STATE OF COLORADO

Colorado Water Conservation Board
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TO: Colorado Water Conservation Board Members

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

DATE: July 3, 2013

SUBJECT: **Agenda Item 25c, July 16-17, 2013 Board Meeting**
Finance – New Water Project Loans
Henrylyn Irrigation District – Prospect Reservoir Dam Facing Project

Introduction

The Henrylyn Irrigation District (District) is applying for a loan for the Prospect Reservoir Dam Facing Project (Project). The purpose of the Project is to increase the stability and erosion protection of the dam. The total Project cost is estimated to be $3,264,400. The District is requesting a loan from the CWCB for approximately 90% of Project costs. See attached Project Data Sheet for a location map and project summary.

Staff Recommendation

Staff recommends the Board approve a loan not to exceed $2,967,279 ($2,937,900 for project cost and $29,379 for the 1% service fee) to the Henrylyn Irrigation District for engineering and construction costs related to the Prospect Reservoir Dam Facing Project from the Construction Fund. The loan terms shall be 30 years at the agricultural rate of 1.75% per annum. Security for the loan shall be in compliance with CWCB Financial Policy #5.

Background

The District's service area consists of 32,745 acres of irrigated farm land in Weld County. The service area starts about 2 miles west of Hudson and extends generally east and south along I-76, to about 9 miles east of Keenesburg. The irrigated acreage within the service area is primarily used to grow corn, beans, sugar beets, wheat, barley, sunflowers, alfalfa and grass hay.

The District's direct flow water is diverted at the Burlington Canal Headgate and continues 16 miles to and past Barr Lake. It then continues 25 miles in the Denver Hudson Canal to Horse Creek Reservoir, and from there continues another 25 miles to Prospect Reservoir.

Prospect Reservoir is located about 8 miles southeast of the Town of Hudson. This off-stream reservoir was constructed in 1914. The homogeneous earth-fill dam is classified as a Significant Hazard Large (Class 2) Dam (property damage but no loss of life expected in the event of failure), and has a dam height of 45 feet, a crest width of 18 feet, and a length of 5,300 lineal feet. The dam embankment failed in 1980 and the reservoir dam embankment, the spillway, and outlet works have all undergone several rehabilitations over the years to address problems that have developed. The latest rehabilitation was in 2011 and 2012 with the repair and lining of the outlet conduit; the construction of a downstream stability berm in the main portion of the dam; the repair and extension of the downstream end of the outlet conduit; the repair of existing toe drains; and the installation of new toe drains.

Loan Feasibility Study

The Loan Feasibility Study titled "Feasibility Study for Prospect Reservoir Dam Facing Project," dated May 2013, was prepared for the District by Duane Smith, P.E. with Smith Geotechnical with assistance from Engineering Analytics, Inc. The study includes an alternative analysis, and preliminary engineering design and cost estimates. Smith Geotechnical also prepared an additional study, "Geotechnical Investigation for Prospect Dam," dated March 2011, that was provided with the Loan Feasibility Study. The study was prepared in accordance with the CWCB guidelines

Borrower - Henrylyn Irrigation District

The District was formed on October 7, 1907 by order of the Weld County Commissioners and operates as an Irrigation District under the Irrigation District Law of 1905. The District office is located in Hudson, Colorado. The District levies an acreage assessment based on benefits received, but there is no mill levy assessment. The Weld County Treasurer serves as the ex officio District Treasurer and collects and distributes assessments, in the same manner as property taxes are collected. Income comes from acreage assessment fees and other miscellaneous fees such as water leases and agreements.

The District may refuse delivery of water to lands until all past due or delinquent assessments have been paid in full. Because this loan contract exceeds $400,000, the Irrigation District Law of 1905 requires the District to hold a special election of the legal electors in the district to authorize and ratify the contract in the manner provided for the issue of bonds. The District is set to hold a special election to obtain voter approval of this loan on July 15, 2013.

Water Rights

The District owns 123 shares (or 5.8%) in the Burlington Ditch, Reservoir and Land Company and 560 shares (or 20.30%) in FRICO, Barr Lake Division. In addition, the District has the following direct flow and reservoir storage decrees:

TABLE 1: DIRECT FLOW WATER RIGHTS

Name	Amount (CFS)	Appropriation Date	Adjudication Date
Denver-Hudson Canal	300	11/28/1907	11/12/1924
South Platte and Sand Creek	100	8/6/1976	7/10/1989

TABLE 2: STORAGE WATER RIGHTS

Reservoir	Storage (AF)	Appropriation Date	Adjudication Date
Horse Creek Reservoir	16,965	3/17/1911	11/12/1924
Horse Creek Reservoir	2,550	7/20/1922	11/12/1924
Prospect Reservoir	5,970	11/21/1910	11/12/1924
Prospect Reservoir	1,690	7/20/1922	11/12/1924
Olds Reservoir	534	1/28/1918	11/12/1924
Olds Reservoir	548	6/15/1922	11/12/1924
Lord Reservoir	775	6/4/1906	11/20/1897

Average annual District diversions are 39,950 AF.

Project Description

The Prospect Reservoir Dam has been repaired and modified several times dues to many problems and deficiencies that remained from original construction, and an embankment failure in 1980. The remaining major component that is in need of repair is the upstream concrete slope protection facing. The concrete is in poor condition with much of it deteriorated to the point that it can be broken by hand. The existing concrete is about 6-inches thick, has no drain gravel or filter to protect the subgrade, and has no waterstop to impede erosion of the subgrade at the joints. The upstream slope on the dam is at 2:1 or steeper and if not for the concrete facing would not meet the criteria of the State Engineer's Office (SEO) Dam Safety Branch.

The objective of this project is to rehabilitate the upslope side of the dam to increase both the erosion protection and the stability of the dam. Four alternatives were considered:

Alternative No. 1 – Do Nothing: This alternative was not considered to be a viable alternative for properly maintaining this dam.

Alternative No. 2 – Riprap Slope Protection with 2:1 Slope: This alternative consists of removing the existing concrete facing, leaving the existing upstream 2 horizontal to 1 vertical slope in place, and the placement of 36-inches of riprap over 6-inches of gravel riprap bedding. This alternative meets all project goals but may not receive approval from the SEO as a 2:1 slope with riprap protection does not meet their standard. This alternative has an estimated project cost of $2,675,000.

Alternative No. 3 – Concrete Slope Protection with 2:1 Slope: This alternative consists of leaving the existing 2 horizontal to 1 vertical slope in place and replacing the existing concrete facing with a new 6-inch reinforced concrete facing. This alternative meets all project goals, meets SEO standards, and has an estimated project cost of $4,293,300.

Selected Alternative No. 4 – Riprap Slope Protection with 3:1 Slope: This alternative consists of removing the existing concrete facing, flattening the upstream slope to a 3 horizontal to 1 vertical slope angle, and the placement of 24-inches of riprap over 6-inches of gravel riprap bedding. This alternative meets all project goals, meets SEO standards, and has an estimated project cost of $3,264,400.

Though this alternative is not the lowest in cost, it is the alternative that fully meets the Project's goals. A summary of the cost is shown in the table below:

TABLE 3: TOTAL PROJECT COST SUMMARY

Task	Cost
Engineering	$398,700
Construction	$2,491,900
Construction Contingency (15%)	$373,800
Total	$3,264,400

Schedule: The District anticipates the final engineering design to be completed by July 2013 with construction starting by September 2013. Substantial Completion is estimated to occur by December 31, 2013.

Financial Analysis

Table 4 provides a summary of the Project's financial aspects. The term of the loan will be 30-years and the interest rate will be the agricultural rate of 1.75%.

TABLE 4: FINANCIAL SUMMARY

Total Project Cost	$3,264,400
Borrower Match (10% of total Project cost)	$326,500
CWCB Loan Amount (90% of total Project cost)	$2,937,900
CWCB Loan Amount (Including 1% Service Fee)	$2,967,279
CWCB Annual Loan Payment	$127,978
CWCB Loan Obligation (Including 10% Reserve)	$140,776
Project cost per reservoir storage (7,480 AF decreed storage)	$436/AF
Number of Assessed Acres	35,086.8
Current Assessment per Acre	$18/AF
Future Assessment per Acre (no change)	$18/AF

Creditworthiness: The District has $2,370,549 in existing debt made up of two existing CWCB loans as summarized in Table 5. These loans are in good standing. Additionally in July 2012 the District paid in full a third CWCB Loan (C153357).

TABLE 5: EXISTING DEBT

Lender	Original Balance	Current Balance	2013 Payment	Maturity Date	Collateral
CWCB (Contract C153328)	$653,000	$219,952	$28,249	2021	1/10 interest in Prospect Reservoir
CWCB (Contract C150252)	$2,184,327	$2,150,597	$100,915	2043	Annual assessment revenues; 1/10 interest in Horse Creek Reservoir; 1/10 interest in Prospect Reservoir

TABLE 6: FINANCIAL RATIOS

Financial Ratio	Past 2 Years	Future w/ Project
Operating Ratio (revenues/expenses) weak: <100% - average: 100% - 120% - strong: >120%	117% (Strong) $1.45M/$1.32M	99% (Weak)* $1.45M/$1.46M
Debt Service Coverage Ratio (revenues-expenses)/debt service weak: <100% - average: 100% - 120% - strong: >120%	200% (Strong) $1.45M-$1.19M $0.13M	96% (Weak)* $1.45M-$1.19M $0.27M
Cash Reserves to Current Expenses weak: <50% - average: 50% - 100% - strong: >100%	175% (Strong) $2.3M/$1.32M	145% (Strong) $2.1M/$1.46M
Annual Operating Cost per Acre-Foot (39,950 AF) weak: >$20 - average: $10 - $20 - strong: <$10	$33 (Weak) $1.32M/40k AF	$37 (Weak) $1.46M/40k AF

** District's Projections show a yearly operating loss of $8,000 until 2021 at which time the District will experience yearly net gains of $20,000. The District is choosing to cover this initial operating loss using their cash reserves rather than increase acreage assessments.*

Collateral: As security for the loan, the District will pledge its revenue from assessments and an undivided 30% interest in Prospect Reservoir. This is in compliance with the CWCB Financial Policy #5 (Collateral).

cc: Rod Baumgartner, Manager, Henrylyn Irrigation District
Susan Schneider/Jennifer Mele, Colorado's Attorney General Office

Attachment: Water Project Loan Program – Project Data Sheet

CWCB Water Project Loan Program
Project Data Sheet

Borrower: Henrylyn Irrigation District

County: Weld

Project Name: Prospect Reservoir Dam Facing Project

Project Type: Reservoir Rehabilitation

Drainage Basin/ District: South Platte / 1

Water Source: South Platte River

Total Project Cost: $3,264,400

Funding Source: Construction Fund

Type of Borrower: Agricultural

Average Annual Diversion: 39,950 AF

CWCB Loan: $2,967,279 (with 1% service fee)

Interest Rate: 1.75% **Term:** 30-years

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