



**COLORADO**

**Colorado Water  
Conservation Board**

Department of Natural Resources

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**TO:** Colorado Water Conservation Board Members

**FROM:** Jonathan Hernandez, P.E., Project Manager  
Kirk Russell, P.E., Finance Section Chief

**DATE:** July 19-20, 2017 Board Meeting

**AGENDA ITEM:** 23b. Water Project Loans  
Church Ditch Water Authority – Ditch System Improvements

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### Introduction

The Church Ditch Water Authority (Authority) is applying for a loan for the Ditch System Improvements (Project). The purpose of the Project is to make needed repairs to the Church Ditch system in order to improve operational efficiency and reduce maintenance requirements. The Authority has identified five high-priority projects and is seeking a CWCB loan to cover 100% of total Project costs, estimated at \$3,580,000. See attached Project Data Sheet for a location map and Project summary.

### Staff Recommendation

Staff recommends the Board approve a loan not to exceed \$3,615,800 (\$3,580,000 for Project costs and \$35,800 for the 1% service fee) to the Church Ditch Water Authority for costs related to the Ditch System Improvements Project, from the Construction Fund. The loan terms shall be 30 years at a blended interest rate of 3.0% per annum. Security for the loan shall be in compliance with CWCB Financial Policy #5.



## **Background**

The Authority operates the Church Ditch (Ditch), which serves 55 headgates from Golden to Arvada and Westminster in Jefferson County. The Ditch is 26-miles long and carries water from Clear Creek at its headworks in the mouth of Clear Creek Canyon to its terminus at Dry Creek Valley Ditch north of Standley Lake. The Ditch provides direct flow water for irrigation of livestock, hay crops, and municipal use. The Ditch has been in operation since 1865.

The Authority and Ecological Resource Consultants (ERC) created a Master Plan in 2009 to identify areas of the ditch system in need of maintenance, modification, or replacement. Since 2009, the Authority has been completing identified projects as time and budgets have allowed. This was interrupted when the 2013 flood in the South Platte occurred. In response to the flood damage, the Authority obtained an emergency CWCB Loan (Contract CT2015-014) and a FEMA Public Assistance grant for emergency repairs. The emergency loan is now in the repayment phase and the first annual payment is due December 1, 2017. The Authority has received a portion of its FEMA grant funds and is now waiting for FEMA to schedule the grant's Project Closeout Meeting to finalize the grant award and release the remaining grant funds.

Attention is now able to return to completing the goals of the 2009 Master Plan. Five projects have been identified as the highest-priority for the Authority over the next two years. The upgrades will improve operational efficiency and reduce maintenance requirements on the ditch system.

## **Loan Feasibility Study**

James Koehler, P.E., with ERC, prepared the Loan Feasibility Study titled, "Church Ditch Water Authority 2017-2019 Capital Improvement Projects: Leyden Flushing Structure, Headgate 53 Retaining Wall, Area 15 Ditch Lining, Ford Street Siphon, Legacy Farms Culvert," dated June 1, 2017. The feasibility study was prepared in accordance with CWCB guidelines and includes an analysis of alternatives and cost estimates. Audited financial statements were prepared by RSM US, LLP.

## **Borrower - Church Ditch Water Authority**

The cities of Northglenn and Westminster created the Authority pursuant to C.R.S. Section 29-1-204.2 through an Intergovernmental Agreement (IGA) and Establishing Contract dated October 24, 2004. The Authority has 97 inch-holders (Contractual Users) with a total of 5710.64 inches. The Authority's primary source of income is through carriage rate assessments, set by the Authority and charged to its Contractual Users. In addition to carriage rate assessments, the Authority receives revenue from separate IGAs with Northglenn, Westminster, and Arvada for a stormwater bypass near the termination of the Ditch, and by contracting the maintenance work for the Woman Creek Reservoir Authority.

Northglenn owns a two-thirds interest and Westminster owns a one-third interest in the Authority. The Contractual Users are not owners of the Authority but have the contractual right to receive the water rights owned by the Authority and are responsible for paying carriage rate assessments which are set by the Authority. The Authority is governed by a Board of Directors consisting of two Directors appointed by Northglenn, and one Director appointed by Westminster. The Authority's IGA and bylaws authorize the Board to exercise all powers of the Authority, including the power to incur debts. The debt obligations of the Authority are not obligations of Northglenn or Westminster. The Rules and Regulations of the Authority (amended December 2010) provide that the annual assessment must be paid prior to the delivery of water from the ditch.

## Water Rights

Table 1 shows the water rights diverted and carried by the Church Ditch for its Contractual Users.

**TABLE 1: IMPACTED WATER RIGHTS**

Name	Amount (cfs)	Appropriation Date	Adjudication Date	Water Court Case No.
Church Ditch	0.90	6/1/1862	10/4/1884	CA53941
Church Ditch	41.43	2/28/1865	10/4/1884	W9412
Church Ditch	1.25	5/16/1865	10/4/1884	CA53941
Church Ditch	18.26	11/18/1877	10/4/1884	W9412
Church Ditch	18.85	11/15/1878	10/4/1884	W9412
Church Ditch	32.34	11/20/1881	10/4/1884	W9412

Average annual diversions of the Authority are approximately 10,500 AF.

### Project Description

The purpose of the Project is to work towards the goals of the 2009 Master Plan. Each of the five identified projects had multiple alternatives identified and were evaluated based on cost, maintenance requirements, operational efficiency, ease of construction (including design and permitting), and longevity. Those alternatives are further described in the feasibility study. Once the Authority selected to preferred alternative for each project, timing of the repairs was then taken into consideration.

**Alternative 1 - No Action:** This alternative was not selected because each identified project is critical to the continued delivery of water.

**Alternative 2 - Repair/Replace as Structures Fail:** This alternative would take a reactive approach and repair the projects as they fail. Based on condition of the infrastructure this alternative assumes failure will occur in 5 years. With a 2% inflation over 5 years, and a 20% increase in construction cost because of the 'emergency' nature of construction, the projected cost in 5 years is estimated to be \$4,743,000. This alternative was not selected because of the increased cost and the likelihood of structures failing during the irrigation season which would disrupt water deliveries.

**Selected Alternative 3 - Repair/Replace within 2 Years:** This alternative lays out a 2 year plan to address the five most high-priority projects. The projects are summarized below:

1. **Leyden Creek Flushing Structure.** This project will repair a critical component of the water delivery infrastructure in order to maximize efficiency, ensure safety, and reduce maintenance in the ditch. The structure is designed to improve water quality and reduce maintenance by capturing and removing sediment and debris from the ditch as well as divert large quantities of storm water that may enter the ditch. The new structure will make removing sediment from the ditch easier, safer, and more effective. New concrete headwalls will be constructed as well as new access bridges and gates. Stop logs will be replaced with a modern slide gate, the old flush gate will be replaced with a new slide gate and an overshot gate to bypass flows more efficiently. Finally, security fencing will be added to protect the structure and limit trespassing. A cheaper alternative (~\$25,000) of simply patching the concrete and sealing gaps was ruled out because this work would only slightly extend the useful life, would not increase the efficiency of operations, and stop logs would still be laborious. The cost of this project is estimated to be \$205,500.

2. **Headgate 53 Retaining Wall.** This project will provide a means for the Authority to continue providing water by minimizing the potential for slope failure near Headgate 53. The retaining wall is a 1,500 LF concrete block wall holding back a steep and unstable ditch bank. During the 2013 flood this section was eroded and the temporary emergency repairs consisted of installing the concrete block wall. Work will now be done to improve the drainage behind the wall, and to reset and “stair step” the concrete blocks that have shown signs of movement since installation in 2014. Costs ruled out piping this section of ditch (~\$2 million). The cost of this project is estimated to be \$527,600.
3. **Area 15 Ditch Lining.** This project will reduce seepage along a 1 mile stretch of the ditch by lining with PVC or a similar liner along the existing ditch alignment. This area of the ditch is of concern as homes and businesses have been constructed adjacent to the ditch, with below-ground floors. Sump pumping and other dewatering by adjacent properties have resulted in increased water loss of the Authority. This project is an opportunity to limit water losses of the ditch and to limit the potential for damage to property adjacent to the ditch, and therefore possible claims against the ditch. Costs ruled out placing this section in a box culvert (~\$3.6 million). The cost of this project is estimated to be \$1,863,700.
4. **Ford Street Siphon.** This project will address concerns related to a 450 LF concrete pipe under Ford Street. This location is just downstream of the headgate so a failure would leave 99% of the Contractual Users without water. This fall, engineers will complete the inspection the 75 year old structure, and the Authority expects to find significant issues requiring the siphon to be replaced. This will be accomplished by slip lining the existing pipe with a slightly smaller pipe, with the annular space between the old and new pipe grouted to create a water tight seal. Hydraulic analysis will be completed during final design to verify the new pipe will be sufficient to carry ditch flows. Cost ruled out a full tear out and new placement of a siphon (~\$1 million), and temporary fixing the structure was considered unacceptable due to the critical nature of this infrastructure and the impact a failure would have. The cost of this project is estimated to be \$678,100.
5. **Legacy Farms Culvert.** This project will increase conveyance capacity, reduce maintenance, and prevent potential flooding along a section of ditch near Legacy Farms by replacing an existing 200 LF 60-inch corrugated metal pipe (CMP) with a new 8'x5' box culvert (final size to be determined in final design). The existing CMP culvert was installed in 2010 as an emergency maintenance project however the pipe was improperly size and is now a bottleneck in the ditch system. An alternative of removing the CMP and returning the section to a ditch was ruled out because an open channel has proven to cause maintenance issues due to storm water runoff from the road causing major erosion to the ditch bank. The cost of this project is estimated to be \$305,100.

The total cost associated with the Project is shown in Table 2.

TABLE 2: ESTIMATED PROJECT COST

Project	Construction	Engineering & Const. Mgmt.	Contingency	Total
Leyden Creek Flushing Structure	\$162,400	\$18,500	\$24,600	\$205,500
Headgate 53 Retaining Wall	\$417,000	\$47,400	\$63,200	\$527,600
Area 15 Ditch Lining	\$1,473,100	\$167,400	\$223,200	\$1,863,700
Ford Street Siphon	\$536,000	\$60,900	\$81,200	\$678,100
Legacy Farms Culvert	\$241,200	\$27,400	\$36,500	\$305,100
<b>TOTAL</b>	<b>\$2,829,700</b>	<b>\$321,600</b>	<b>\$428,700</b>	<b>\$3,580,000</b>

**Permitting:** All necessary easements and rights-of-way are in place except for in the area around the Ford Street siphon, where close coordination with City of Golden and associated permits will be required. Authority will confirm with the US Army Corps of Engineers that planned work is exempt from 404 permitting under the ditch maintenance exemption. Where applicable, local floodplain, grading and stormwater erosion control permits will be obtained prior to start of construction.

**Schedule:** Construction will occur during the non-irrigation season to limit disruption of water deliveries. The Leyden Flushing Structure and Headgate 53 Retaining Wall projects will be constructed after the 2017 irrigation season. The Area 15 Ditch Lining, Ford Street Siphon, and Legacy Farms Culvert will be completed after the 2018 irrigation season.

#### Financial Analysis

Table 3 provides a summary of the Project's financial aspects. The Authority qualifies for a blended interest rate of 3.0% for a 30-year term (ownership: 67% mid municipal, 33% high municipal). The Authority has a strong savings account, currently \$1.28 million. Of this amount, \$350k is reserved for emergency funding, and the rest is reserved for additional projects that are less critical as the five projects this loan will cover, and will therefore be accomplished after this Project. In anticipation of this Project, assessments were raised from \$90 to \$135 per inch in 2015.

TABLE 3: FINANCIAL SUMMARY

Total Project Cost	\$3,580,000
CWCB Loan Amount	\$3,580,000
CWCB Loan Amount (Including 1% Service Fee)	\$3,615,800
CWCB Annual Loan Payment	\$184,475
CWCB Annual Loan Obligation (1 <sup>st</sup> Ten Years)	\$202,923
Number of Inches	5710.64
Annual Obligation per Inch	\$35.53/inch
Current Assessment per Inch	\$135
Annual Obligation per AF of Deliveries (10,500 AF)	\$19.33/AF

**Creditworthiness:** The Authority has \$230,951 in existing debt made up of one CWCB Emergency Loan as shown in Table 4. That loan originally had a balance of \$591,179, but the Authority applied \$360,228 in FEMA grant funds to the principal balance.

TABLE 4: EXISTING DEBT

Lender	Original Balance	Current Balance	Annual Payments	Maturity Date	Collateral
CWCB (CT2015-014)	\$591,179	\$230,951	\$12,378	2043	Assessment Revenues

TABLE 5: FINANCIAL RATIOS

Financial Ratio	Past 2 Years	Future w/ Project <sup>1</sup>
Operating Ratio (revenues/expenses) weak: <100% - average: 100% - 120% - strong: >120%	196% (strong) \$856K/\$437K	131% (strong) \$856K/\$654K
Debt Service Coverage Ratio (revenues-expenses)/debt service weak: <100% - average: 100% - 120% - strong: >120%	NA <sup>1</sup>	193% (strong) (\$856K-\$437K) \$217K
Cash Reserves to Current Expenses weak: <50% - average: 50% - 100% - strong: >100%	293% (strong) \$1.28M/\$437K	196% (strong) \$1.28M/\$654K
Annual Operating Cost per Acre-Foot (10,500 AF) weak: >\$20 - average: \$10 - \$20 - strong: <\$10	\$42 (weak) \$437K/10.5K AF	\$62 (weak) \$654K/10.5K AF

<sup>1</sup>First annual payment on emergency loan is not due until December 2017.

**Collateral:** Security for this loan will be a pledge of assessment revenues back by a rate covenant and the Ford Street Siphon. This security is in compliance with the CWCB Financial Policy #5 (Collateral).

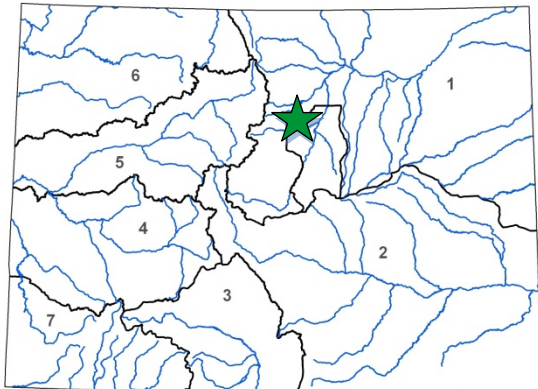
cc: Nathan McCoy, General Manager, Church Ditch Water Authority  
 Andy Nicewicz, Colorado Attorney General's Office

Attachment: Water Project Loan Program - Project Data Sheet





L O A N   D E T A I L S	
Project Cost:	\$3,580,000
CWCB Loan (with Service Fee):	\$3,615,800
Loan Term and Interest Rate:	30 Years @ 3.0%
Funding Source:	Construction Fund
B O R R O W E R   T Y P E	
Agriculture	Municipal      Commercial
0%	0% Low - 33% Mid - 67% High      0%
P R O J E C T   D E T A I L S	
Project Type:	Ditch Rehabilitation
Average Annual Delivery:	10,500 AF



L O C A T I O N	
County:	Jefferson
Water Source:	Clear Creek
Drainage Basin:	South Platte
Division:	1      District: 7

The Authority was formed in 2004 by the cities of Northglenn and Westminster to operate the Church Ditch. The ditch is 26-miles long and carries water from its headgate in Clear Creek, near Golden, through Jefferson County until it ends near the intersection of 100<sup>th</sup> Ave and Simms St at the Wilson Flume. There are 97 Contractual Users who receive water from the ditch.

The Authority and Ecological Resource Consultants (ERC) created a Master Plan in 2009 to identify areas in need of maintenance, modification, or replacement. Since 2009, the Authority has been completing identified projects as time and budgets have allowed. Currently, the following five projects have been identified as the highest priority for the Authority over the next two years. (1) The Leyden Creek Flushing Structure will replace the aging structure and improve efficiency, safety, and maintenance. (2) The Headgate 53 Retaining Wall project will repair a concrete block wall which was installed as an emergency fix due to the 2013 flood. (3) The Area 15 Ditch Lining will line a section of ditch where the dewatering by new homes and businesses adjacent to the ditch are causing increased water loss in the ditch. (4) The Ford Street Siphon will address a 75 year old culvert that is at or near the end of its expected lifespan. Finally (5) the Legacy Farms Culvert will replace an undersized culvert which is currently creating a bottleneck.

All projects will be constructed during the non-irrigation season and are planned to be complete by spring of 2019.

