump	Ward Brewer Eric Suel	17000 S	Pump Vault - No meter	1	$ 1,750	Meter	24	$ 3,000	$ 580	$ -	$ 939	$ 6,269
3	5	Camp Williams Pump	Arnold Warner	17000 S	Veterans Park Pump Station - No meter	1	$ 1,750	Meter	12	$ 2,600	$ 580	$ -	$ 939	$ 5,869
4	6	Camp Williams Pump (24in)	Arnold Warner	17000 S	Veterans Park Pump Station - No meter	1	$ 1,750	Meter	24	$ 3,000	$ 580	$ -	$ 939	$ 6,269
5	10	15-inch Outlet	Don Davis	16800 S	Trapezoidal Channel	2B	$ 1,750	Level Sensor	-	$ 1,200	$ 580	$ 1,250	$ 1,564	$ 6,344
6	15	Turnout	Terry Nelson	16700 S	~4-inch Pipe - No measurement/No Manhole	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
7	20	16-inch Square Outlet	David B Gibson	16300 S	Trapezoidal Channel	2B	$ 1,750	Level Sensor	-	$ 1,200	$ 580	$ 1,250	$ 1,564	$ 6,344
8	30	15-inch Outlet	Wayne Mortimer	16100 S	Trapezoidal Channel	2B	$ 1,750	Level Sensor	-	$ 1,200	$ 580	$ 1,250	$ 1,564	$ 6,344
9		Porter Rockell Pump	Bluffdale City		Pump Station - No measurement	4	$ 1,750	None	-	$ -	$ -	$ -	$ -	$ 1,750
10	35	12-inch Outlet	Stewart Zeeh	15700 S	12-inch Pipe with Manhole and Manual Read Meter	4	$ 1,750	None	-	$ -	$ -	$ -	$ -	$ 1,750
11	39	15-inch Outlet (Subdivision)	Mike Broussard	15200 S	Pump - No meter	1	$ 1,750	Meter	15	$ 3,000	$ 580	$ -	$ 939	$ 6,269
12	40	15-inch Outlet (Subdivision)	Charley Mason	15200 S	Pump - No meter	1	$ 1,750	Meter	15	$ 3,000	$ 580	$ -	$ 939	$ 6,269
13	45	18-inch Outlet	Kim Rindlisbacher	15075 S	Pump House with Manhole - No meter	1	$ 1,750	Meter	18	$ 3,000	$ 580	$ -	$ 939	$ 6,269
14	50	15-inch Outlet	Greg Wolfley	15050 S	Flume	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
15	51	26-inch Outlet	Chris Ashcroft	15050 S	Flume	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
16	55	Pump	Shawn Doxey	15035 S	Small Pump - No meter	1	$ 1,750	Meter	2	$ 950	$ 580	$ -	$ 939	$ 4,219
17	Mainline 2	Near 150th South			No Measurement	6	$ 1,750	Area Velocity	-	$ 3,500	$ -	$ -	$ -	$ 5,250
18	60	15-inch Outlet	Roger Dymock	15015 S	15-inch Pipe with no manhole and no meter	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
19	65	15-inch Outlet	Kim Rindlisbacher	14900 S	15-inch Pipe with no manhole and no meter	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
20	70	15-inch Outlet	Dick Shafer	14700 S	Flume	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
21	75	24-inch by 24-inch (uphill side)	Robert Thomas	14450 S	Pump - No meter	1	$ 1,750	Meter	24	$ 3,000	$ 580	$ -	$ 939	$ 6,269
22	78	15-inch Outlet	Dave Butterfield	14395 S	Flume	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
23	80	20-inch Outlet	Wayne Earl	14300 S	No manhole - No meter	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
24	90	18-inch Outlet	Tom Gardiner	14200 S	Pump - No manhole - No meter	1	$ 1,750	Meter	18	$ 3,000	$ 580	$ -	$ 939	$ 6,269
25	95	15-inch Outlet	Michael Jones	14000 S	Pump - No manhole - No meter	1	$ 1,750	Meter	15	$ 3,000	$ 580	$ -	$ 939	$ 6,269
26	100	18-inch Outlet	Dave Teseder	13800 S	Pump - 4in pipe - No meter	1	$ 1,750	Meter	18	$ 3,000	$ 580	$ -	$ 939	$ 6,269
27	106	24-inch Outlet	Scott Hill	13600 S	OVERFLOW	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
28	107	18-inch Outlet (Gate w/ TO 106)	Scott Hill	13600 S	Flume	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
29	109	Open Box (uphill side)	Wayne Earl	13500 S	12-inch Pipe and Pump	1	$ 1,750	Meter	12	$ 2,600	$ 580	$ -	$ 939	$ 5,869
30	110	18-inch Outlet	Deloy Weaver	13400 S	Manhole but no Meter	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
31	120	Pump (uphill side)	Wayne Earl	13350 S	Pump - no meter	1	$ 1,750	Meter	12	$ 2,600	$ 580	$ -	$ 939	$ 5,869
32	130	15-inch Outlet	Wayne Earl	13100 S	CMP Manhole - no meter	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
33	132	14-inch Outlet	Arlin Freeman	12800 S	CMP manhole - no meter	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
34	134	6-inch Outlet	Florin Bluemal	12700 S	~6" Pump Uphill	1	$ 1,750	Meter	6	$ 1,600	$ 580	$ -	$ 939	$ 4,869
35	136	Pump	Kenneth Crane	12775 S	~6" Pump Uphill	1	$ 1,750	Meter	6	$ 1,600	$ 580	$ -	$ 939	$ 4,869
36	139	6-inch square Outlet	Van Palmer	12750 S	~4" Pump	1	$ 1,750	Meter	4	$ 1,400	$ 580	$ -	$ 939	$ 4,669
37	140	15 inch Outlet	Van Palmer	12749 S	Trapezoidal Channel	2B	$ 1,750	Level Sensor	-	$ 1,200	$ 580	$ 1,250	$ 1,564	$ 6,344
38	Mainline 3	Near 126th South			No Measurement	6	$ 1,750	Area Velocity	-	$ 3,500	$ -	$ -	$ -	$ 5,250
39	150	15-inch Outlet	Ken Fallor	12600 S	Pipe and Manhole - no meter	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
40	160	15-inch Outlet	Clay Butterfield	12500 S	Rectangular channel	2B	$ 1,750	Level Sensor	-	$ 1,200	$ 580	$ 1,250	$ 1,564	$ 6,344
41	170	15-inch Outlet	Rod Petersen	12200 S	Concrete Box with no measurement	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
42	179	24-inch Outlet	Scott Hill	11800 S	Pump Station with Meter	4	$ 1,750	None	-	$ -	$ -	$ -	$ -	$ 1,750
43	180	18-inch Outlet	Clay Butterfield	11800 S	Weir Box	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
44	182	24-inch Outlet	Raymond Garrison	11795 S	Weir Box	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
45	184	12-inch Outlet	Wayne Earl	11600 S	Pipe with no manhole or measurement	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
46	220	15-inch Outlet	Jack Mckee	10600 S	Weir Box	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
47	223	19-inch Outlet	Raymond Garrison	11795 S	Box with no Weir	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
48	224	12-inch Outlet	Tim Adams	10200 S	Pipe with no manhole or measurement	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
49	230	15-inch Outlet	Susan McGinnes	10195 S	Pipe with no manhole or measurement	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
50	235	15-inch Outlet	Raymond Garrison	11795 S	~6" Pump - No meter	1	$ 1,750	Meter	6	$ 1,600	$ 580	$ -	$ 939	$ 4,869
51	240	18-inch Outlet	Richard Scmidt	9800 S	Pipe with no manhole or measurement	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
52	243	15-inch Outlet	Raymond Garrison	11795 S	Weir Box	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
53	244	4-inch Pump	Kevin Sherman		Pump - No meter	1	$ 1,750	Meter	4	$ 1,400	$ 580	$ -	$ 939	$ 4,669
54	245	15-inch Pump	Raymond Garrison	11795 S	Weir Box	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
55	255	15-inch Outlet			Trapezoidal Channel	2B	$ 1,750	Level Sensor	-	$ 1,200	$ 580	$ 1,250	$ 1,564	$ 6,344
56	258	Pump (uphill side)	S.J. City/Terry Wright		Pipe with no manhole or measurement	1	$ 1,750	Meter	4	$ 1,400	$ 580	$ -	$ 939	$ 4,669
57	Mainline 4	Near 92nd South			No Measurement	6	$ 1,750	Area Velocity	-	$ 3,500	$ -	$ -	$ -	$ 5,250
58	300	24-inch Outlet	Brian Clegg (Casey)	8300 S	To South Jordan Pond on 24" Pipe (no measurement)	5	$ 1,750	Area Velocity	-	$ 3,500	$ 580	$ 1,207	$ 1,173	$ 8,210
59		South Jordan Pond Level Control			Automate gates with level sensor for pond control	0			-			$ 9,520		$ 9,520
60	300	24-inch Outlet		8300 S	Spill from pond to SJ Storm Drain (no measurement)	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
										SCADA				Physical Facilitie
					Welby Subtotal		$ 103,250			$ 129,350	$ 23,200	$ 35,125	$ 44,820	$ 335,745

Jacob Canal

	Turnout ID	Description	Manager	Address	Measurement Needs	Site Type	SCADA Equip and Install	Sensor Type	Meter Size	Sensor Cost	ADS Manhole	Meas. Structure	Labor	Site Subtotal
61	Mainline 1	Existing measurement structure at head of canal			Existing Flume	4	$ 1,750	None	-	$ -	$ -	$ -	$ -	$ 1,750
62	1	24-inch by 24-inch w/ concrete bridge			Existing Weir.	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
63	2	Pump Box (north side)	Holbrook Farms		6" Above ground movable pipe	1	$ 1,750	Meter	6	$ 1,600	$ 580	$ -	$ 939	$ 4,869
64	3	Pump Box (south side)	Holbrook Farms		~12 Buried Pipe. Needs manhole and Flume.	2A	$ 1,750	Level Sensor	-	$ 1,200	$ 580	$ 750	$ 1,564	$ 5,844
65	4	6-inch by 5-inch Box w/ 15-inch Outlet	Paul Hardman		Existing Flume. Needs stilling well.	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
66	5	15-inch Outlet	Stan Lewis		Existing Flume Needs stilling well.	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
67	6	18-inch & 48-inch pipe	Steve Smith		Existing Weir.	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
68	7	Outlet north of SR-73	Stan Lewis		Existing Weir.	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
69	8	18-inch Outlet near Fire Station			Existing Weir.	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
70	9	12-inch Outlet	Barlow		Existing box, but removable weir plate missing.	2A	$ 1,750	Level Sensor	-	$ 1,200	$ 580	$ 750	$ 1,564	$ 5,844
71	10	24-inch by 21-inch Outlet (south side)	Evans, Peterson		Existing Weir.	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
72	Canal Flume	Flume on Canal	N/A		Existing Flume. No stilling well.	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
73	11	21-inch Outlet to Upper Shiba Pond			Existing Flume. No Stilling Well.	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
74	12	Parshall Flume to LDS Pond. End of System.	LDS Church		Existing Parshall Flume with Stilling Well and Measurement Equip. from Scientific Campbell. Measurement Equipment no longer works.	3	$ 1,750	Level Sensor	-	$ 1,200	$ -	$ -	$ -	$ 2,950
75	Overflow	LDS Pond Overflow			No Measurement	2C	$ 1,750	Level Sensor	-	$ 1,200	$ 580	$ 2,000	$ 1,564	$ 7,094
										SCADA				Physical Facilitie
					Jacob Subtotal		$ 26,250			$ 17,200	$ 2,320	$ 3,500	$ 5,632	$ 54,902

SCADA Costs	$ 276,050
Physical Facilities Costs	$ 114,597
Software, Repeater Sites & System Setup Costs	$ 9,855
TOTAL CONSTRUCTION COSTS	$ 400,500

Appendix E

Probable Cost for Environmental Services

(Environmental and Cultural Resources Compliance)

WJWUC Water Efficiency Project

Probable Cost Estimate for Environmental Services

ITEM DESCRIPTION	HOURS	UNIT COST	TOTAL COST
Fieldwork - Archaeological Inventory			
Project Manager	50	$70.00	$3,500
Staff Archaeologist	50	$60.00	$3,000
		Subtotal	**$6,500**
Report Production, Site Forms & Maps			
Principal Investigator	30	$75.00	$2,250
Staff Archaeologist	30	$60.00	$1,800
		Subtotal	**$4,050**
Report Production, Site Forms & Maps			
SHPO - Division of State History File Search	1	$130.00	$130
Mileage	500	$0.56	$280
Field Equipment	15	$50.00	$750
Reproduction and Postage	4	$25.00	$100
		Subtotal	**$1,260**
		Total	**$11,810**

Appendix F
Proposed Schedule

Welby Jacob Canal Water Efficiency Project

PROJECT SCHEDULE