COLORADO
Colorado Water Conservation Board
Department of Natural Resources

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TO: Colorado Water Conservation Board Members

FROM: Derek Johnson, P.E., Project Manager
Kirk Russell, P.E., Finance Section Chief

DATE: November 19-20, 2014 Board Meeting

AGENDA ITEM: 27d. Water Project Loan
Las Animas Consolidated Canal Company
Repair & Replacement of Canal Spillway Structure

Introduction

The Las Animas Consolidated Canal Company (Company) is applying for a loan for the construction of the *Repair & Replacement of Canal Spillway Structure* Project (Project). The Company operates a spillway structure that permits diversions further downstream into their ditch system, or river return flows. This structure was heavily damaged by a localized nighttime thunderstorm in April 2014. Temporary measures have been put in place to maintain operations, but the Company seeks a long-term solution by replacement with a new and improved spillway structure at the same location.

The total Project cost is estimated at $400,200. The Company is requesting a loan to cover 90% of the Project cost. See the attached Project Data Sheet for a location map and project summary.

Staff Recommendation

Staff recommends the Board approve a loan not to exceed $363,782 ($360,180 for project costs and $3,602 for the 1% Loan Service Fee) to the Las Animas Consolidated Canal Company for costs associated with design and construction of the *Repair & Replacement of Canal Spillway Structure* Project from the Severance Tax Perpetual Base Fund. The loan terms shall be 30 years at the blended rate of 5.05% per annum. Security for the loan shall be in compliance with CWCB Financial Policy #5.

Staff additionally recommends a contract condition that, upon payment towards outstanding principal representing the non-agricultural Company share of the final accumulated loan amount (including the 1% Loan Service Fee), the loan interest rate shall be amended down to the agricultural rate of 2% per annum.

Background
The Company, located in Bent County, Colorado, provides irrigation water to approximately 5,600 acres of land in the vicinity of Las Animas, Colorado. The Company, along with the Consolidated Extension Canal Company, owns and operates the Las Animas ditch diversion dam, located approximately one mile west of the spillway structure. The diversion dam, itself a previous CWCB financed project, is located on the Arkansas River approximately 11 miles east of La Junta and about seven miles west of Las Animas. Water is conveyed through the head gates of the Las Animas Consolidated Canal Company canal in an easterly direction to a siphon under the Purgatoire River, ultimately tailing into John Martin Reservoir.

A significant, localized thunderstorm occurred during the night in April 2014, which created heavy runoff that flowed into the canal downstream of the Company's main canal headgate, through several uncontrolled and ungaged tributaries. These flows exceeded the capacity of the existing spillway structure at the river return, causing the structure to be overtopped and undermined, and resulted in its catastrophic failure. While temporary measures have been put in place to keep the ditch in operation, a long term solution is being sought. The Company is seeking to replace the spillway structure with an improved and modernized structure similar to the original design, but with additional control and safety measures to allow automated canal operations, including automated responses to similar flooding conditions in the future. Modernization of this structure will improve routine canal operations and safety, in addition to mitigating future canal failure risk.

Loan Feasibility Study
Richard L. Belt, P.E., Senior Water Resources Analyst at Xcel Energy, prepared the Feasibility Study, titled "*Repair and Replacement of the Las Animas Consolidated Canal Spillway Structure*" and dated September 2014, for this project. The study was prepared in accordance with CWCB guidelines and includes preliminary engineering, alternate analysis, and an engineers' estimate of probable costs used in determination of total project costs.

Las Animas Consolidated Canal Company
The Company is a non-profit mutual ditch company incorporated in 1941, and is currently in good standing with the Secretary of State. The ditch has been in existence since the 1870s, when the most senior water rights were appropriated. The Company is managed by a five-member board of directors. The board has the power to enter into contracts, to cut off water deliveries to shareholders who fail to pay their assessments, to make assessments, and to offer stock for sale to pay back assessments.

There are 10 shareholders and 562 shares of stock. Xcel Energy owns 430 shares (76.57%) of the Company and leases all of its water to local irrigators for agricultural use. 132 shares (23.43%) are owned by agricultural users. Xcel Energy has committed to pay for its portion of the Project costs from its capital reserves at substantial completion of the project. The remaining Project funding will come from the Company.

Water Rights

The Company's annual diversions have ranged from about 8,000 to nearly 42,500 acre-feet, but average approximately 26,000 acre-feet. Its water rights are listed in the following Table 1:

TABLE 1: IMPACTED WATER RIGHTS

Name	Amount	Appropriation Date	Adjudication Date
LAS ANIMAS CONSOLIDATED	22.3 CFS	4-10-1875	4-8-1905
CATLIN CANAL	22.0 CFS	12-3-1884	4-8-1905
LAS ANIMAS CONSOLIDATED	80.0 CFS	3-13-1888	4-8-1905
LAS ANIMAS CONSOLIDATED	5.5 CFS	3-7-1884	4-8-1905
LAS ANIMAS CONSOLIDATED	44.8 CFS	4-15-1909	8-30-1922

Project Description

The spillway structure that was destroyed is believed to have been constructed in the early 1920s. It was comprised of three major parts: three canal control gates, a radial gate to flush sediment, and a spillway to control flow and level upstream of the canal measurement flume.

Following the failure of the spillway structure earlier this year, a temporary earthen plug and spillway structure was constructed in the existing canal so that the Company could continue to operate through the irrigation season.

To determine a best course of action to restore full function of the ditch and structure, four rehabilitation alternatives were evaluated:

Alternative No. 1 – No-action:

The "No Action" alternative is not preferred because of the deficiencies associated with the temporary repair. With relatively minor modifications, it is possible that the temporary repair could be used for a few more irrigation seasons without endangering the canal, but it is not a permanent solution.

Alternative No. 2 – Modify Existing Temporary Structure:

The second alternative would be to modify the existing temporary structure to improve functionality. First, a slide gate should be added to the level control outlet pipe to allow sediment to be flushed through the spillway. This would also allow the ditch superintendent additional control over river returns. Second, an alternative trash rack design (beehive or similar) could be used on the level control to improve debris removal. An access bridge would also improve access to the level control for maintenance and allow operation of the proposed gate. Finally, the existing failed concrete spillway would be demolished and removed, and additional stabilization added to the canal banks and earthen plug. The total cost for this alternative was estimated to be approximately $61,000. This alternative was not selected since, while not a temporary solution, it would not have the longevity and resilience as available in the following options.

Alternative No. 3 – Demolish spillway structure but reuse existing radial gate:

The third alternative would be to demolish and rebuild the entire spillway structure utilizing the existing radial gate. The proposed structure would be a complete in-kind replacement of the structure and include two new 4-foot x 4-foot slide gates at the head of the canal, and a new concrete spillway with access bridge. The existing structure and temporary repair would be demolished and removed. The new structure would be constructed in the same location with an improved foundation and tie-in to the canal bed and banks. The existing radial gate would be reused to allow sediment flushing and the canal to spill in the event of emergency. The proposed structure would include stop log slots around all gates to allow for operational flexibility and ease of maintenance. The primary drawback of this alternate is that it will be difficult to maintain a watertight seal using the existing radial gate, and

that the rate of leakage will be unacceptable in a water-short ditch suffering from prolonged drought. The total estimated cost for Alternative 3 is approximately $330,000.

***Selected Alternative No. 4 - New spillway, slide gates, and new overshot gate*:**
The fourth and preferred alternative would be to demolish and rebuild the entire spillway structure employing an automated overshot gate in-lieu of the existing radial gate. An overshot gate offers a number of advantages over a radial gate in this application. First, an automated overshot gate would allow water control over a range of elevations, maintaining consistent canal deliveries at the Company's in-priority diversion rate. Second, an automated overshot gate would include high-water alarms to allow the gate to respond to upstream flooding by spilling the ditch. The alarms would also include automated notifications to the ditch superintendent. Third, an overshot gate would also be lowered to flush sediment from the canal. Construction of this alternative is estimated to take approximately 2 to 3 months, and would be completed during the 2015 off-season. The total estimate cost for Alternative 4 is approximately $400,200

Schedule:
The Company anticipates the following Project schedule; however, unanticipated delays could cause the Project to be delayed until the 2015/2016 off-season.

Task	Target Completion Date
CWCB Loan Approval	November 2014
Complete Engineering Design	Early 2015
Contractor Selection	Early 2015
Contractor Mobilization	Winter/Early Spring, 2015
Construction Complete	Spring 2015
Begin Irrigation Diversions	Spring 2015

TABLE 1: ESTIMATED PROJECT COSTS

Construction	$ 286,038
Engineering	$ 34,000
Subtotal	$ 320,038
Contingencies (25%)	$ 80,162
Total	$ 400,200

Financial Analysis
The Company has shares held by a mix of 76.57% commercial by Xcel Energy, and 23.43% agricultural shareholders, and thus qualifies for a blended interest rate of 5.05% for 30 years. To minimize the effect of the commercial interest rate on the agricultural borrowers, Xcel has agreed to pay 76.57% of the final loan amount upon substantial completion. The Company would then qualify for a 2% agricultural interest rate as only the agricultural users will be paying for the annual payments of the loan.

TABLE 2: FINANCIAL SUMMARY

	w/o Xcel Reimbursement	W/ Xcel Reimbursement
Total Project Cost	$ 400,200	$ 400,200
Borrowers Contribution (10%)	$ 40,020	$ 40,020
Loan Amount (90%)	$ 360,180	$ 360,180
Loan Amount (including 1% Service Fee)	$ 363,782	$ 363,782
Xcel's Responsibility on Loan Amount (76.57%)	NA	$ 278,548
Final Loan Amount (Amended)	$ 363,782	$ 85,234
Loan Apr	5.05%	2.00%
Annual Loan Payment	$ 23,800	$ 3,806
Annual Loan Obligation (1st Ten Years)	$ 26,180	$ 4,186
Applicable Shares	562	132
Annual Loan Obligation Per Share	$ 46.58	$ 31.71
Current Assessment Per Xcel Share	$90.00	$90.00
Current Assessment Per Non-Xcel Share	$104.25	$104.25
Future Assessment Per Xcel Share	$116.13	$90.00
Future Assessment Per Non-Xcel Share	$134.51	$104.25

Creditworthiness: The Company's debt coverage ratio is strong, and no increase in assessments is needed to cover the project debt service, after the principle balance is paid by Xcel Energy.

The Company has a credit history with the CWCB on loan C150307, having made 3 payments on time as of this memorandum.

TABLE 3: EXISTING DEBT

Loan	Maturity Date	Original Balance	Remaining Balance	Annual Payment	Collateral
CWCB Loan C150307	6/1/2041	$77,265	$71,146.76	$3,815.69	Revenue pledge

TABLE 4: FINANCIAL RATIOS

Financial Ratio	Past 3 Years	Future[2] w/ Project $363.8K loan @5.05%	Future[1] w/ Project $86.1K loan @2%
Operating Ratio (revenues/expenses) weak: <100% - average: 100% - 120% - strong: >120%	123% (strong) $60,138K / $48,907K	100% (average) $75,366K / $75,087K	113% (average) $60,138K / $53,135K
Debt Service Coverage Ratio (revenues-expenses)/debt service weak: <100% - average: 100% - 120% - strong: >120%	738% (strong) ($60,138K- $47,146K) / $1,761K	101% (average) ($75,366K- $47,146K) / $27,941K	217% (strong) ($60,138K- $47,146K) / $5,989K
Cash Reserves to Current Expenses weak: <50% - average: 50% - 100% - strong: >100%	153% (strong) $75,056K / $48,907K	47% (weak) $35,036K / $75,087K	66% (average) $35,036K / $53,135K
Annual Operating Cost per Acre-Foot (26,000 AF) weak: >$20 - average: $10 - $20 - strong: <$10	$1.88 (strong) $48.9K/26k AF	$2.89 (strong) $75.1K/26K AF	$2.04 (strong) $53.1K/26K AF

Notes:

1. *Applicability of the 2% agricultural rate will be conditional on full payment of Xcel Energy's 77% share of the project upon substantial completion. No increase in assessments is required to meet the ratios shown for this option.*
2. *Financial ratios as shown in the event of non-payment by Xcel at substantial completion will require increased assessments on the order of $27 per share.*

Collateral: As security for the loan, the Company will pledge assessment revenues and the project itself in compliance with the CWCB Financial Policy #5 (Collateral).

cc: Richard L. Belt, P.E., P.H., Senior Water Resources Analyst, Xcel Energy
Susan Schneider/Jennifer Mele, Colorado Attorney General's Office

Attachment: Project Data Sheet

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Repair & Replacement of the Las Animas Consolidated Canal Spillway Structure

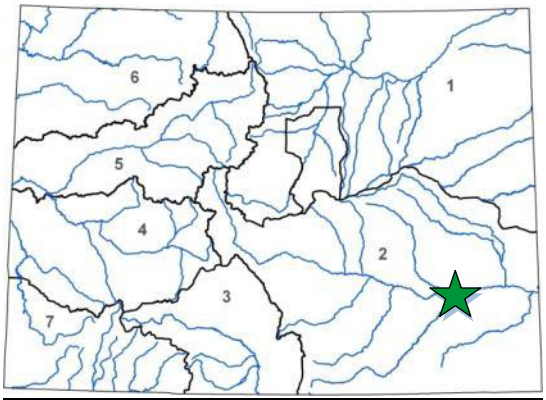
Las Animas Consolidated Canal Company

November **2014 Board Meeting**

LOAN DETAILS	
Project Cost:	$ 400,200
CWCB Loan (with Service Fee):	$ 363,782
Loan Term and Interest Rate:	30 Years @ 5.05%
Funding Source:	

BORROWER TYPE		
Agriculture	*Municipal*	*Commercial*
23%	0%	77%

PROJECT DETAILS	
Project Type:	Spillway Structure Replacement
Average Annual Diversion:	26,000 AF



LOCATION			
County:			Bent
Water Source:			Arkansas River
Drainage Basin:			Arkansas
Division:	2	*District:*	17

The Las Animas Consolidated Canal Company and the Consolidated Extension Canal Company were formed in the mid-1870s and together have continuously operated to irrigate 8,300 acres of land in the vicinity of Las Animas, Colorado. A significant, localized thunderstorm occurred during the night in April 2014, which created heavy runoff which flowed into the canal downstream of the main canal headgate through several uncontrolled and ungaged tributaries. These flows exceeded the capacity of the existing spillway structure at the river return, caused the structure to be overtopped and undermined, and resulted in catastrophic failure of the existing structure. While temporary measures have been put in place to keep the ditch in operation, a long-term solution is being sought. The Company is seeking to replace the spillway structure with an improved and modernized structure similar to the original design, but with additional control and safety measures to allow automated canal operations, including response to similar flooding conditions in the future. Modernization of this structure will improve routine canal operations and safety, in addition to mitigating future canal failure risk.