

YAKIMA RIVER BASIN

Small-Scale Water Efficiency Project

Application

Columbia Irrigation District Staff

7/30/2018

Columbia Irrigation District Lower Main Canal Automated Check Structures Project proposal and related information for Grant application pursuant to: Funding Opportunity Announcement No. BOR-DO-18-F009.

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I. Technical Proposal

A. Executive Summary

30 July 2018

Columbia Irrigation District

Kennewick, Benton County, Washington

Columbia Irrigation District (CID) is proposing the automation of two check structures in its main canal system. Along with adding flow meters to the Soggie pumping station. This will allow CID to better manage approximately 16% +/- of the annual water diversion for its system an estimated 9,600AF annually. The automation and measurement at these sites will allow CID to better monitor the usage and waste in the last 3.5 miles of the main canal. The increase in monitoring will allow CID to know how to make changes throughout the entire system to minimize waste at the tail-end. Through better management of this portion of the canal system the future annual water savings could be 2,246AF, if a target of 3 CFS or less is achieved once all planned improvement projects have been completed. Through the implementation of this project alone, the District hopes to achieve a savings of 906AF as result of more efficient changes in river diversion from the data and control this technology will render.

This project is located on District facilities and could be finished within the calendar year the funds are awarded. The project work will be conducted during the four months water is off. Giving a completion date on or around 10 March 2019 if started in the beginning of November.

B. Background Data

The CID was organized under Title 87 of the Revised Code of Washington as a quasi-municipal corporation. It currently operates under that title to supply irrigation water to over 9,500 acres within its 11,170 assessed acres. CID is an “on-demand” canal system, meaning there is no water ordering protocol for deliveries to patrons. It also has limited water usage metering due to its senior water right status, and lack of need throughout its history because of ample water supply most years.

CID was organized on 3 October 1917 for purpose of supplying and distributing irrigation water. However, the history of the infrastructure that it operates dates to 1888 when its predecessor, Yakima Irrigation & Improvement Company (YI&I) was formed in Yakima County of the then Territory of Washington. With money invested from stockholders, mostly from Niagara Falls, New York, the company was formed for these purposes:

1. To buy and sell lands in Washington Territory, and, to buy and sell all kinds of property; real, personal, and mixed;
2. To dig, construct, and operate ditches and canals for general irrigating, milling, and mining purposes;
3. To carry on a general farming, stock raising, and agricultural business; and
4. To build, construct, and operate mills of all kinds and manufacturing establishments for general milling and manufacturing purposes.

In 1889, the YI&I began constructions of its diversion structure (Horn Rapids Dam, aka Wanawish Dam) and the westerly portion of the current canal system. In 1891 the YI&I filed the original water right claim to divert 300Cfs from the Yakima River and staked its claim at the point on the south side of the river where the headgates are still located. In 1893, the Northern Pacific Railroad transferred ownership of 19,742 acres to the YI&I. Most of the acreage was within the present CID boundaries; however, a portion of the acreage was within the present Kennewick Irrigation District. Construction of the canal system proved to be costly and the YI&I frequently overran budgeted amounts which lead to continuous borrowing of moneys for the project. As lenders and stockholders grew more and more anxious about their investments the Cataract Bank in Niagara Falls called in the note on the company's debt. Driven by the fear of foreclosure the YI&I conveyed the deeds for the canals and all appurtenances to the newly formed Dell Haven Irrigation District. The pressures from investors continued to mount even after the transfer and in response to these pressures the leadership offered the investors bonds in the newly formed irrigation district in exchange for their YI&I stocks. The investors and lenders did not agree to the exchange and the Cataract Bank began legal action when payment of the note wasn't remitted. As a result, YI&I went into receivership in 1894, and since the Dell Haven Irrigation District didn't receive any money to operate in the plan it dissolved. Then, after the assets of YI&I were sold, several times, the deed to the canal system was transferred to Northwestern Improvement Company by the court. In 1904 Northern Pacific Irrigation Company, a branch of Northern Pacific Railroad, acquired the assets.

After dissatisfaction of the landowners due to the failure of completing the irrigation delivery system, and to ensure a timelier delivery of water to their land the CID was formed in 1917. The assets were transferred from Northern Pacific Irrigation Company to CID in 1918 and the remainder if the delivery system was completed in the following years.

The USBR operates the Yakima River based upon target flows for key points on the river and this has historically been satisfactory in making available CID's full instantaneous flows. However, the water availability down river in the system is ever decreasing due, in part, to water conservation upstream. CID operates as one of the most senior water rights on the Yakima River System and as such hasn't historically viewed modernization as a pressing need. Some of the decreasing inflows have been realized between the CID headworks and

the nearest target flow location have begun making the diversion of the full entitlement to CID patrons a difficult endeavor. Considering all this the CID Board of Directors now view modernization and water conservation as a top priority and are planning multiple projects to that end. The addition of these automated gates is the next step towards continued modernization and will provide valuable information for the next stages. Also, this project will lead to considerable water conservation in and of itself.

C. Technical Project Description

The automation of the lower main canal system will consist of installing Langemann (or similarly functional) gates on the end spillway of the canal and on the Soggie check structure, 3.5 miles from canal end. Also, installing magnetic flow meters to the Soggie LID pump station. The gate sites are currently operated as board checks with frequent monitoring by CID staff of canal level and waste flows. These board checks require frequent changes to maintain canal levels without running patrons dry or overflowing the canals.

D. Project Location



E.1.1 Evaluation Criterion A – Project Benefits

The installation of these gates will allow for better monitoring of canal levels and flows that are used to irrigate 1750 acres within the District. This increased monitoring will allow CID to more effectively make changes in diversions from the Yakima River at the canal headworks because the District will have more data regarding timing of patron water usage for the last 1750 acres of the system. Which currently is not monitored or compiled in any real way due to CID “on-demand” system setup that lacks water ordering, or metering for most turnouts on the canal system. With the increased understanding of usage at the tail end of the canal, flows from the river at the canal headworks can be reduced while still meeting the demand placed on the canal. Thus, improving the water availability for the entire system.

The flow measurement at the Soggie pumps will give vital information to the District regarding the usage at the largest canal diversion within this reach of canal. CID can then monitor and regulate the flows through this reach more effectively. Ensuring that the LID is within its allotted amounts of water at all times.

Then there is the potential for the leaving previously diverted instantaneous flow within the river itself. The District can only speculate at this point as to whether or not this would become a realized benefit, but it stands to reason that there will be some portion that, in time, will be left in river.

Another major project benefit is the reduction in the risk for canal breaches because the gates will monitor and adjust 24 hours per day. Currently we are taking readings and make adjustment twice per day and weather or call outs dictate the need to go out on over-time. This method, although common historically, is ever increasing in danger as our system becomes more and more residential. Residential patrons are less predictable as farm patrons, who typically water continuously during a set before turning off.

Lastly, there will be monetary savings thanks to the above mentioned 24 hour automatic monitoring and adjustments because the District will have a decreased need for overtime that manual operation has required.

E.1.2 Evaluation Criterion B –Planning Efforts Supporting the Project

The CID water conservation plan addressed the need for and conservation opportunity that automated gates could present the District. The Districts conservation plan considered multiple locations and the need to reduce spillage that automated gates would address. The end of the main canal is one of the locations it presents. The Soggie check location proposed in this application was not considered at the time of the conservation plan because the future location of a reregulation reservoir had not been determined. The location for such a reservoir has now been

determined and land for this purpose has been acquired 1,300 ft upstream of the Soggy check by the District.

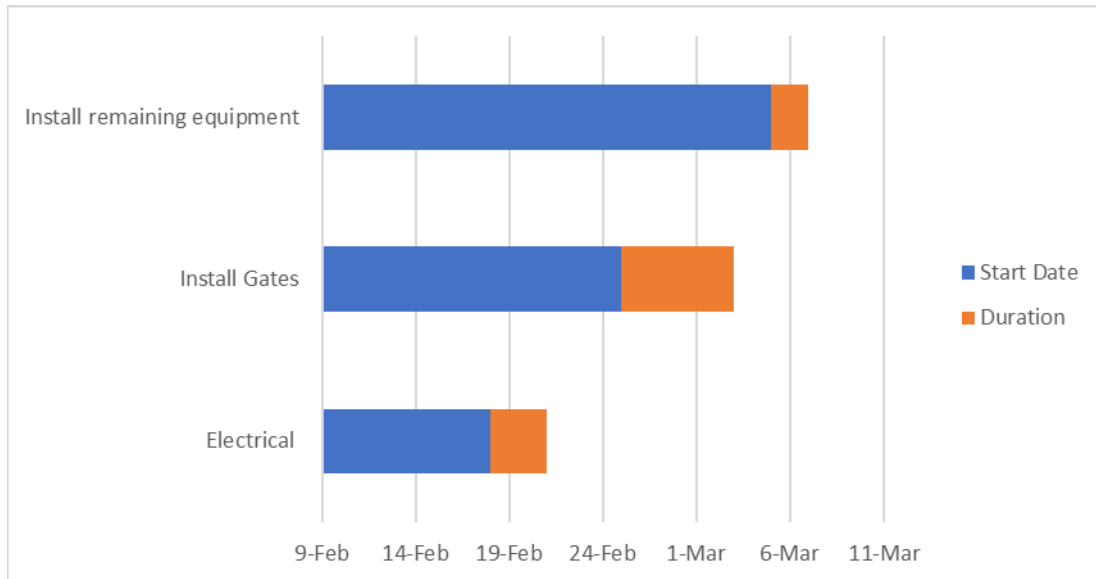
The reasons that the proposed project has been determined to be of high value and priority to the District are:

- 1) The District sees a need for real time and compiled data to more effectively manage the Districts wastes;
- 2) The reduction of spillage in which will make the District more sustainable;
- 3) And the need to modernize for reduction in labor costs.

E.1.3 Evaluation Criterion C – Project Implementation

Implementation of this project will be done in one phase. The gates will be installed by District staff with technical assistance provided by the manufacturer and the District engineer. The gates will all retrofit to existing structures and are delivered calibrated and pre-commissioned.

The implementation timeline with milestones and task is listed below:



E.1.4 Evaluation Criterion D – Nexus to Reclamation

CID is not directly connected to the USBR by a repayment contract. The District does have ties to USBR through the Yakima River Basin in several ways:

1. The CID is in the same river basin Kennewick Irrigation District (KID), Kittitas Reclamation District (KRD), Sunnyside Valley Irrigation District,

(SVID), Yakima-Tieton Irrigation District (YTID), Wapato Irrigation Project (WIP), as well as several non-USBR irrigation districts.

2. CID carries 6CFS in its canal system for Kennewick Irrigation District (KID).
3. The USBR operates and maintains the fish screen at CID headworks.

E.1.5 Evaluation Criterion E Department of the Interior Priorities

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

- a) The addition of these automated gates to the CID canals would be a giant step towards modernizing the water delivery system. The modernization of CID system will allow for better information on water usage as well as the timing of usage. Having more accurate information will allow CID to identify the best practices for managing the Districts water resource.

2. *Utilizing our natural resources*

- a) Through adoption of best practices, the District can adapt to future changes in the environment that will, without modernization, jeopardize the Districts ability to delivery water judiciously to all patrons.

3. *Restoring trust with local communities*

- a) The automated gates will improve the Districts ability to maintain safe water levels in the canal ensuring the availability of water while protecting the surrounding properties from overflowing canals that can erode property. This protection will make CID a better neighbor to its water users and the surrounding communities.

4. *Striking a regulatory balance*

- a) Automated gates on our canal system will reduce the administrative burden on CID patrons (i.e. the public) because there will be a reduced need for the field monitoring and regulating of the canal levels. This will reduce the monetary burdens placed on CID patrons for the salary expenses for field monitoring.

5. *Modernizing our infrastructure*

- a) The installation of automatic gates will fit into CID's modernization of its infrastructure and allow for further functionality of our SCADA system. These gates will be adding to our current system for monitoring and adjustments of the canal. This system will in the future allow for a re-regulation reservoir upstream that these gates will communicate with to regulate the flow to the tail end of our system. This will allow the District to conserve water and save money that would have been used to pay for manual monitoring and adjusting the water levels. The saved money can then be utilized to further the Districts' conservation and modernization goals.

II. Budget

A. Budget Plan

Funding Source	Amount
Non-Federal Entities	
* In-Kind	\$11,235.93
Reserves	\$57,248.85
Total Non-Federal Funding	\$68,484.78
Other Federal Entities	
Other Federal Total	\$0
Requested Reclamation Funding	\$68,484.77
Total Funding	\$136,969.54

Funding Source	% of Total Cost	Total Cost by Source
Recipient Funding	50%	\$68,484.78
Reclamation Funding	50%	\$68,484.77
Other Federal Funding	0%	
Totals	100%	\$136,969.54

B. Budget Proposal

Check Structure Automation Project Budget Narrative						
Check Structure Automation Project Budget Narrative						
Personnel/Equipment/Materials/sub-contractors	Hours	Miles	Cost per unit	sub total in-kind	sub total BOR	Project Total
Personnel						
Project Manager	30		\$39.66	\$1,189.80		\$1,189.80
Supervisors	17		\$30.82	\$523.94		\$523.94
Equipment Operators	56		\$26.97	\$1,510.32		\$1,510.32
Connections Crew	120		\$24.84	\$2,980.80		\$2,980.80
						\$0.00
Benefits 39%				\$2,109.65		\$2,109.65
Contractors						\$0.00
Electrical						\$0.00
						\$0.00
Equipment						\$0.00
CAT excavator	25		\$74.34	\$1,858.50		\$1,858.50
JD Backhoe				\$0.00		\$0.00
CAT Grader	4		\$77.65	\$310.60		\$310.60
pick-ups		550	\$0.40	\$220.00		\$220.00
truck & lowboy trailer	4		\$95.12	\$380.48		\$380.48
welder	16		\$9.49	\$151.84		\$151.84
						\$0.00
Materials						\$0.00
End canal Langemann Gate	1		\$43,000.00		\$43,000.00	\$43,000.00
Soggie Langemann Gates	2		\$35,000.00	\$49,588.19	\$20,411.82	\$70,000.01
8" Flow meter	1		\$1,710.00	\$3,420.00		\$3,420.00
sales tax			\$0.08	\$4,240.66	\$5,072.95	\$9,313.60
Source Sub total				\$68,484.78	\$68,484.77	\$136,969.54

C. Budget Narrative

The project manager will be Clancy Flynn and the Supervisor will be Pat Loftus. The current rates of pay for these individuals and for the crew are the rates listed in the budget proposal. These salaries are anticipated to have approximately a 3% increase effective October 2018 when the District's FY2019 budget is approved. The compliance hours for reporting are estimated at 25 and they are included in the total hours for the project manager.

The fringe benefits are the District's cost for health insurance, retirement and deferred compensation that the District offers as part of its compensation. These rates are used only for the purposes of the application.

III. Environmental Compliance

Will the project impact the surrounding environment? No.

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?

The District is not aware of any such species in the project area.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?"

The District is not aware of any such wetlands.

When was the water delivery system constructed?

Canals were originally constructed by 1917.

Will the project result in any modification of or effects, to individual features of an irrigation system?

Yes, we will be retrofitting new gates into board check slots.

Are there buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

The District does not have any currently listed, however, due to the age of certain features we may have some that would be eligible.

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

The District is not aware of any such sites.

Will the project have disproportionately high and adverse effects on the low income or minority populations?

No.

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

No.

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

No.

VI. Required Permits

There are no required permits because the work will all be done with current District facilities and Rights-of-Way.

VII. Appendices

i. Official Resolution

COLUMBIA IRRIGATION DISTRICT
End of Main Canal Automated Gates
Resolution 2018-4

WHEREAS, the Columbia Irrigation District has recognized an increased need for modernization; and

WHEREAS, said modernization will be a boon to decision making data; and

WHEREAS, said data will lead to reduced spillage; and

WHEREAS, the District has sites ready to be retrofitted with such technology to allow these benefits; and

WHEREAS, the Bureau of Reclamation has introduced available grants to help with small-scale efficiency projects;

NOW THEREFORE, BE IT RESOLVED that the Columbia Irrigation District authorizes a project to install automated gates at the end of the Main Canal and at the Soggie Check structure.

BE IT FURTHER RESOLVED that the Columbia Irrigation District authorizes the pursuit of Reclamation Small-Scale Water Efficiency monies to help cover the cost of said project.

Dated this 13th day of July 2018.

COLUMBIA IRRIGATION DISTRICT

A handwritten signature in black ink, appearing to read "Vincent Shawver", is written over a horizontal line.

Vincent Shawver, President



Kennewick

El Bowles Rd

397

Finley

S Pent Rd

El Riek Rd

S Finley Rd

Highland

KID Canal

End Canal Structure