



**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:** May 15-16, 2019 Board Meeting

**AGENDA ITEM:** 15a. Water Project Loans/Grants  
Logan Irrigation District - Prewitt Reservoir Dredging

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### Introduction

The Logan Irrigation District (LID) is applying for a loan for the Prewitt Reservoir Dredging (Project). Prewitt Reservoir (Reservoir) currently does not have access to 5,059 AF of storage space due to a storage restriction and the presence of a dead pool created by sedimentation which disconnected that area of the Reservoir from the outlet works. The proposed Project will reconnect the dead pool by dredging a channel from the dead pool to the outlet works. Dredged material will be disposed of by creating an island as a habitat enhancement site within the Reservoir.

The Reservoir is operated through the Prewitt Operating Committee (Operating Committee) made up of the three entities which share ownership in the Reservoir. LID is requesting this loan on behalf of the Operating Committee. The total Project cost is estimated to be \$3,239,000. LID submitted a Water Plan Grant application for \$1,500,000 for this Project under the Storage & Supply category. Due to limited grant funds available, CWCB Staff is recommending funding at \$1,408,000 which is also described under Agenda Item 29mm. This results in a loan to cover approximately 56% of Project cost and a Water Plan Grant to cover approximately 44% of Project costs. See attached Project Data Sheet for a location map and Project summary.

### Staff Recommendation for Loan

Staff recommends the Board approve a loan not to exceed \$1,849,310 (\$1,831,000 for Project costs and \$18,310 for the 1% service fee) to the Logan Irrigation District for costs related to the Prewitt Reservoir Dredging Project, from the Severance Tax Perpetual Base Fund. The loan terms shall be 30 years at a blended interest rate of 1.90% per annum. Security for the loan shall be in compliance with CWCB Financial Policy #5.

### Staff Recommendation for Water Plan Grant

Staff recommends the Board approve a grant of up to \$1,408,000 from the Water Plan Grant - Storage & Supply category to the Logan Irrigation District for cost related to the Prewitt Reservoir Dredging Project.



**Background**

The Reservoir is located in Washington and Logan Counties and is a State Wildlife Area. Ownership of the Reservoir is shown in Table 1 below. Together the owners formed the Prewitt Operating Committee in 2006. The Operating Committee is a management organization used to perform Reservoir operations. Though it was officially formed in 2006 the three entities have worked in this manner for over 90 years and have demonstrated an excellent working relationship. Jim Yahn serves as the Manager for the Operating Committee and all three owner entities.

**TABLE 1: PREWITT RESERVOIR OWNERSHIP**

Name	Ownership Interest
Logan Irrigation District (LID)	17/31 (54.8%)
Iliff Irrigation District (IID)	8/31 (25.8%)
Morgan Prewitt Reservoir Company (MPRC)	6/31 (19.4%)

The Operating Committee does not qualify as a borrower for a CWCB loan but LID has agreed to be the Project sponsor and accept full financial responsibility for the execution and repayment of this loan. IID and MPRC will be cooperating entities, providing a pro-rata share of the loan payment to LID through a special agreement among the three owner entities.

The Reservoir was built in 1910 and has a current available capacity of 29,283 AF. In 1991 the Dam Safety Branch of the State Engineer’s Office (SEO) restricted the Reservoir for lack of an adequate spillway and concerns with wave overtopping in extreme wind events. Under the storage restriction the Reservoir is not allowed to fill the top 1.5 ft resulting in a storage loss of 3,455 AF. In 2006, LID on behalf of the Operating Committee, obtained a CWCB loan to construct an emergency spillway. This was successfully completed however the storage restriction remains in place due to the wave concerns. In addition to the storage restriction causing a reduction in available Reservoir capacity, a 1,604 AF dead pool has developed due to built-up sedimentation which has blocked that area from draining to the outlet. In total, the Reservoir’s current active capacity is 24,224 AF.

**Loan Feasibility Study**

Marcus Krall, P.E. with Wenck Associates, Inc., prepared a feasibility study titled, “Feasibility Report: Prewitt Reservoir Rehabilitation Feasibility Study,” dated January 2019. The study was completed for the Operating Committee and was submitted by LID in support of its loan application. The feasibility study was prepared in accordance with CWCB guidelines and includes an analysis of alternatives, preliminary engineering design, and construction cost estimates. Financial statements were prepared and submitted by LID.

**Borrower - Logan Irrigation District**

LID was formed on December 19, 1910 by order of the Logan County Commissioners and operates as an irrigation district under the Irrigation District Law on 1905. The LID office is located in Sterling and is managed by 3 elected governing board members. LID provides water for both irrigation and augmentation. Irrigated acreage within the service area is primarily used to grow corn, alfalfa, sugar beets, pinto beans, and feed crops.

Typically, about 50% of the LID revenues comes from acreage assessments and 50% from State recreation leases. The Logan County Treasurer serves as the ex officio LID Treasurer and collects and distributes assessments in the same manner as property taxes are collected. There are 128 landowners and 12,818.9 acres in LID.

Following adoption of a budget resolution in October, LID certifies the required levy to the Logan County Commissioners, with copies to the State Treasurer and Department of Local Affairs. To enforce assessments, State revenue laws pertaining to the assessment, levying, and collection of property taxes, including enforcement of penalties and forfeiture for delinquent taxes, are applicable to LID. LID may also 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 LID to hold a special election of the legal electors in the district to authorize and ratify the contract.

**Iliff Irrigation District (Cooperating Entity):** IID was formed on March 6, 1911 also under the Irrigation District Law of 1905. Its service area extends from about midway between Sterling and Iliff east to about 3 miles east of Crook. There are 65 landowners and 10,874.3 acres under the district. The current levy is \$2.50 per acre. IID is managed by 3 elected governing board members.

**Morgan Prewitt Reservoir Company (Cooperating Entity):** MPRC was organized as a Colorado non-profit corporation on February 10, 1923. MPRC serves various properties in Morgan and Logan Counties. There are 58 shareholders holding 261 shares of stock. Their current assessment is \$125 per share. MPRC is managed by 5 board members.

**Water Rights**

Prewitt Reservoir’s water rights are shown in Table 2. The Reservoir’s water is a supplemental supply for over 250 landowners/shareholders irrigating approximately 30,000 acres and an augmentation source for over 550 wells. The average annual diversion of the Reservoir is 40,160 AF.

**TABLE 2: PREWITT RESERVOIR WATER RIGHTS**

Name	Amount (AF)	Appropriation Date	Adjudication Date	Water Court Case No.
Prewitt Res (Priority 75A)	32,300	5/25/1910	1/15/1914	CA2142
Prewitt Res (Priority 75R, Refill)	34,960	12/31/1929	10/18/1965	CA16704

**Project Description**

The objective of the Project is to provide additional storage space in Prewitt Reservoir. The following alternatives were analyzed:

**Alternative 1 - No Action:** This alternative was considered unacceptable. The South Platte Storage Study (HB16-1256) highlights the need for additional storage options in the lower basin and, by having an existing diversion and conveyance capabilities, this Project represents a very efficient means of generating additional lower basin storage.

**Alternative 2 - Remove the SEO Storage Restriction:** This alternative would make improvements to mitigate wave runoff on the structure. Successful mitigation would remove the SEO storage restriction, allowing the use of 3,455 AF on ‘top’ of the reservoir. Wave mitigation methods studied included: (1) beaching dredge material on the dam face, (2) placing soil cement in a stair-step or plating method on the dam face, (3) constructing parapet walls on the dam to increase its freeboard, and (4) installing breakwaters to reduce wave energy. Cost estimates were provided for each alternative and were approximately (1) \$12-22 million, (2) \$15-21 million, (3) \$7 million, and (4) \$2 million. These alternatives were not selected at this time as they each need further evaluation to understand the maintenance requirements and reliability, particularly the most cost-effective option of a floating

breakwater. The SEO has not implemented a compliance plan mandating a schedule by which the restriction must be addressed because the Reservoir’s emergency spillway was cut to the restricted level to physically prevent storage above the SEO allowed gage height.

**Selected Alternative 3 - Connect the Dead Pool:** This alternative will dredge the sediment that is currently blocking 1,604 AF in the reservoir bottom from being connected to the Reservoir’s outlet works. A variable width channel design will be used and will widen as it approaches the outlet works to minimize the risk of blockage through additional sedimentation in that area. It’s estimated that 162,500 cubic yards (101 AF) of material will need to be dredged in order to connect the dead pool to the outlet structure.

Dredging alternatives were evaluated for reliability, costs, robustness, multi-use potential. Dredging alternatives studied include: (1) wet mechanical dredging from shore and reservoir, (2) hydraulic cutterhead dredging, and (3) dry mechanical dredging. The selection process identified hydraulic cutterhead dredging as the preferred alternative as it was the most cost-effective option, lends itself to enhancement site development, and would not significantly impact normal operation of the Reservoir.

Methods of dredge material disposal that were analyzed include: (1) sediment dewatering facilities, (2) reservoir placement, (3) habitat enhancement sites, and (4) placement on dam as part of wave mitigation activities. A habitat enhancement site, specifically creating an island habitat, was selected for the preferred method of material disposal. Final design will still need to occur but a potential site near the inlet to the Reservoir was identified which would provide 5 acres of surface area which meets the minimum area recommended by the US Army Corps of Engineers for island habitats. The island will be designed with the goal of supporting diverse plant and wildlife communities including aquatic habitats, fringe wetlands, and avian nesting habitat. Project partners will be sought to assist with a detailed analysis and may include Audubon Society who has preciously participated in island habitat development projects, as well as Colorado Parks and Wildlife, Ducks Unlimited, and Delta Waterfowl.

The total Project cost associated with dredging and disposal is \$3,239,000 as shown in Table 3. Model simulations suggest that this 1,604 AF of storage would provide 476 AF of additional Reservoir yield during dry years.

**TABLE 3: ESTIMATED PROJECT COST**

Task	Total
Mobilization	\$267,500
Hydraulic Dredging	\$2,275,000
Material Disposal (Island Infrastructure)	\$250,000
Site Reclamation	\$150,000
Construction Subtotal	\$2,942,500
Design Engineering	\$110,000
Permitting	\$28,500
Construction Engineering	\$158,000
<b>TOTAL</b>	<b>\$3,239,000</b>

**Permitting:** Work will take place within the Reservoir’s footprint and no new rights-of-way or easements will be required. It is anticipated that work will be either exempt from US Army Corps of Engineers permits or fall within a nationwide permit. This will be verified during final design.

**Schedule:** Funding for this Project will need to first be approved through a special election. It is anticipated that construction will be able to begin by August 2020 and be completed by August 2021.

**Financial Analysis**

Table 4 provides a summary of the Project’s financial aspects. Based on the current ownership of the Reservoir the blended interest rate is 1.90% for a 30-year term (Ownership: 91% Agricultural, 2% Low-Income Municipal, 7% High-Income Municipal).

As discussed above, LID, IID, and MPRC will enter into a special agreement that will obligate each entity to pay a portion of the annual loan payment based on its pro-rata ownership share. Because LID will be fully responsible to CWCB for the full loan debt, CWCB staff prepared the financial analysis assuming no financial contributions are received from IID or. However, ratios based on LID’s pro-rata obligation are also shown for reference.

**TABLE 4: FINANCIAL SUMMARY**

Total Project Cost	\$3,239,000
Water Plan Grant - Storage & Supply	\$1,408,000
CWCB Loan Amount	\$1,832,000
CWCB Loan Amount (Including 1% Service Fee)	\$1,849,310
CWCB Annual Loan Payment	\$81,441
CWCB Annual Loan Obligation (1 <sup>st</sup> Ten Years)	\$89,585
LID Pro-Rata Annual Loan Obligation (17/31 ownership)	\$49,127
LID Assessed Acres	12,818.9
Annual Loan Obligation per Acre	\$6.99
LID Pro-Rata Annual Loan Obligation per Acre	\$3.83
Current Acreage Assessment per Acre	\$4.00
Project Cost per AF of Storage Recovered (1,604 AF)	\$2,019

**Loan/Grant Disbursement:** Payments from CWCB funds will be disbursed at the following percentages: 56% loan and 44% grant.

**Creditworthiness:** The Company has \$248,400 in existing long term debt made up of one CWCB loan as shown in Table 5. That loan was used to construct an emergency spillway in 2006 at Prewitt Reservoir and, similar to this current dredging loan request, the emergency spillway loan was taken out by LID on behalf of the Operating Committee. That loan is in good standing.

**TABLE 5: EXISTING DEBT**

Lender	Original Balance	Current Balance	Annual Payment	Maturity Date	Collateral
CWCB (C150229)	\$498,676	\$248,400	\$31,937	2027	Annual Acreage Assessment Revenues

**TABLE 6: FINANCIAL RATIOS**

Financial Ratio	Prior Years	Future w/ Project (100% Obligation)	Future w/ Project (Pro-Rata Obligation)
Operating Ratio (revenues/expenses) Weak: <100% - average: 100% - 120% - strong: >120%	107% (average) \$108K/\$101K	104% (average) \$198K/\$191K	105% (average) \$157K/\$150K
Debt Service Coverage Ratio (revenues-expenses)/debt service Weak: <100% - average: 100% - 120% - strong: >120%	122% (strong) (\$108K-\$69K) \$32K	106% (average) (\$198-\$69K) \$122K	109% (average) (\$157K-\$69K) \$81K
Cash Reserves to Current Expenses Weak: <50% - average: 50% - 100% - strong: >100%	58% (average) \$59K/\$101K	31% (weak) \$59K/\$191K	39% (weak) \$59K/\$150K
Annual Cost per AF Diverted (22,000AF) Weak: >\$20 - average: \$10 - \$20 - strong: <\$10	\$4.59 (strong) \$101K/22KAF	\$8.68 (strong) \$191K/22KAF	\$6.82 (strong) \$150K/22KAF

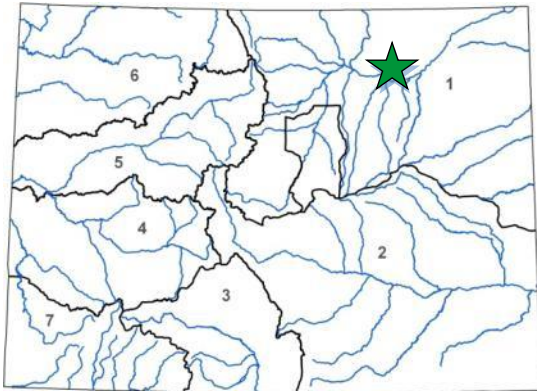
**Collateral:** Security for this loan will be a pledge of revenues collected through the annual tax levy upon the lands of the Logan Irrigation District backed by an assessment covenant. This security is in compliance with the CWCB Financial Policy #5 (Collateral).

cc: Jim Yahn, Manager: Logan Irrigation District, Iliff Irrigation District, Morgan Prewitt Reservoir Company, and Prewitt Operating Committee  
 Jennifer Mele, 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:	\$3,239,000
CWCB Loan (with Service Fee):	\$1,849,310
Loan Term and Interest Rate:	30 years @ 1.90%
Funding Source:	Severance Tax PBF/ Water Plan Grant
B O R R O W E R T Y P E	
Agriculture	Municipal
91%	2% Low - 0% Mid -7% High
Commercial	0%
P R O J E C T D E T A I L S	
Project Type:	Reservoir Rehabilitation
Storage Recovered:	1,604 AF



L O C A T I O N	
County:	Washington and Logan
Water Source:	South Platte River
Drainage Basin:	South Platte
Division:	1 District: 64

Prewitt Reservoir is owned by Logan Irrigation District, Iliff Irrigation District, and the Morgan Prewitt Reservoir Company. Together they manage the Reservoir through the Prewitt Operating Committee.

Prewitt was built in 1910 and has a current available storage capacity of 29,283 AF. Sedimentation within the Reservoir has caused 1,604 AF to be blocked off from the outlet, creating a dead pool. This project will reconnect the dead pool by dredging a channel from the dead pool to the outlet works. Dredged material will be disposed of by creating an island habitat enhancement site within the Reservoir.

Logan Irrigation District is requesting this loan on behalf of the Operating Committee. Iliff Irrigation District and the Morgan Prewitt Reservoir Company will be Cooperating Entities and all three Reservoir owners will enter into a special agreement setting forth terms for each to pay its pro-rata share of the loan's annual payment. It is anticipated that construction will be able to begin by August 2020 and be completed by August 2021.

