

FEASIBILITY STUDY  
FOR  
REHABILITATION  
OF  
NORTH GRAY RESERVOIR

PREPARED FOR  
LAKE CANAL RESERVOIR COMPANY  
P.O. BOX 421  
FORT COLLINS, CO 80524

FOR  
THE COLORADO WATER  
CONSERVATION BOARD

PROJECT NO. 11.047  
AUGUST 2011

**FEASIBILITY STUDY APPROVAL**  
Pursuant to Colorado Revised Statutes 37-60-121 & 122, and  
in accordance with policies adopted by the Board, the  
CWCB staff has determined this Feasibility Study meets all  
applicable requirements for approval.  
Date: 8-14-2011  
Signed: [Signature]

**SMITH GEOTECHNICAL**



1225 RED CEDAR CIRCLE  
FORT COLLINS, CO 80524  
(970) 490-2620

**FEASIBILITY STUDY**  
**FOR**  
**REHABILITATION**  
**OF**  
**NORTH GRAY RESERVOIR**

**OWNED BY**

**LAKE CANAL RESERVOIR COMPANY**  
**P.O. BOX 104**  
**Lucerne, Colorado 80646**

**PREPARED BY**

**SMITH GEOTECHNICAL ENGINEERING, INC.**  
**1225 RED CEDAR CIRCLE, SUITE H**  
**FORT COLLINS, COLORADO 80524**

Sponsored by the

**Lake Canal Reservoir Company**

in conjunction with the

**Colorado Water Conservation Board**

**August 3, 2011**

**Project No. 2011.047**

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Date

9.14.2011

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**Colorado Water Conservation Board**

## **Feasibility Study for the Rehabilitation of North Gray Reservoir**

### **PROJECT SPONSOR**

The **Lake Canal Reservoir Company** (LCRC) is a Colorado Mutual Ditch Company and a Non-profit Corporation. Articles of Incorporation and Bylaws are included in Appendix E.

The company's facilities consist of the storage reservoirs known as North Gray Reservoir, South Gray Reservoir, and Gray Reservoir No.3 located in Sections 34 and 35, Township 8 North, Range 68 West of the 6<sup>th</sup> Prime meridian. Their facilities include the reservoirs and the associated diversion structure into North Gray and the diversion structure into the Lake Canal Ditch. The diversion structure into North Gray is located in Section 27, Township 8 North, Range 68 West which fills all three reservoirs through North Gray.

Storage in the Gray Reservoirs is released into Box Elder Creek which is diverted into the Lake Canal Ditch by a structure located in Section 16, Township 7 North, Range 68 West. The Lake Canal Ditch serves approximately 5,200 acres of irrigated farm and pasture land.

The Company was incorporated in January 1902 and has been in operation continuously since that time and has delivered water and applied assessments since its inception. Assessments during the year 2009 were \$150 per share of stock and are \$350 per share for 2010.

Financial statements for 2009 and 2010 are included in Appendix A of this study. For the year 2010 the Company had revenue of approximately \$87,017; a cash balance from the previous year of \$43,191; expenses of approximately \$99,731; and, a cash balance of \$73,596. The Company currently has long term debt of \$443,343 which includes three loans from the Colorado Water Conservation Board. The Company lists total assets of \$235,251 and stockholder equity of \$143,383.

The company has minimal equity in buildings and equipment. Normal maintenance and repair of the ditches and reservoirs is handled by the Company. Assets listed include their cash account, accounts receivable, and the ditches and reservoirs.

### **PROJECT SERVICE AREA**

The service area of for the Lake Canal Reservoir Company includes approximately 5,200 acres of irrigated farm land in Larimer and Weld Counties in Colorado. The approximate service area boundaries are shown on the map in Figure 1. North Gray Reservoir which is the object of this study is located in Larimer County, Section 34, Township 8 North, Range 68 West.



# The Lake Canal Reservoir Company Gray Lakes Delivery Area

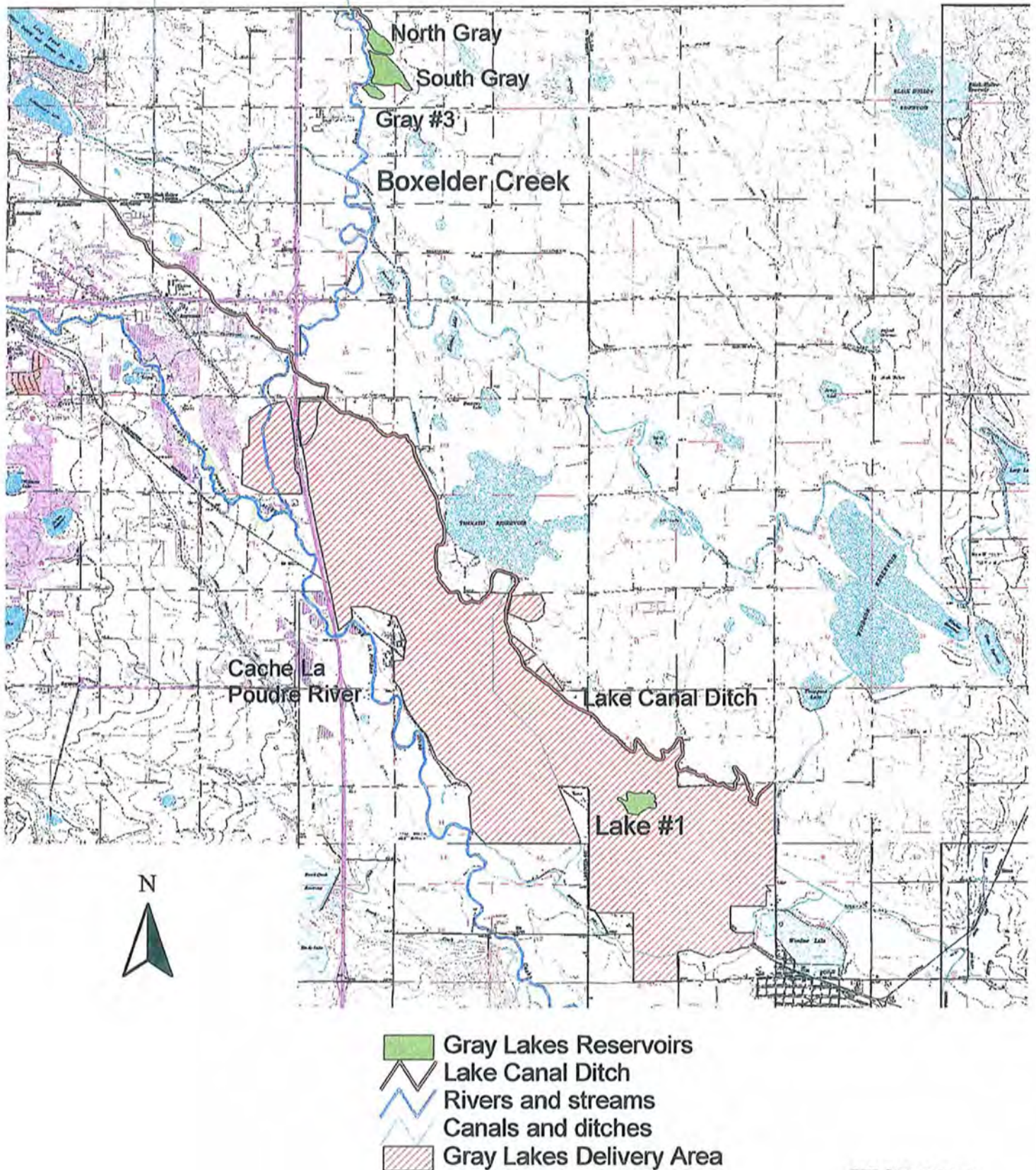


FIGURE 1



Crops grown in the service area include alfalfa hay, corn, a small amount of beets, and pasture grass. An approximate division of crops and planted acreage is as follows.

<u>Crop Type</u>	<u>No. of Acres</u>
Alfalfa Hay	1800
Corn	2350
Pasture Grass	1000
Beets	<u>50</u>
	5200 acres

Average crop yields per acre in this area are: 3.5 tons of alfalfa hay, 150 bushels of corn, and 21 tons of beets.

The soils in the service area consist of predominantly Table Mountain-Paoli-Caruso association and Otero-Nelson-Tassel Association. These soils are shallow to deep, nearly level, well drained to poorly drained, fine sandy loams formed in alluvium and/or weathered from sandstone and modified by wind. These soils include those in the Farnuf Series, the Loveland Series, the Nunn Series, the Paoli Series, the Satanta Series, the Satanta Variant, and the Table Mountain Series. These soils range from Fluvaquents that are nearly level soils on flood plains, low terraces, and bottom lands; to clay loams, sandy loams, and residual soils derived from sandstone. Most of the soils are suitable for irrigated pasture and hay with a high percentage of the soils suitable for irrigated crops such corn, beets, and barley . These soils generally are in the group B and C hydrologic class with soil permeabilities in the range of 0.6 to 2.0 inches per hour with some as high as 6.0 inches per hour; available water capacity is generally in the range of 0.12 to 0.18 inches per inch of soil; and water intake capacity from moderate to high.

The precipitation in the Fort Collins to Windsor area averages 14.6 inches, relative humidity is about 30 to 35 percent in summer and about 40 to 50 percent in winter. The length of the growing season in this area is approximately 145 days with the average for the last killing frost in the spring being June 4<sup>th</sup> and the first killing frost in the fall being October 1<sup>st</sup>.

## **LAND OWNERSHIP**

The land in the project service is primarily private farms, ranches, and some individual home sites. All of the land serviced by the Company is privately owned.

## **WATER RIGHTS**

The Lake Canal Company Reservoir Company has issued 160 shares of water stock which is

presently owned by 49 stockholders. All of the stock is privately owned and used for agricultural purposes. All the water is delivered to the Lake Canal Ditch by a diversion from the Box Elder Creek. The Lake Canal Ditch is owned by The Lake Canal Company which is a separate company from the Lake Canal Reservoir Company. However, all the water stored and delivered from the Gray Reservoirs is owned by stock holders in the Lake Canal Company.

The Lake Canal Reservoir Company has historically supplied a portion of the irrigation water for approximately 5,200 acres of land. The water for irrigation is supplied by a storage decree from Box Elder Creek equal to 1,178 acre-feet. The priority numbers, appropriation dates, and storage right are summarized in Table 1. The Lake Canal Ditch Company, which is separate from the Lake Canal Reservoir Company, also delivers CBT water and water from Timanth Reservoir and Lake Canal Reservoir No. 1.

**TABLE 1  
GRAY RESERVOIR'S WATER DECREES**

Reservoir	Priority	Appropriation Date	Gage Height Feet	Storage Acre-Feet
North Gray	2	April 1, 1882	7.5	136
	50	November 1, 1902	11.5	139
	77	November 15, 1904	13.65	58
South Gray	3	April 1, 1882	6.0	275
	51	November 1, 1902	14.0	237
	78	November 10, 1904	18.0	222
Gray No. 3	76	November 14, 1904	13.0	111
			TOTAL	1,178

In 2002 the Lake Canal Reservoir Company filed with the water court to allow for alternate storage locations for the water decreed for storage in Gray Reservoir No. 3. This application was accepted by the water court with a ruling dated November 10<sup>th</sup>, 2004. The ruling is included in Appendix F.

### **NEED FOR THE PROJECT**

At the present time, North Gray Reservoir is restricted to Gage Height 11 by the State Engineer due to the poor condition of the spillway. The latest inspection report completed by the State Engineer in 2011 is included in Appendix G.

Due to the poor condition of the North Gray spillway, LCRC has considered rehabilitation or replacement of the existing spillway. Photographs 1, 2, 3 and 4 show the existing spillway and its

condition. The spillway is a CMP pipe that has reached its life span and the invert has corroded completely through in some locations. This has caused erosion below the pipe invert and removed the subgrade soil on the downstream end of the pipe. Continued corrosion would be expected and increased erosion of the dam embankment would be expected which could lead to embankment saturation and failure.

## **ALTERNATIVES EVALUATED**

During our study of North Gray we evaluated the following alternatives: 1) Constructing a new spillway between North and South Gray; and, 2) Replacing the existing spillway in its current location; and, 3) No Action.

Following is a summary of our assessment of each alternative.

### **Alternative #1-New Spillway Between North and South Gray**

Alternative 1 is for the removal of the existing spillway and the construction of a new spillway on the embankment dam between the North and South Gray reservoirs. The new spillway will consist of a concrete cutoff wall and riprap lined channel. The spillway will be designed to pass the inflow design flood for the North Gray reservoir (0.45 PMP) without overtopping the North Gray dam into the South Gray Reservoir. The spillway will also be designed to ensure that the South Gray dam is not overtopped. The removal of the existing spillway will consist of removing the existing spillway culvert and backfilling the excavation to ensure that the embankment is constructed in a manner that is in accordance with standard engineering and construction techniques.

A sketch of the expected layout and size of the new spillway is included at the end of this report.

The estimated total project cost for this alternative is \$ 119,200 as shown in Table 4. A complete breakdown of the work proposed and expected costs are included in Table 2.

### **Alternative #2-New Spillway At Current Location**

Alternative 2 is for the removal of the existing spillway and the construction of a new spillway in the current location of the Spillway. The spillway for North Gray will not meet the current regulations for dam safety in the State of Colorado. Therefore a rehabilitation of the existing spillway to the current size is not feasible; therefore the spillway must be removed and enlarged. In order to replace the spillway in the current location the company will need to construct a concrete chute style spillway. The spillway will be designed to pass the inflow design flood for the North Gray reservoir (0.45 PMP) without overtopping the North Gray dam into Boxelder Creek.

A sketch of the expected layout and size of the new spillway is included at the end of this report.

The estimated total project cost for this alternative is \$ 250,000 as show in Table 4. A complete breakdown of the work proposed and expected costs are included in Table 3.

### **Alternative #3-No Action Alternative**

One course of action considered was to do no major repair or rehabilitation of the dam and spillway. The results of this alternative would not necessarily result in “no cost” to the company. We believe the result of not repairing the spillway will ultimately result in further restrictions on the reservoir storage. The restrictions will be required to prevent overtopping of the dam during a major storm and to prevent further erosion and saturation of the downstream face of the dam embankment due to the holes in the existing CMP overflow pipe. The existing spillway is inadequate to pass the Inflow Design Storm and is structurally inadequate.

While this alternative has no immediate capital expenditures, the risk and potential costs can be very great. Failure of the dam is the risk of the do nothing alternative. The potential result if a failure were to occur would be the loss of water for one to two years, repair of the damage to the dam embankment and the construction of a new spillway, repair of damage to downstream owners, and the potential of lawsuits from downstream owners. Even if failure of the dam were averted, a problem developing during the irrigation season could result in further restrictions that could either require the reservoir be emptied or alternatively only allow limited discharges. The storage potential of South Gray Reservoir would also be decreased by the loss of North Gray as the operation of North Gray is required to fill and operate South Gray.

The potential future costs of this Alternative were not estimated but the repair to the dam, the construction of the new spillway, and the loss in water storage for up to two years would be several times greater than the costs of Alternatives 1 or 2. The current storage restriction is imposed by the State Engineer is three (3) feet for a loss of 75 acre-feet. Additional loss of storage in South Gray would increase that total and would most likely double the loss from the current restriction.



**TABLE 2**  
**GRAY LAKES**  
**ALTERNATIVE 1**  
**Spillway Between North Gray and South Gray**  
**North Gray Spillway**

ITEM	DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	SUBTOTALS	AMOUNT
1.	Insurance, Bonds	1	L.S.	\$ 2,000.00	\$ 2,000	\$ 2,000
2.	Mobilization, Demobilization	1	L.S.	\$ 7,500.00	\$ 7,500	\$ 7,500
3.	Surveying	1	Each	\$ 2,000.00	\$ 2,000	\$ 2,000
4.	Dewatering/Erosion Control	10	Days	\$ 500.00	\$ 5,000	\$ 5,000
5.	Spillway Demolition					\$ 6,000
	Spillway Excavation and Removal	1	L.S.	\$ 2,000.00	\$ 2,000	\$ 2,000
	Backfill	1	L.S.	\$ 4,000.00	\$ 4,000	\$ 4,000
6.	Earthwork					\$ 7,800
	Stripping	1	L.S.	\$ 1,000.00	\$ 1,000	\$ 1,000
	Excavation	600	C.Y.	\$ 8.00	\$ 4,800	\$ 4,800
	Spillway Grading	1	L.S.	\$ 2,000.00	\$ 2,000	\$ 2,000
7.	Spillway					\$ 47,200
	Concrete	31	C.Y.	\$ 650.00	\$ 20,150	\$ 20,200
	Riprap, supply and place	600	Tons	\$ 35.00	\$ 21,000	\$ 21,000
	Riprap Bedding, supply and place	151	Tons	\$ 32.00	\$ 4,832	\$ 4,900
	Road Base	40	Tons	\$ 27.00	\$ 1,080	\$ 1,100
8.	Spoil	600	C.Y.	\$ 3.00	\$ 1,800	\$ 1,800
9.	Seeding	2	Acres	\$ 2,500.00	\$ 5,000	\$ 5,000
TOTAL CONSTRUCTION COST						\$ 84,300
CONTINGENCY(20%)						\$ 17,000
ENGINEERING/LEGAL/SURVEYING						\$ 22,000
TOTAL						\$ 123,300

**TABLE 3**  
**GRAY LAKES**  
**ALTERNATIVE 2**  
**Spillway Existing Location**  
**North Gray Spillway**

ITEM	DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	SUBTOTALS	AMOUNT
1.	Insurance, Bonds	1	L.S.	\$ 2,500.00	\$ 2,500	\$ 2,500
2.	Mobilization, Demobilization	1	L.S.	\$ 9,700.00	\$ 9,700	\$ 9,700
3.	Surveying	1	Each	\$ 2,000.00	\$ 2,000	\$ 2,000
4.	Dewatering/Erosion Control	10	Days	\$ 500.00	\$ 5,000	\$ 5,000
5.	Earthwork					\$ 10,000
	Stripping	1	L.S.	\$ 1,000.00	\$ 1,000	\$ 1,000
	Excavation	1000	C.Y.	\$ 5.00	\$ 5,000	\$ 5,000
	Spillway Grading	1	L.S.	\$ 4,000.00	\$ 4,000	\$ 4,000
6.	Spillway					\$ 136,700
	Concrete	208	C.Y.	\$ 650.00	\$ 135,200	\$ 135,200
	Riprap, supply and place	30	Tons	\$ 35.00	\$ 1,050	\$ 1,100
	Riprap Bedding, supply and place	10	Tons	\$ 32.00	\$ 320	\$ 400
7.	Spoil	600	C.Y.	\$ 3.00	\$ 1,800	\$ 1,800
8.	Seeding	2	Acres	\$ 2,500.00	\$ 5,000	\$ 5,000
TOTAL CONSTRUCTION COST						\$ 172,700
CONTINGENCY(20%)						\$ 35,000
ENGINEERING/LEGAL/SURVEYING						\$ 37,000
TOTAL						\$ 245,000

## **COST ESTIMATE**

The complete breakdown of the cost of the work proposed for each alternative is shown in Tables 2 and 3. The costs are based on our past experience with similar projects and also from data supplied by local contractors and suppliers. Quantities were based on surveyed cross section of the dam between North and South Gray Reservoirs and the USGS Quad map for this area.

A summary of the costs for Alternatives 1 and 2 are included in Tables 4 and 5. No cost analysis was attempted for Alternative #3 as this alternative is not seen as a viable alternative. This alternative would ultimately have costs associated with it due to loss of irrigation water and potentially reduced crop yields on the irrigated lands and no benefit.

**TABLE 4  
TOTAL PROJECT COST SUMMARY**

ITEM	ALTERNATIVE 1	ALTERNATIVE 2
1. Construction Cost	\$ 84,300	\$ 172,700
2. Contingency @ 20%	\$ 17,000	\$ 35,000
3. Engineering Fees	\$ 22,000	\$ 37,000
4. Feasibility Study	\$ 5,000	\$ 5,000
TOTALS	\$ 128,300	\$ 249,240

Table 5 provides a summary of the expected loan payments, the cost per share of stock and the yearly cost per acre-foot of water. This is based on 160 stockholders and the 75 acre-feet of water which will potentially be saved by repairing North Gray.

**TABLE 5  
LOAN PAYMENTS**

ALTERNATIVE	LOAN AMOUNT	YEARLY LOAN PAYMENT	YEARLY COST PER SHARE OF STOCK	YEARLY COST PER ACRE-FOOT OF LOST STORAGE
Alternative 1	\$ 115,470	\$ 5,227	\$ 33	\$ 70
Alternative 2	\$ 224,316	\$ 10,154	\$ 64	\$ 135

## THE SELECTED PROJECT

The Lake Canal Reservoir Company has chosen Alternative 1 as the best alternative to meet their goals. Alternative 1 includes the removal of the existing damaged spillway and the relocation of the spillway to the embankment between North and South Gray Reservoirs. The total cost of this alternative is estimated at approximately \$ 128,300 as shown in Table 4.

## FINANCIAL PLAN

The required capital for the Owner and the CWCB for the project is summarized in Table 6. This is based on the cost of Alternative 1 with a loan interest rate of 2.1% and a 30 year loan maturity. The funds required for the Company during 2011 would be the cost of the Feasibility Study (\$5,000), plus the 1% loan origination fee (\$1,155). The funds required by the Owner for 2012 would be the 10% of the loan amount less the cost of the Feasibility Study (\$12,830 - \$5,000). The funds required by the CWCB would be the loan amount of \$115,470.

The first payment would be expected to be made by the Company in 2013. The yearly payment is \$5,227 and through 2022 this is increased by \$523 which goes into the Project Reserve account. From 2023 until 2041, the yearly payment is \$5,227. As shown in Table 6, the final payment is to be paid by the funds in the Project Reserve account which is equal to one yearly payment.

**TABLE 6**  
**FUND REQUIREMENT SCHEDULE**

YEAR	LAKE CANAL PARTICIPATION/PMT'S	CWCB 90% LOAN
2011	\$ 5,000 + \$1,155	
2012	\$ 7,830	\$ 115,470
2013-2022	\$ 5,227 + \$ 523	
2023-2041	\$ 5,227	
2042	Final PMT Made By CD	

**LCRC** plans to apply for a \$115,470 loan from the Colorado Water Conservation Board (CWCB) small projects fund. This would represent a 90% loan with the remainder of the project to be paid from yearly assessments on the shares of stock. The loan rate expected is 2.1% and the loan repayment period requested is 30 years.

Revenue for operations and payment of loans is derived from assessments on 160 shares of



outstanding stock. Assessments are presented to stockholders and approved at the annual stockholders meeting held in January of each year. The assessments for the past ten years are shown below.

<u>YEAR</u>	<u>ASSESSMENT</u>	<u>YEAR</u>	<u>ASSESSMENT</u>
2002	\$130	2007	\$150
2003	\$130	2008	\$150
2004	\$130	2009	\$150
2005	\$130	2010	\$350
2006	\$130	2011	\$350

The financial condition of the company is sound. The company only has two outstanding debts which are to the Colorado Water Conservation Board for the rehabilitation of North and South Gray Reservoirs. The balance on the first loan is approximately \$ 53,884 and has a maturity date of July 2018. The yearly payment on this loan is \$6,920 which is \$43.25 per share of stock. The balance of the second loan is \$ 389,700 and has an estimated maturity date of 2040. The yearly payment on this loan is \$19,245 which is \$120 per share of stock. This loan is included in the Annual Financial Schedule which is shown in Table 7.

The Company typically does not usually carry a large cash balance at the end of the year which is similar to how most irrigation companies operate. The past several years the cash balance has been larger than normal due to raises in the assessments to pay for the construction projects. The cash reserves in the past, prior to the rehabilitation of the reservoirs, has have been approximately 16% of their operating expenses whereas the cash reserves in 2010 were approximately 200% of the operating expenses. The LCRC can require a special assessment if they have higher than expected operating costs. The LCRC does expect to raise their assessments to pay for their 10% share of the project and the annual loan payment.

Table 7 shows the Annual Financial Schedule of income and expenses for the LCRC. This includes the Company's operations expenses, past loans, and the projected yearly loan payment to the CWCB of \$5,227 for the current project. The loan payment is based on the CWCB loan rate of 2.1% over a 30-year repayment period.

Column (1) shows the assessment level project over the life of the project and loan; column (2) shows the revenue from assessment on 160 shares of stock; column (3) shows the "other income" the company has from leases, water transfers, and augmentation and was held constant to provide an analysis in today's dollars without inflation; column (4) is the operating expense as taken from the 2008 financial statement and was held constant rather than estimating inflation; and, columns (5) and (6) show the loan payment on the existing CWCB loans.

Column (7) in Table 7 shows the funds that will be required by the LCRC for its share of the project

**TABLE 7**  
**LAKE CANAL RESERVOIR COMPANY**  
**ANNUAL FINANCIAL SCHEDULE**

ALTERNATIVE 1														
YEAR	(1) ASSESSMENT PER SHARE	(2) REVENUE FROM ASSESSMENTS	(3) ESTIMATED OTHER INCOME	(4) COMPANY O&M EXPENSE	(5) PRIOR CWCB LOAN PYMT	(6) PRIOR CWCB LOAN PYMT	(7) COMPANY PYMNT	(8) CWCB LOAN PYMT	(9) PROJECT RESERVE	(10) TOTAL INCOME	(11) TOTAL EXPENSES	(12) INCOME MINUS EXPENSE	(13) CASH BALANCE	YEAR
2010	\$350												\$79,596	2010
2011	\$350	\$56,000	\$31,000	\$47,000	\$6,920	\$21,170	\$6,155			\$87,000	\$81,245	\$5,755	\$85,351	2011
2012	\$350	\$56,000	\$31,000	\$47,000	\$6,920	\$21,170	\$7,830			\$87,000	\$82,920	\$4,080	\$89,431	2012
2013	\$250	\$40,000	\$31,000	\$47,000	\$6,920	\$21,170		\$5,227	\$523	\$71,000	\$80,840	(\$9,840)	\$79,591	2013
2014	\$250	\$40,000	\$31,000	\$47,000	\$6,920	\$21,170		\$5,227	\$523	\$71,000	\$80,840	(\$9,840)	\$69,751	2014
2015	\$250	\$40,000	\$31,000	\$47,000	\$6,920	\$21,170		\$5,227	\$523	\$71,000	\$80,840	(\$9,840)	\$59,911	2015
2016	\$250	\$40,000	\$31,000	\$47,000	\$6,920	\$21,170		\$5,227	\$523	\$71,000	\$80,840	(\$9,840)	\$50,071	2016
2017	\$250	\$40,000	\$31,000	\$47,000	\$6,920	\$21,170		\$5,227	\$523	\$71,000	\$80,840	(\$9,840)	\$40,231	2017
2018	\$250	\$40,000	\$31,000	\$47,000	\$6,920	\$21,170		\$5,227	\$523	\$71,000	\$80,840	(\$9,840)	\$30,391	2018
2019	\$250	\$40,000	\$31,000	\$47,000		\$21,170		\$5,227	\$523	\$71,000	\$73,920	(\$2,920)	\$27,471	2019
2020	\$250	\$40,000	\$31,000	\$47,000		\$21,170		\$5,227	\$523	\$71,000	\$73,920	(\$2,920)	\$24,551	2020
2021	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227	\$523	\$71,000	\$71,995	(\$995)	\$23,556	2021
2022	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227	\$523	\$71,000	\$71,995	(\$995)	\$22,561	2022
2023	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$22,089	2023
2024	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$21,617	2024
2025	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$21,145	2025
2026	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$20,673	2026
2027	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$20,201	2027
2028	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$19,729	2028
2029	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$19,257	2029
2030	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$18,785	2030
2031	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$18,313	2031
2032	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$17,841	2032
2033	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$17,369	2033
2034	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$16,897	2034
2035	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$16,425	2035
2036	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$15,953	2036
2037	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$15,481	2037
2038	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$15,009	2038
2039	\$250	\$40,000	\$31,000	\$47,000			\$19,245	\$5,227		\$71,000	\$71,472	(\$472)	\$14,537	2039
2040	\$130	\$20,800	\$31,000	\$47,000		\$0		\$5,227		\$51,800	\$52,227	(\$427)	\$14,110	2040
2041	\$130	\$20,800	\$31,000	\$47,000				\$5,227		\$51,800	\$52,227	(\$427)	\$13,683	2041
2042	\$130	\$20,800	\$31,000	\$47,000				\$0		\$51,800	\$47,000	\$4,800	\$18,483	2042

ALL INCOME AND EXPENSES IN TODAY'S DOLLARS - NO ADJUSTMENT FOR INFLATION  
FINAL PAYMENT IN COLUMN 8 MADE WITH PROJECT RESERVE

costs including the Feasibility Study and the 1% loan origination fee in 2011 and the remainder of their 10% of the project cost in 2012.

Columns (8) and (9) show the loan payments that will be required to the CWCB and the payment made into the “certificate of deposit” for the Project Reserve Fund.

The total income and expenses are indicated in Columns (10) and (11) with the net income for each year shown in Column (12). The cash balance is the sum of Column (11) and the cash balance from the previous year. The assessment levels were set to maintain *A CASH BALANCE* greater than or approximately equal to at least 50% of their normal Operations and maintenance costs.

Table 7 is presented in current dollars as no inflation is included. No interest is included on the certificate-of- deposit or on the cash balance. Due to the low return expected over the next few years, no interest was included for simplicity and as any rate chosen would be hard to justify.

As indicated in Table 7, the assessments will not have to be increased significantly over the current \$350 per share. The assessment level ranging from \$130 to as high as \$350 per share is projected based on our analysis.

### **CREDIT WORTHINESS**

The Company currently has only two outstanding loans which are both to the Colorado Water Conservation Board for the repayment of a loan to rehabilitate both North and South Gray Reservoirs. The first loan has a balance of approximately \$53,884 with a maturity date of July 2018 and a yearly payment of \$6,920. The second loan has a balance of \$389,759 with a maturity date of 2040 and a yearly payment of \$19,245.

The Company does have a relationship with and has conducted business with New West Bank of Eaton, Colorado.

### **ALTERNATIVE FINANCING CONSIDERATIONS**

The Company has not investigated alternative financing at this time.

### **OPINION OF FEASIBILITY**

There do not appear to be significant roadblocks, other than cost, which would keep the Lake Canal Reservoir Company from successfully completing this project. The project does not significantly raise the assessment level from the current \$350 per share of stock. Additionally, the rehabilitation cost is much lower than the cost to replace the water even at current values. With the expected future increase in the value of the water, this project would be expected to be a good investment.

Following is a cost to benefit analysis of the project.

**Total Project Cost** including interest

$$\$5,227 \times 30 \text{ years} + \$1,155 + 12,830 = \$ 170,795$$

**Total Cost per Share** of Stock

$$\$170,795 \div 160 = \$1,067$$

**Total Cost Per Share of Stock** Per Year

$$\$ 1,067 \div 30 \text{ years} = \$36$$

**Cost Per Acre-foot** Of Water Saved

$$\$170,795 \div 75 \text{ A-Ft} = \$2,277$$

The current value of the water is expected to be in the range of \$8,000 to \$10,000 per acre foot. This is based on the price of water sold in Northern Colorado over the past few years. Over the 30 year life of the loan the value would be expected to be much higher than the current value of the water. For the benefit to cost analysis we have used the lower end of the current value.

$$\textbf{Benefit/Cost} = [\$8,000 \times 75 \text{ A-Ft}] \div \$170,795 = 3.5$$

At the current value of water the project has a positive benefit to cost ratio. This ratio would be much greater if the average future value over the life of the loan were utilized.

## **COLLATERAL**

The Lake Canal Reservoir Company can offer the following collateral for the CWCB loan.

1. The revenue from assessments as allowed by the Company By-Laws and Articles of Incorporation.
2. A certificate of deposit account in the amount of one annual payment to be held by the State Treasurer.
3. Assignment of the land the reservoir occupies.



## **IMPLEMENTATION SCHEDULE**

The following schedule is proposed for implementation of the project.

<u>Task</u>	<u>Target Completion Date</u>
1. Feasibility Study Submitted	8/7/11
2. Loan Approved By CWCB	9/25/11
3. Loan Finalized By CWCB	1/1/12
4. Start Design	11/1/11
5. Finish Design	2/1/12
6. Review Completed By SEO	7/1/12
7. Project Bid	7/15/12
8. Award Bid	8/15/12
9. Start Construction	9/15/12
10. Complete Construction	11/15/12

## **SOCIAL, ECONOMIC, AND PHYSICAL IMPACTS**

The project will have some social impacts as the facility is expected to be utilized for recreational opportunities. No other significant social impacts are expected.

The project will have a positive economic impact by ensuring full storage capability for North Gray Reservoir which potentially will save 75 acre-feet of water for irrigation in the Company's service area.

The project will have no significant physical impacts except in the immediate vicinity of the construction. These impacts will be minor in nature and will affect an area of less than 5 acres.

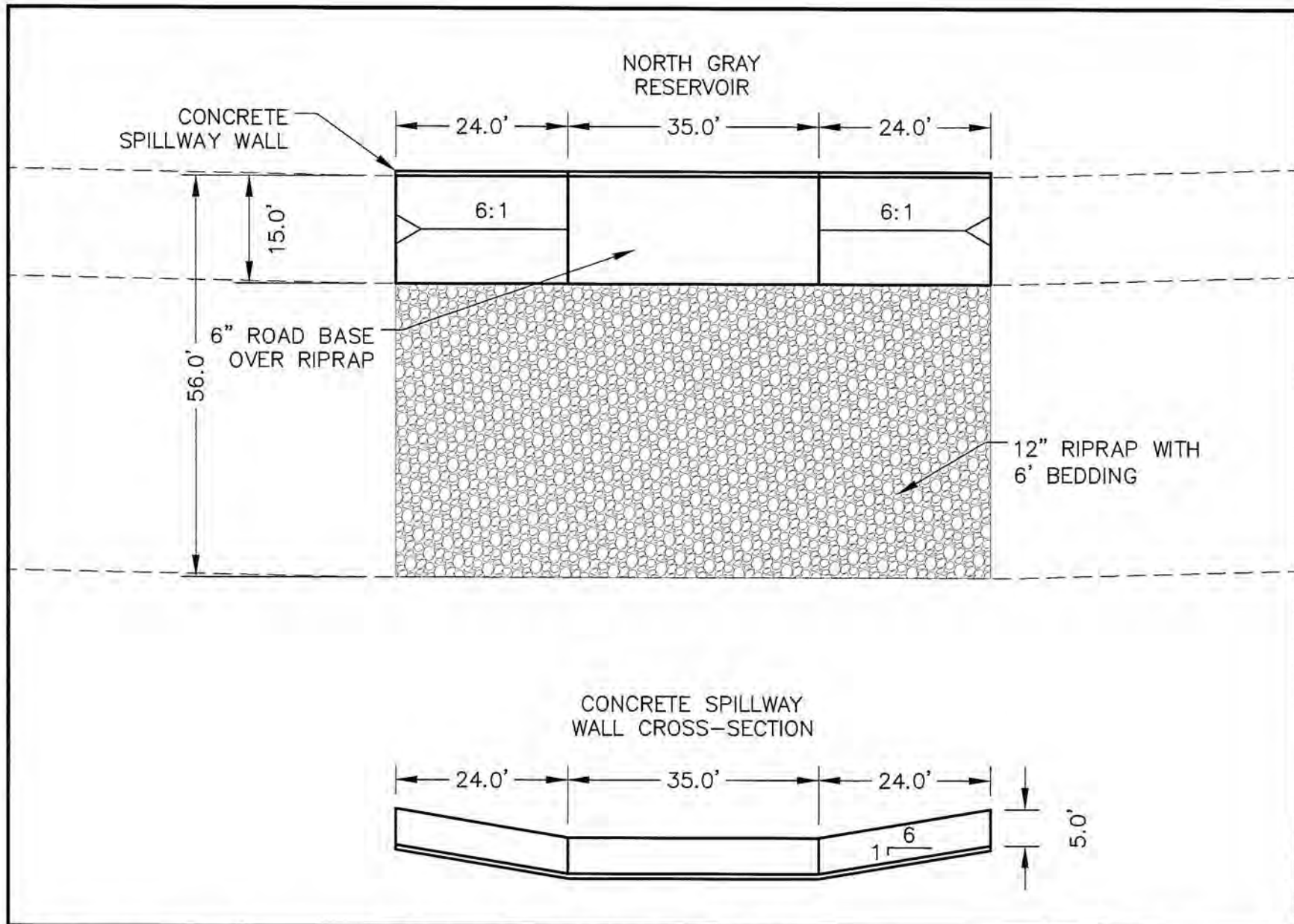
## **PERMITTING**

The Company and the Engineer believe no Environmental Assessment (EA) or Environmental Impact Statement (EIS) will be required. The Corps of Engineers will be contacted concerning 404 permitting but anticipate the work falling under the general permits and will be exempted due to the agriculture use.

Water quality and erosion control will have to be considered but no air quality control plan is expected due to the small size of the work area.

## **INSTITUTIONAL CONSIDERATIONS**

No institutional considerations exist other than the proposed loan from the CWCB.

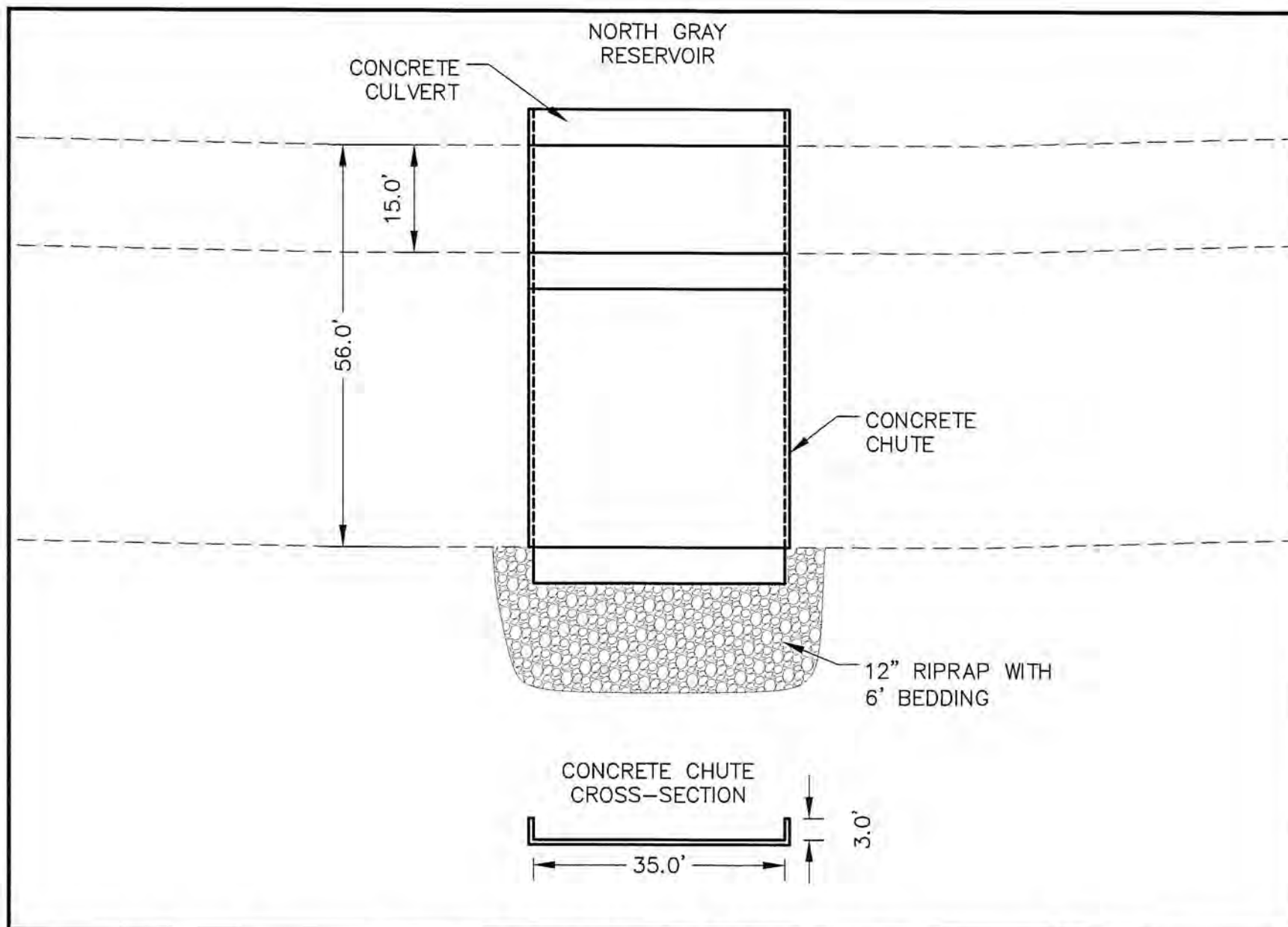


PROJECT: 04.073

DATE: MAR. 2006

NORTH GRAY RESERVOIR ALTERNATIVE 1  
SPILLWAY CROSS-SECTION

**SG** Smith  
Geotechnical  
ENGINEERING CONSULTANTS



PROJECT: 04.073

DATE: MAR. 2006

**NORTH GRAY RESERVOIR ALTERNATIVE 2**  
**SPILLWAY CROSS-SECTION**

**SG** Smith  
Geotechnical  
ENGINEERING CONSULTANTS

**APPENDIX A**  
**Financial Statements**



**APPENDIX B**  
**CWCB Application**

Colorado Water Conservation Board  
CONSTRUCTION FUND LOAN APPLICATION

Instructions: This application form should be typed, or printed neatly with black ink. You may attach additional sheets as necessary to fully answer any question, or to provide additional information which you feel would be helpful in evaluating this application. If you have difficulty with any part of the application, please contact the Colorado Water Conservation Board office for assistance, at (303) 866-3441.

Generally, the applicant is also the prospective owner and sponsor of the proposed project. If this is not the case, please contact the CWCB staff before completing this application.

Part A. - Description of the Applicant (Project Sponsor or Owner):

1. Name of applicant(s): Lake Canal Reservoir Company, Rodney Nelson, President  
Mailing address: c/o Hill & Hill, P.O. Box 421, 160 West Mountain  
Fort Collins, CO 80524  
  
Telephone number:                      Business: 970-482-3683  
   Facimilie: 970-482-7648
2. Person to contact regarding this application, if different from above:  
Name: \_\_\_\_\_  
Position/title: \_\_\_\_\_  
Mailing address: \_\_\_\_\_  
  
Telephone number:                      Business \_\_\_\_\_  
   Facimilie: \_\_\_\_\_
3. Type of organization (Ditch Company, Irrigation District, Municipality, Private Owner, etc.):  
Ditch Company
4. Is the organization incorporated in the State of Colorado? YES X NO \_\_\_\_\_  
(If "YES", please include a copy of the articles of incorporation, and the Bylaws with this application form.)
5. Please provide a brief description of the owner's existing water supply facilities and describe any existing operational or maintenance problems. (Attach separate sheets and a map, if

needed.):

The Lake Canal Reservoir Company owns three small reservoirs northeast of Fort Collins, Colorado which are commonly referred to as Gray Lakes. Numerous projects including the installation of toe drains and the expansion of the downstream stability berms have been performed over the years to maintain the reservoirs. In June, 2011, an inspection by the Dam Safety Engineer from the Colorado Division of Water Resources revealed that the emergency spillway for the North Gray Dam had been damaged. The reservoir storage has been restricted to gage height 11 or 3 feet below the spillway crest storage since the inspection thus reducing the yield of the facilities.

6. For existing facilities indicate: (A) the number of shareholders 49, or (B) the number of customers served \_\_\_\_\_

Part B. - Description of the Project

1. Name of the project or facility: North Gray Reservoir
2. What is the purpose of this loan application? Check one.  
       New Project  
  X   Rehabilitation or replacement of existing facility -North Gray Reservoir  
       Enlargement of existing facility  
       Emergency Repair  
       Other (describe) : \_\_\_\_\_
3. If the project is for rehabilitation of an existing reservoir, is the reservoir currently under a storage restriction order from the State Engineer? YES   X   NO \_\_\_\_\_
4. General location of the project. (Please include county, and approximate distance and direction from nearest town, as well as legal description, if known):  
Larimer County, Colorado; 3 miles east and 2 miles north of Fort Collins, Colorado  
T8N, R 68 W ; Timnath Quad

5. Please provide a brief narrative description of the proposed project including purpose, need, facilities, types of water uses to be served and service area. (Attach separate sheet, if needed.):

Remove the existing spillway and replace with a spillway that meets the current

requirements of the Colorado State Engineer.

6. Will the acquisition of additional water rights be necessary?

YES \_\_\_\_\_ NO X If "YES", please explain: \_\_\_\_\_

7. Please list the names and addresses of any technical or legal consultants retained to represent the applicant or to conduct investigations for the proposed project:

NAME

ADDRESS and PHONE

SMITH GEOTECHNICAL

1225 Red Cedar Circle, Suite H

(Duane H. Smith, P.E.)

Fort Collins, CO 80524

☎970-490-2620; Fax: 970-490-2851; dsmith@smithgeotech.com

8. List any feasibility studies or other investigations ~~which have~~ been completed or are now in progress for the proposed project. (Please submit ~~one copy~~ of each completed study with this application):

North Gray Reservoir, August 2011.

9. What is the estimated cost of the project? Please include estimated Engineering costs, and estimated Construction costs, if known:

Estimated Construction Costs: \$ 84,300

Contingency @ 20%: \$ 17,000

Estimated Engineering Costs: \$ 22,000

Feasibility Study Costs: \$ 5,000

Estimated Total Costs: \$ 128,300

10. What loan amount and terms are you requesting?:

Requested Loan Amount: \$ 115,470

Term (length) of loan: 30 years

Interest Rate: 1.75%

### Part C. - Project Sponsor Financial Information

Because the CWCB Construction Fund is a revolving fund, it is important that the project sponsor have the financial capacity to repay any loans made by the CWCB. The following information is requested to assist the CWCB in a preliminary assessment of the applicant's financial capacity. It is also requested that the project sponsor submit with this application copies of the two most recent annual reports, financial statements, corporate reports or other current documentation of financial condition and operations.

1. List any existing liability or indebtedness which exceeds one-thousand dollars. For example, bank loans, government agency loans, bond issues, accounts payable, etc. Include names and addresses of lenders, amounts, due dates and maturity dates. (You may attach a separate schedule if you wish):

<u>Lender</u> <u>Name/Address</u>	<u>Total</u> <u>Amount</u>	<u>Due</u> <u>Dates</u>	<u>Maturity</u> <u>Date</u>
Colorado Water Conservation Board (See enclosed payment schedule)	\$99,136.23	July	July, 2018
Colorado Water Conservation Board (See enclosed payment schedule)	\$389,700	July	July, 2040

2. Are any of the above liabilities now in default, or been in default at any time in the past?  
YES \_\_\_\_\_ NO X If "YES", please give detailed explanation:

3. Please provide a summary of all revenues received during the last two fiscal years by category (such as service charges, tap fees, assessments, etc.):

See attached Financial Reports for 2009 and 2010.

4. Please provide a brief narrative description of potential sources of funding (in addition to the CWCB) which have been explored or which will be explored for the proposed project (Examples would be Banks, U.S. Farmer's Home Administration, Colorado Water Resources and Power Development Authority, etc.)

New West Bank, Eaton Colorado



5. What collateral will you be offering for this loan?:

- 1) The facilities.
- 2) A portion of annual assessments.
- 3) A Certificate of Deposit equal to one loan payment.

The above statements are true, to the best of my knowledge:

Signature of Applicant: Rodney Nelson  
Rodney Nelson

Title: President

Date: 8-5-11

**APPENDIX C**  
**Stockholders Resolution**

A resolution has not been presented to the stockholders at this time. The LCRC plans to present one to the stockholders as soon as possible using the format required by the CWCB.

**APPENDIX D**  
Water Rights







# - GRAY LAKES -

## ADJUDICATED RIGHTS

<u>NORTH GRAY</u>	<u>PRIORITY No.</u>	<u>DATE</u>	<u>GAUGE HT. (FT.)</u>	<u>ACRE FT.</u>
	#2 *	4/1/1882	7.5'	136 A.F.
	#50	11/1/1902	11.5'	139 A.F.
	#77	11/15/1904	13.65'	58 A.F.
NORTH GRAY TOTAL -				333 A.F.

<u>SOUTH GRAY</u>				
(MIDDLE LAKE)	#3 *	4/1/1882	6.0'	275 A.F.
	#51	11/1/1902	14.0'	237 A.F.
	#78	11/16/1904	18.0'	222 A.F.
South GRAY TOTAL -				734 A.F.

<u>GRAY #3</u>				
	#76	11/14/1904	13.0'	111 A.F.
GRAY #3 TOTAL -				111 A.F.

TOTAL OF ALL LAKES 1178 A.F.

### FILLING SOURCE - Box Elder BASIN

\* THE #1 PRIORITY FILLING RIGHT ON ANY LAKE OR RES. WITHIN THE PONDRE BASIN IS THE WINDSOR LAKE OR KERN RES. WHICH IS IN WINDSOR, CO.

GRAY RESERVOIR NO. 3.

The Lake and Reservoir Survey, 1904.

In accordance with the findings: that Gray Reservoir No. 3 is located in the southeast quarter of section 54, township 8, north range 68 west of the 6th P.M.; that the source of supply is water from Box Elder Creek and from an unnamed draw in the east half of section 27, township 8, north range 68 west, tributaries of the Cache la Poudre River, the headgate of the inlet ditch being located at a point from which the south quarter corner of section 27, township 8, north range 68 west, bears south  $0^{\circ} 23'$  west, 1515 feet, from thence the water is conducted into North Gray reservoir, thence into South Gray reservoir and thence into Gray reservoir No. 3; that the total storage depth of the reservoir as constructed is 13 feet above the base of the outlet tube an estimated capacity of 4,844,281 cubic feet; that the work of construction commenced November 14, 1904, and was prosecuted with due diligence to completion; that water has been stored to the full capacity of the reservoir and beneficially applied for irrigation; that an appropriation of water from the sources defined sufficient to fill said reservoir to a total storage depth of 13 feet above the base of the outlet tube, an amount estimated at 4,844,281 cubic feet was made by reason of said construction and beneficial application of water stored in said reservoir as of date November 14, 1904.

IT IS ORDERED, ADJUDGED AND DECREED, that Gray Reservoir No. 3 be awarded a priority as of date November 14, 1904,

for the storage of water for irrigation from the sources defined, necessary to fill said reservoir to a total storage depth of 13 feet above the base of the outlet tube, an estimated capacity of 4,844,281 cubic feet, said priority being No. 73.

The above appropriation and priority number is awarded to said reservoir upon the condition that the court may, on final hearing of any claim for appropriation, herein continued for further hearing, grant to such continued claim an appropriation and priority number of a date earlier than said priority herein awarded to this claimant, should the court, upon such final hearing of any continued claim, so determine.

SOUTH GRAY RESERVOIR

Second Enlargement

The Lake Canal Reservoir Company, Claimant.

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In accordance with the findings: that the South Gray Reservoir is located in the east half of section 34, township 8 north range 68 west of the 6th P.M.; that the source of supply is water from Box Elder Creek, and an unnamed draw in the ~~the~~ east half of section 34, and an unnamed ravine located in section 35, township 8 north range 68 west, tributaries of the Cache la Poudre river; that the headgate of the intake ditch is located at a point from which the south quarter corner of section 27, township 8 north range 68 west, bears south  $0^{\circ} 25'$  west 1513 feet, from which the water is conducted into North Gray Reservoir, thence into South Gray Reservoir; that the second enlarged storage depth of the reservoir for which a decree is now sought, is 4 feet, with an estimated second enlarged capacity of 9,677,138 cubic feet; making the total storage depth under original construction, first and second enlargements, of 13 feet above the base of the outlet tube and a total estimated <sup>enlarged</sup> capacity of 31,970,138 cubic feet; that the work of the second enlargement commenced November 16, 1904, and was prosecuted with due diligence to completion; that water has been stored to the total capacity of the reservoir as enlarged and beneficially applied for irrigation; that an appropriation of water from the sources defined, sufficient to fill said reservoir to a second enlarged depth of 4 feet, an amount estimated at 9,677,138 cubic feet was perfected by reason of said second



enlargement and the beneficial application of water stored therein as of date November 16, 1904.

IT IS ORDERED, ADJUDGED AND DECREED, that the South Gray Reservoir be awarded a priority as of date November 16, 1904, for the storage of water for irrigation from the sources defined, necessary to fill said reservoir to a second enlarged depth of 4 feet, a second enlarged capacity estimated at 9,677,136 cubic feet, making a total storage depth under original construction, first and second enlargements, of 18 feet above the base of the outlet tube, a total capacity estimated at 31,970,136 cubic feet, the priority for second enlargement being No. 78.

The above appropriation and priority number is awarded to said reservoir upon the condition that the court may, on final hearing of any claim for appropriation, herein continued for further hearing, grant to such continued claim an appropriation and priority number of a date earlier than said priority herein awarded to this claimant,, should the court, upon such final hearing of any continued claim, so determine.

It is hereby adjudged and decreed that said reservoir be allowed to have stored in it from the canals and feeders aforesaid by reason of said first enlargement and for the benefit of the party or parties aforesaid under and in virtue of said appropriation by enlargement priority No. 58, so much water as is necessary to fill said reservoir to an increased depth of 8 feet or a total depth of 14 feet from the base of the outlet tube and a cubical capacity 511.78 AF of 22, 293,000 cubic feet with an area at its upper contour of 52.55 acres, which said appropriation of water for said storage purposes took effect on and said priority thereof dates from the 1st day of November, 1902.

That reservoir named reservoir Number 1 belonging to reservoir claimant No. 2 The Lake Canal Reservoir Company, claimant, having been found in manner aforesaid to be a reservoir located on section 7, township 6, north range 67 west in Weld County, Colorado, used for the irrigation of lands and taking its supply of water from the Cooper and Ames Sloughs Box Elder Creek and the Cache La Poudre river, the main feeder being the canal of the Lake Canal Company; the feeder from Box Elder Creek is 10 feet wide at the bottom with a capacity of 20 cubic feet per second of time, which priority for said feeder dates from the 1st day of December, 1901.

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said Lake Canal, the main feeder has a capacity of 152 cubic feet per second of time and derives its supply of water from the Cache La Poudre river; said reservoir is used for the irrigation of lands and is entitled to one appropriation of water for the purpose of filling said reservoir and to priority No. 41 by construction thereof and to the amount of water hereinafter mentioned for the benefit of the party or parties lawfully entitled thereto; It is hereby adjudged and decreed that said reservoir be allowed to have stored in it from said Cooper and Ames Sloughs, Box Elder Creek and the Cache La Poudre river through the feeders constructed from the ditches aforesaid under and in virtue of said appropriation by construction priority No. 41, so much water as is necessary to fill said reservoir to a depth of 13 feet from the base of the outlet tube and a capacity of 35,000,000<sup>803.494F</sup> cubic feet with an area at its upper contour of 93 acres, which appropriation of water for said storage purposes took effect on and said priority thereof dates from the 15th day of October, 1898.

See Page 411

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NORRIS GRAY RESERVOIR

Second Enlargement

The Lake Canal Reservoir Company, Claimant.

In accordance with the findings: That Norris Gray Reservoir is located in the northeast quarter of section 22, township 8 north range 68 west of the 6th P.M.; that the source of supply is water from Box Elder Creek and a certain unnamed draw in the east half of section 27, township 8 north range 68 west, tributaries of the Cache la Poudre river, the headgate of the inlet being located at a point from which the south quarter corner of section 17, township 8 north range 68 west, bears south  $0^{\circ} 25'$  west, 1515 feet; that the second enlarged storage depth of the reservoir for which a decree is now sought, is 2.15 feet, an estimated second enlarged capacity of 2,486,103 cubic feet, making a total storage depth under original construction, first and second enlargements of 13.65 feet above the base of the outlet tube, a total estimated capacity of 14,486,103 cubic feet; that the work of the second enlargement commenced November 15, 1904, and was prosecuted with due diligence to completion; that water has been stored to the total capacity of the reservoir and beneficially applied for irrigation; that an appropriation of water sufficient to fill said reservoir to the second enlarged depth of 2.15 feet, an amount estimated at 2,486,103 cubic feet was perfected by reason of the second enlargement of said reservoir and the beneficial application of water stored therein as of date November 15, 1904.

IT IS ORDERED, ADJUDGED AND DECREED, that the North Gray Reservoir be awarded a priority as of date November 15, 1904, for the storage of water for irrigation, from the sources defined, necessary to fill said reservoir to a second enlarged depth of 2.15 feet, an enlarged capacity estimated at 2,486,103 cubic feet, making a total storage depth under original construction, first and second enlargements, of 15.65 feet above the base of the outlet tube, a total capacity estimated at 14,486,103 cubic feet, the priority for said second enlargement being No. 77.

The above appropriation and priority number is awarded to said reservoir upon the condition that the court may, on final hearing of any claim for appropriation, herein continued for further hearing, grant to such continued claim an appropriation and priority number of a date earlier than said priority herein awarded to this claimant, should the court, upon such final hearing of any continued claim, so determine.



PP 314 (409) (SEE #2)		NORTH GRAY	
Decree No. 50	Ditch (Reservoir) Well No.		
11-1-1902	LAKE CANAL + RESERVOIR CO.		
Decree Date	When		
12,000,000 @ 11.5			
135 + 140 = 275 AF			
Decree Amt. G.H.	Location Length-Area-Depth		
111			
Capacity	Source	PP 313 (408)	
	Decree No. 2	NORTH GRAY	
	Ditch (Reservoir) Well No.		
	LAKE CANAL RESERVOIR CO.		
	Decree Date	When	
	4-1-1882		
	Decree Date	When	
	135 AF		
	5,903,000 CF 7.5	SB 8-68-34 ACA 39A st	
	Decree Amt. G.H.	Location Length-Area-Depth	
	83 @ 7.5 287 @ 14.0	BOX ELDER CREEK	
	194 @ 11.5	Source of Supply	
	Capacity	From To res	
		Seasonal Usage	
	Acres Irrig.	APRIL	
	ALSO #S 50 + 77		
	ISSUED 10-28-1909		

#### Reservoir Claimant No. 2.

That reservoir known as The North Gray reservoir belonging to reservoir claimant No. 2, The Lake canal reservoir company claimant, having been found in manner aforesaid to be a reservoir located upon sec. 34, twp. 8 North range 68 West in Larimer County, Colorado, used for the irrigation of lands and taking its supply of water from a draw in section 27, twp. 8, North range 68 West on the East side of Box Elder Creek and also from an inlet ditch constructed from Box Elder Creek, 9 feet wide on the bottom and three feet deep with a capacity of 40 cubic feet per second of time, is entitled to two appropriations of water for the purpose of filling said reservoir and to priority No. 2 by construction thereof and to the amount of water hereinafter mentioned for the benefit of the party or parties lawfully entitled thereto;

section 27 and from said inlet ditch constructed from the Box Elder creek to said reservoir and for the benefit of the party or parties aforesaid under and in virtue of said appropriation by construction priority No. 2, so much water as is necessary to fill said reservoir to a depth of  $7\frac{1}{2}$  feet from the base of the outlet tube and to a capacity of 5,903,000 cubic feet with an area at its upper contour of about 10 acres, which appropriation of water for said storage purposes took effect on and said priority thereof dates from the 1st day of April, 1882.

And further said North Gray reservoir is entitled by appropriation to priority No. 50 by increased storage and beneficial application of water and thereby to the quantity of water hereinafter mentioned for the use and benefit of the party or parties lawfully entitled thereto; It is hereby adjudged and decreed that said reservoir be allowed to have stored in it from the canals and feeders aforesaid by reason of said first enlargement and for the benefit of the party or parties aforesaid under and in virtue of said appropriation by enlargement priority No. 50, so much water as is necessary to fill said reservoir to an increased depth of 4 feet from the base of the outlet tube or a total depth of  $11\frac{1}{2}$  feet and a cubical capacity of 12,000,000 cubic feet with an area at its upper contour of 30 acres, which appropriation of water for said storage purposes took effect on and said priority dates from ~~1900~~ the 1st day of November, 1902.

That reservoir named the South Gray reservoir belonging to reservoir claimant Number 2, The Lake Canal Reservoir Company, claimant, having been found in manner aforesaid to a reservoir located on section 34, twp. 8 North range 68 West in Larimer County, Colorado, used for the irrigation of lands and taking its supply of water from the same source and through the same feeders as the North Gray reservoir and by a ditch from the North Gray reservoir to the South Gray reservoir, is entitled to two appropriations of water for the purpose of filling said reservoir and to priority No. 3 by construction thereof and to the amount of water hereinafter mentioned for the benefit of the party or parties lawfully entitled thereto.

It is hereby adjudged and decreed that said reservoir be allowed to have stored in it from said draw and inlet ditch from the Box Elder Creek through the feeders constructed to said reservoir and for the benefit of the party or parties aforesaid under and in virtue of said appropriation by construction priority Number 3, so much water as is necessary to fill said reservoir to a depth of 6 feet from the base of the outlet tube and to a capacity of 12,000,000 cubic feet, which appropriation of water for said storage purposes took effect on and said priority thereof dates from the 1st day of April, 1882.

And further said South Gray reservoir is entitled by appropriation to priority No. 51, by increased storage

410

and beneficial application of water and thereby to the quantity of water hereinafter mentioned for the use and benefit of the party or parties lawfully entitled thereto. It is hereby adjudged and decreed that said reservoir be allowed to have stored in it from the canals and feeders aforesaid by reason of said first enlargement and for the benefit of the party or parties aforesaid under and in virtue of said appropriation by enlargement priority No. 51, so much water as is necessary to fill said reservoir to an increased depth of 8 feet or a total depth of 14 feet from the base of the outlet tube and a cubical capacity of 22,293,000 cubic feet with an area at its upper contour of 52.55 acres, which said appropriation of water for said storage purposes took effect on and said priority thereof dates from the 1st day of November, 1902.

That reservoir named Reservoir Number 1 belonging to Reservoir claimant No. 2, The Lake Canal Reservoir Company, claimant, having been found in manner aforesaid to be a reservoir located on section 7, Township 6, North Range 67 West in Weld County, Colorado, used for the irrigation of lands and taking its supply of water from the Cooper and Ames sloughs Box Elder Creek and the Cache La Poudre River, the main feeder being the canal of the Lake Canal Company; the feeder from Box Elder Creek is 10 feet wide at the bottom with a capacity of 20 cubic <sup>411</sup> feet per second of time, which priority for said feeder dates from the 1st day of December, 1901.

---

and beneficial application of water and thereby to the quantity of water hereinafter mentioned for the use and benefit of the party or parties lawfully entitled thereto. It is hereby adjudged and decreed that said reservoir be allowed to have stored in it from the canals and feeders aforesaid by reason of said first enlargement and for the

PP3841D	RES. No. LAKE CANAL RES. CO.	d in
Decree No. 36	Ditch (Reservoir) Well No.	ty No.
10-15-1898	Owner	ervoir to
12-01-1901 Box. CK	SB 6-67-74 AC	4 feet
Decree Date	Location Length-Area-Depth	acity of
35,000,000 @ 13.0	CACHE LA POUDE, AMES + COOPER	ntour of
803 AF	SLOUGH, BOX ELDER CREEK	said
Decree Amnt. G.H.	Source of Supply	thereof
327 @ 10.0	From To	
Capacity	Approx. Seasonal Usage	
Acres Irrig.	FEEDER DATES FROM 12-1-1901 FROM BOX ELDER CK	
ISSUED 10-28-1909		

That reservoir named Reservoir Number 1 belonging to Reservoir claimant No. 2, The Lake Canal Reservoir Company, claimant, having been found in manner aforesaid to be a reservoir located on section 7, Township 6, North Range 67 West in Weld County, Colorado, used for the irrigation of lands and taking its supply of water from the Cooper and Ames sloughs Box Elder Creek and the Cache La Poudre River, the main feeder being the canal of the Lake Canal Company; the feeder from Box Elder Creek is 10 feet wide at the bottom with a capacity of 20 cubic 411 feet per second of time, which priority for said feeder dates from the 1st day of December, 1901.

said Lake Canal, the main feeder has a capacity of 152 cubic feet per second of time and derives its supply of water from the Cache La Poudre river; said reservoir is used for the irrigation of lands and is entitled to one appropriation of water for the purpose of filling said reservoir and to priority Number 36 by construction thereof and to the amount of water hereinafter mentioned for the benefit of the party or parties lawfully entitled thereto; It is hereby adjudged and decreed that said reservoir be allowed to have stored in it from said Cooper and Ames sloughs, Box Elder Creek and the Cache La Poudre River through the feeders constructed from the ditches aforesaid under and in virtue of said appropriation by construction priority No. 36, so much water as is necessary to fill said reservoir to a depth of 13 feet from the base of the outlet tube and a capacity of 35,000,000 cubic feet with an area at its upper contour of 93 acres, which appropriation of water for said storage purposes took effect on and said priority thereof dates from the 15th day of October, 1898.

See page 314

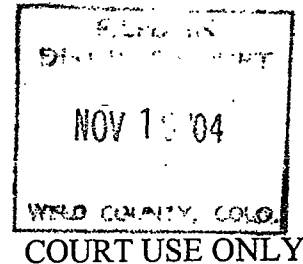
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RESERVOIR CLAIMANT NO. 3.

Those reservoirs named Reservoirs Nos. 2 and 3 belonging to reservoir claimant No. 3, The Water Supply and Storage Company, having been found in manner afore-

DISTRICT COURT, WATER DIVISION NO. 1.  
COLORADO

Address: 9<sup>th</sup> Street & 9<sup>th</sup> Ave.  
P.O. Box 2038  
Greeley, CO 80631



Case No:2002CW244

CONCERNING THE APPLICATION FOR WATER  
RIGHTS OF:

LAKE CANAL RESERVOIR COMPANY, RODNEY  
NELSON, KATHY NELSON, AND PARAGON  
PARTNERS, L.L.C.  
IN LARIMER COUNTY.

William H. Brown, No. 2088  
Fischer, Brown & Gunn, P.C.  
P.O. Box Q  
Fort Collins, CO 80522  
(970) 407-9000  
Fax: (970) 407-1055  
E-mail: [billbrown@fbgpc.com](mailto:billbrown@fbgpc.com)

**FINDINGS OF FACT, CONCLUSIONS OF LAW,  
RULING AND DECREE**

This matter was filed with the Water Clerk, Water Division No. 1, on October 31, 2002. The Referee, having considered the pleadings, the stipulations of the parties, the contents of the Court's file, and being fully advised in the premises, does hereby find, conclude and rule as follows:

**FINDINGS OF FACT**

1. Applicants Lake Canal Reservoir Company, Rodney Nelson, Kathy Nelson, and Paragon Partners, L.L.C. initiated this matter by filing with the District Court, Water Division No. 1, their application for a change of water rights, being for alternate places of

Case No. 2002CW244  
Lake Canal Reservoir Company,  
Rodney Nelson, Kathy Nelson,  
and Paragon Partners, L.L.C

storage, on October 31, 2002. The court finds that the application is complete and includes all matters required by law.

2. This matter was referred to the Water Referee pursuant to the provisions of Section 37-92-302 (4), Colorado Revised Statutes.

3. Statements of Opposition to this application have been duly filed by the City of Thornton and the City of Greeley, acting by and through its Water & Sewer Board. The time for filing statements of opposition has expired. There have been no motions to intervene, nor are there any motions that have been made that have not been ruled upon.

3.1

3.2

4. The Water Referee has consulted with the Division Engineer regarding the application as required by law. The Division Engineer submitted a Summary of Consultation dated February 25, 2003. Copies of the summary of consultation were properly served on all parties to the case on February 28, 2003.

5. The Applicants seek a decree for alternate points of storage for the water decreed for storage in Gray Reservoir No. 3, a/k/a Gray Lake No. 3.

6. The Gray Reservoir No. 3 is located in the SE ¼ of Section 34, Township 8 North, Range 68 West of the 6<sup>th</sup> P.M. The headgate of the inlet ditch that serves Gray Reservoir No. 3 is the Gray Reservoir Inlet located on Box Elder Creek at a point from which the south quarter corner of Section 27, Township 8 North, Range 68 West bears south 0 degrees 23 minutes west, 1515 feet, from thence the water is conducted into North Gray Reservoir, thence into South Gray Reservoir and thence into Gray Reservoir No. 3.

7. The Gray Reservoir No. 3 was adjudicated in Case No. 2031, District Court, Larimer County on April 22, 1922. The appropriation date is November 14, 1904 in the amount of 4,844,381 cubic feet (111.2 acre feet).

8. Applicants seek to store the water decreed to the Gray Reservoir No. 3 at alternate storage locations in Section 36, Township 7 North, Range 68 West of the 6<sup>th</sup> P.M., Larimer County. The names, locations and approximate capacities of such alternate places of storage follow. The locations of the alternate places of storage are measured in feet from the northwest corner of Section 36, Township 7 North, Range 67 West of the 6<sup>th</sup> P.M.



Case No. 2002CW244  
Lake Canal Reservoir Company,  
Rodney Nelson, Kathy Nelson,  
and Paragon Partners, L.L.C

<u>Name</u>	<u>Location</u>	<u>Capacity</u>
GL 3A,	east 350 and south 480,	15 acre feet.
GL 3B,	east 400 and south 1850,	20 acre feet.
GL 3C,	east 900 and south 3000,	20 acre feet.
GL 3D,	east 1150 and south 730,	10 acre feet.
GL 3E,	east 1420 and south 850,	10 acre feet.
GL 3F,	east 2050 and south 2450,	15 acre feet.
GL 3G,	east 2310 and south 200,	10 acre feet.
GL 3H,	east 3900 and south 850,	10 acre feet.
GL 3I,	east 4220 and 3550 south,	10 acre feet.

9. A map showing the general configuration of the above listed alternate places of storage is attached as Exhibit A. At the time each alternate storage location is constructed it will be lined in accordance with the State Engineer's gravel pit lining standards.

10. The water, whether stored in Gray Reservoir No. 3 or in the alternate storage locations, will continue be used for irrigation on the same lands as have been irrigated historically.

11. Water diverted pursuant to the Gray Reservoir No. 3 storage right may be stored in Gray Reservoir No. 3 and/or the alternate storage locations in any combination. Whether stored in Gray Reservoir No. 3 or the alternate storage locations, water diverted pursuant to the Gray No. 3 storage right will first be diverted from Box Elder Creek into the Gray Reservoir inlet ditch, then into North Gray Reservoir and then South Gray Reservoir. Said water may then be (1) stored and measured in Gray Reservoir No. 3, (2) stored and measured in Gray Reservoir No. 3 and then released back to Box Elder Creek through the Gray Reservoir No. 3 outlet structure for rediversion at the Lake Canal headgate for storage in the alternate storage locations, or (3) released directly from South Gray Reservoir into Box Elder Creek for rediversion at the Lake Canal headgate for storage in the alternate storage locations. Both outlet structures release to Box Elder Creek in the SE ¼ of Section 34, Township 8 North, Range 68 West of the 6<sup>th</sup> P.M. Water released to Boxelder Creek from either the South Gray Reservoir outlet or the Gray Reservoir No. 3 outlet for rediversion at the Lake Canal headgate pursuant to this decree shall be measured in the outlet structure by which the water is released to Box Elder Creek (South Gray or Gray Reservoir No. 3 outlet). The amount of water stored in Gray Reservoir No. 3 shall not exceed 111.2 acre-feet per year. The total amount of water released annually from the Gray Reservoir No. 3 and/or South Gray Reservoir outlet to Box Elder Creek for rediversion at the Lake Canal headgate under the Gray

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Reservoir No. 3 storage right shall not exceed the difference between the amount of water stored in Gray Reservoir No. 3 and 111.2 acre feet, and in no event exceed 111.2 acre feet. Water released to Box Elder Creek and rediverted at the Lake Canal headgate pursuant to this decree shall be measured at the Lake Canal headgate on Box Elder Creek. The amount of water diverted at the Lake Canal headgate pursuant to this decree shall not exceed the amount of water released to Box Elder Creek from Gray Reservoir No. 3 and/or South Gray Reservoir pursuant to this decree, less river transit loss. Transit loss shall be 0.75% (0.25% x 3 miles) of the water released back to Box Elder Creek from Gray Reservoir No. 3 and/or South Gray Reservoir pursuant to this decree. In no event shall the amount of water diverted at the Lake Canal headgate pursuant to this decree exceed 110.4 acre feet.

#### CONCLUSIONS OF LAW

12. Any conclusion of law contained in the foregoing Findings of Fact is included herein by reference.

13. The Referee and this Court have jurisdiction of this application.

14. Applicant is entitled to an alternate point of storage decree allowing the water decreed to Gray Reservoir No. 3 to be stored at the alternate storage sites listed in paragraph 8 above.

#### RULING

It is hereby the ruling of the Water Referee:

15. The foregoing findings of fact and conclusions of law, together with any exhibits hereto, are incorporated into this ruling.

16. The storage locations listed in paragraph 8 above are hereby determined to be alternate storage locations for the water decreed for storage in Gray Reservoir No. 3, as decreed in Case No. 2031, District Court, Larimer County on April 22, 1922.


17. Water decreed to the Gray Reservoir No. 3 shall not be impounded in the alternate points of storage except pursuant to the terms and conditions set forth in this decree. All inflow of water into these storage locations to which Applicant is not entitled, including precipitation, shall be removed by applicant or applicant's successors in interest by draining, pumping or other means, and released into the nearest natural

Case No. 2002CW244  
Lake Canal Reservoir Company,  
Rodney Nelson, Kathy Nelson,  
and Paragon Partners, L.L.C.

water course or below the reservoir, and not utilized by applicant or applicant's successors in interest in any manner. Applicant or applicant's successors in interest shall install and maintain such meters, measuring devices or other structures, and shall maintain such records, as may be required by the Division Engineer of Water Division No. 1 for administration of this right. To this end, Applicant shall prepare an accounting sheet as reasonably required by the Water Commissioner and Division Engineer on a form acceptable to the Water Commissioner and Division Engineer. An accounting sheet acceptable to the parties is attached as Exhibit B. This accounting sheet, however, is not part of this decree, and if otherwise consistent with the provisions of this decree, may be modified as agreed between the Applicant and the Water Commissioner and/or Division Engineer with notice provided to all parties herein.

18. This decree of the Court shall be subject to reconsideration by the Water Judge pursuant to §37-92-304(6), C.R.S. for a period of five years from the date the decree is made absolute.

DATED this 10th day of NOVEMBER, 2004.

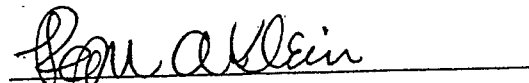
  
Water Referee  
Water Division No. 1

THE COURT DOTH FIND: NO PROTEST WAS FILED IN THIS MATTER.

THE FOREGOING RULING IS CONFIRMED AND APPROVED, AND IS HEREBY  
MADE THE JUDGMENT AND DECREE OF THE COURT.

DEC 01 2004

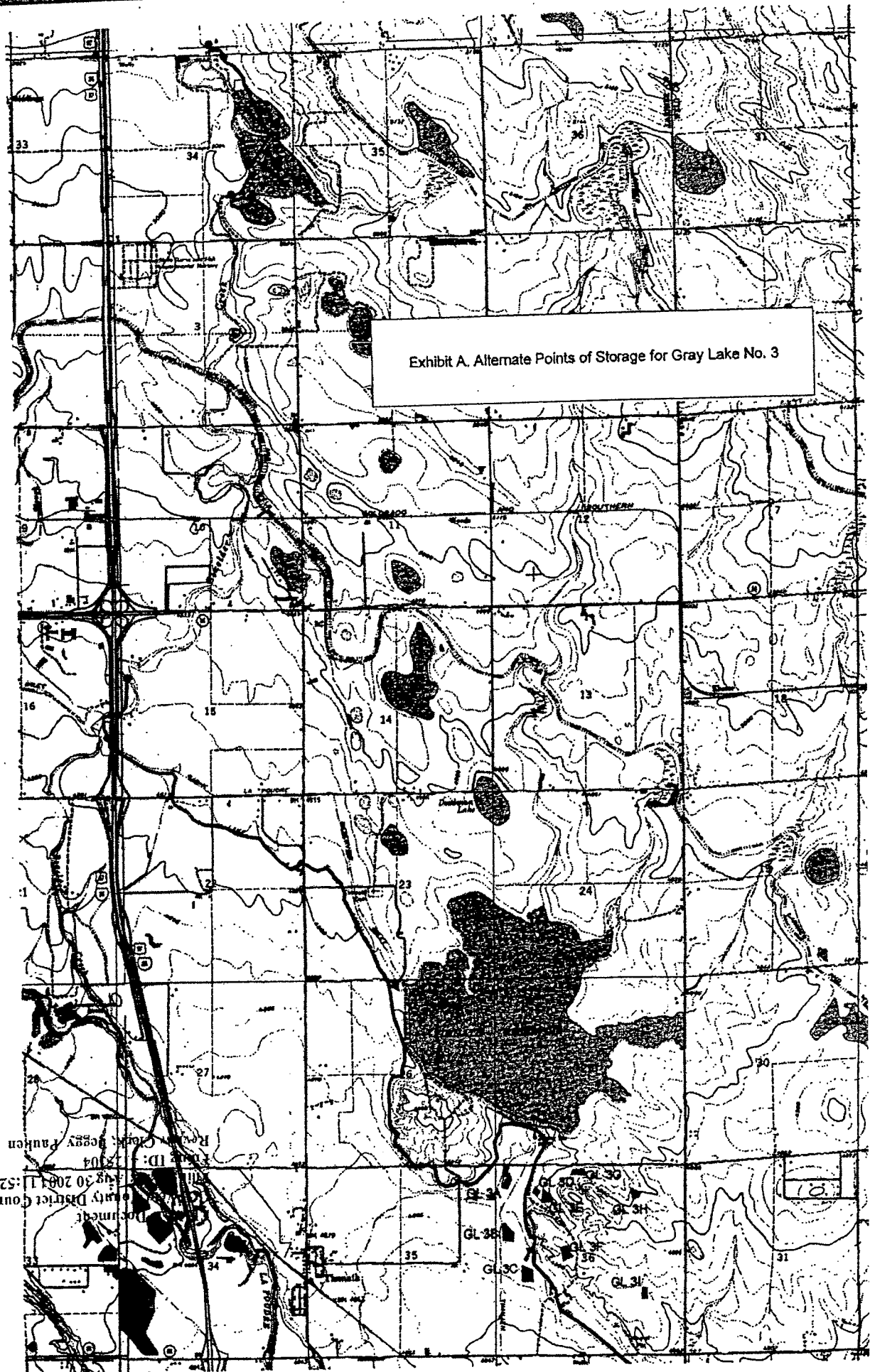
Dated: \_\_\_\_\_

  
Water Judge  
Water Division No. 1  
State of Colorado

\\paragon partners\decree 1 031403.doc

Exhibit A. Alternate Points of Storage for Gray Lake No. 3

Document  
County District Court 19th JD  
Case No. 2004-11-52AM MDT  
ID: 2804  
H. Clark, Peggy Pauken



**APPENDIX E**  
**Articles of Incorporation and Bylaws**

Page 1 of  
Art. of Incorp.

Articles of Incorporation of  
The Lake Canal Reservoir Company.

Filed in the office of the Secretary of State on the 25th of  
January, 1902, at 11:20 A.M.  
*Filed in Larimer County - Mar 4, 1922 - Certified Copy.*

Know all men by these presents, that the undersigned Lewis  
Kern, Joseph O'Hara, B. H. Eaton, Percy Clegg and George W.  
Kern, all of the County of Weld and State of Colorado, have  
and by these presents do form a corporation and certify,

First: That the corporate name of said Company is and  
shall be "The Lake Canal Reservoir Company."

Second: The objects for which the said Company shall be  
created are to own, locate, construct, maintain and operate  
reservoirs and irrigating ditches in the counties of Larimer  
and Weld, in the State of Colorado, and to make appropriations  
of water for the purpose of storing and for direct irrigation  
from any of the natural streams, sloughs, arroyos and depressions  
within said counties for the purpose of storage for irriga-  
tion purposes, and for direct irrigation of farming land and  
domestic use, and especially to take, carry and appropriate  
from what is commonly known as Box Elder Creek, a natural  
stream flowing in the county of Larimer and State of Colorado,  
the waters flowing therein, and divert the same through two  
separate ditches, the headgates of which are situated in the  
banks of said Box Elder Creek as follows:

The first in the bank of said Box Elder Creek in Section  
fifteen, Township seven, North, Range sixty eight west of the  
Sixth P.M., through which headgate water is to be diverted and  
carried through ditches to a certain reservoir or reservoirs,  
situated in Sections thirteen, fourteen, twenty three and  
twenty four, in Township seven, North, Range sixty eight, West,  
also a certain other reservoir situated in Sections six and

seven, Township six, North, Range sixty eight, West, said waters to be so diverted from said Box Elder Creek are to be stored at all times when they are not needed for immediate use for irrigation, especially during the winter season, said waters so stored to be afterwards diverted from said reservoirs by this corporation and its successors at points convenient for use for irrigation of farming lands belonging to the stockholders of this corporation, and others who may be entitled by contract, or otherwise, to use the same for irrigation of farming lands.

The second headgate to the ditch for diversion of water from said Box Elder Creek is to be located in the bank of said Box Elder Creek in Section ten, Township seven, North, Range sixty eight West, from which water is to be diverted into a ditch and stored in a certain reservoir situated upon Sections thirteen, fourteen, twentythree and twentyfour, in Township seven, North, Range sixty eight West, also a certain other reservoir situated in Section six, and seven, Township six, North, Range sixty eight West. The further objects of said corporation is to divert and appropriate from what is commonly known as Cooper's Slough, a natural stream flowing in the county of Larimer and State of Colorado; the waters flowing therein, by means of a ditch with a headgate located in Section sixteen, Township seven, Range sixty eight West, and to divert water through said headgate and ditch, and store the same in a certain reservoir located in Section six and seven, Township six North, Range sixty eight West, said waters to be so diverted and appropriated from said Cooper's Slough are to be stored at all times when they are not needed for immediate use for irrigation, especially during the winter season, said waters so stored in said reservoir so situated, to be afterwards diverted by this corporation and its successors and assigns at points convenient for use for irrigation of lands belonging to the stockholders of our said Company, and to others who by contract, or otherwise, are entitled to use the same for irrigation purposes.

Our said Co. any also is to exercise the right to divert and deliver any water which it may have in any of said reservoirs, or any other reservoir it may afterwards acquire, into the Cache la Poudre River, or any tributary thereof or any other natural stream, or any tributary thereof, or any ditch or canal taking water therefrom, for the purpose of making exchange and taking an equivalent amount of water from said Cache la Poudre River, or other streams, or other ditches or canals, at some other point, as may be convenient for all the parties concerned. Our said corporation shall also exercise the right to acquire by purchase, condemnation, or otherwise, any lands which it may desire for irrigation or reservoir purposes, and to acquire by purchase, condemnation, or otherwise, the right of way to flow any waters which this Company may divert, appropriate or acquire, through any canals or ditches in said counties of Larimer and Weld, or either of them; also the right to buy and sell all manner of real and personal property, including shares of the capital stock of their corporation, bonds, notes, bills of exchange, stocks and securities; to borrow and loan money; to engage in a general livestock business; to enter into contracts with other corporations or individuals, for the purpose of constructing canals, reservoirs, and the appropriation and diversion of water for the irrigation of farming lands, and to do any and all things lawful that may be necessary to carry on a general business of constructing, operating and maintaining irrigating reservoirs and canals, and the appropriation and diversion of waters for the irrigation of farming lands.

Third: The amount of capital stock of said Company is the sum of Twelve Thousand Dollars (\$12,000.00) to be divided into One Hundred and Twenty (120) shares of One Hundred Dollars (\$100) each.

Fourth: The term of the existence of this corporation is to be 20 years.

Fifth: The number of directors of said Company shall be five.



Sixth: The names of those who shall manage the affairs of this Company during the first year and until their successors are elected and qualified are Lewis Kern, Joseph O'Harra, B. H. Eaton, Percy Clegg and J. W. Yancey.

Seventh: The name of the town and county in which business shall be carried on is Windsor, Weld County, Colorado.

Eighth: The principal business of the corporation shall be carried on in the counties of Larimer and Weld and State of Colorado.

In Witness Whereof, the undersigned have subscribed their names and affixed their seals this 2nd day of December A.D. 1901.

Lewis Kern (Seal)  
Joseph O'Harra (Seal)  
B. H. Eaton (Seal)  
Percy Clegg (Seal)  
Geo. W. Kern (Seal)

(The above Articles of Incorporation were acknowledged in form by R. E. Hanna, of Weld County, on Dec. 4, 1901.)  
before

End

These Articles of Incorporation became legal and effective on Jan 25, 1902 when they were filed in the office of the Secretary of State. The Corporate Life extends from the date of filing instead of the date of signing or acknowledging the Incorporation papers.

*Page 1 of 2*  
*Ext. of Corp. Life 1922.*

Extension of Corporate Existence of  
The Lake Canal Reservoir Company

Filed in the office of the Secretary of State  
*Filed St. Collins, Co. Ok. Mar 4, 1922 @ 10:30 a.m.*

We, the undersigned, respectively President and Secretary of The Lake Canal Reservoir Company, a corporation, duly organized and existing under and by virtue of the laws of the State of Colorado, do hereby certify as follows:

I

That the term of existence of said The Lake Canal Reservoir Company expired on the 25th day of January, A.D. 1922, by limitation under its charter, and that said corporation has not been administered upon as an expired corporation nor gone into liquidation nor had any settlement of its affairs, but is still an active-going business concern.

II

That a notice for the call of a special meeting of the stockholders of The Lake Canal Reservoir Company was duly given and signed by the owners of more than ten per cent of the entire Capital Stock of said Company;

That the notice of said meeting was duly published for four successive weeks, beginning Jan. 12th, A.D. 1922 and ending Feb 9th, A.D. 1922 in the Poudre Valley, a weekly newspaper published in the town of Windsor, Weld County, Colorado, and a copy of said notice was duly mailed, by the Secretary, to each of the stockholders of said Company more than thirty days prior to the time fixed for said meeting.

III

That at said meeting held at the First National Bank in the Town of Windsor, Weld County, Colorado, on the 15th day of February, A.D. 1922, at the hour of two o'clock in the afternoon, there were present in person and by proxy more than one-half of the entire outstanding capital stock of said Company, and there was submitted to the vote of the stockholders the

Page 2 of  
Cert. of Corp. Life 1922

question: "Shall the term of existence of this Company be extended for twenty years?" A Ballot was taken in which the entire capital stock represented and voting was voted in favor of said question of extension as submitted.

Therefore, we, W. A. Scott, as President, and Ira M. Watts, as Secretary of the said The Lake Canal Reservoir Company, do hereby certify the above facts under the seal of said Company as provided by law.

Witness our hands and the seal of said corporation this  
16th day of February, A.D. 1922.

W. A. Scott President of The  
Lake Canal Reservoir Co.

Ira M. Watts Secretary of The  
Lake Canal Reservoir Co.

Seal

\*\*\*\*\*

\*\*\*\*\* (End) \*\*\*\*\*

\*\*\*\*\*

Certificate of Amendment of (*Increasing Capital Stock*)  
The Lake Canal Reservoir Company

Filed in the office of the Secretary of State on the 24th of  
July, 1902 at 11:05 A.M. *Filed in F. H. Collins, Clerk - Mar 4 - 1902*

I, Joseph O'Hara, President of The Lake Canal Reservoir Company and I, Lewis Kern, Secretary of said Company, hereby certify that a special stockholders' meeting of said Company was held on the 10th day of July, 1902, at the residence of Lewis Kern, Secretary of said Company, near Windsor, Colorado, for the purpose of considering an amendment to the articles of incorporation of said corporation, to increase the capital stock of said Company from its then capitalization of \$12,000, divided into 120 shares of \$100 each, to a capitalization of \$16,000, divided into 160 shares of \$100 each.

That said special stockholders' meeting was called by delivering personally or by depositing in the post office, at least thirty days prior to the said date, a notice addressed to each stockholder, and duly signed by the Secretary of said corporation, stating the time and object of said meeting.

That at such meeting there were present and voted 108 shares out of a total of 120 shares of the capital stock of said company. That of said 108 shares, 100 shares, or more than  $\frac{2}{3}$  in amount of the total outstanding capital stock voted in favor of said amendment.

Wherefore, by virtue of the statute in such cases made and provided, we, the president and secretary of said corporation have hereunto affixed our signatures to this certificate.

Joseph O'Hara    President of The  
                                 Lake Canal Reservoir Co.

Lewis Kern        Secretary of The  
                                 Lake Canal Reservoir Co.

(The above Amendment to the Articles of Incorporation was acknowledged in form before R. E. Hanna, Notary Public of Well County, on July 22, 1902.)

(End)

The Lake Canal Reservoir Company

Extension of Corporate Life

In Perpetuity

We, the undersigned, respectively President and Secretary of The Lake Canal Reservoir Company, a corporation, duly organized and existing under and by virtue of the Laws of the State of Colorado, do hereby certify as follows:

I

That the term of existence of said The Lake Canal Reservoir Company expired on the 28th day of January, A.D. 1942, by limitation under its charter, and that said corporation has not been administered upon as an expired corporation nor gone into liquidation nor had any settlement of its affairs, but has been and is still an active-going business concern.

II

That a notice for the call of a special meeting of the stockholders of The Lake Canal Reservoir Company was duly given and signed by the owners of more than ten percent of the entire Capital Stock of said Company.

That the notice of said meeting was duly published for two successive weeks, Apr. 2 and Apr. 9, A.D. 1942, to wit; that said notice appeared in the Poudre Valley, a weekly newspaper published in the town of Windsor, Weld County, Colorado, and a copy of said notice was duly mailed, by the Secretary, to each of the stockholders of said Company more than thirty days prior to the time fixed for said meeting.

III

That at said meeting held in the schoolhouse in the town of Timnath, Larimer County, Colorado, on the 18th day of April,

A.D. 1942, at the hour of one o'clock in the afternoon, there were present in person and by proxy 118 shares of the entire outstanding capital stock of said Company, same being 180 shares; and there was submitted to the vote of the stockholders the question: "Shall the Corporate life of this Company be extended in perpetuity from and after the date of January 25, A.D. 1942, at which time it expired/<sup>by</sup> lawful limitation?"

Vote was taken by ballot and the report of the tellers showed that 118 shares of capital stock were voted, that 118 shares were voted in favor of the question as submitted and that no shares were voted against.

By resolution submitted and adopted G. O. Fisher, as President, and Bertha Peterson, as Secretary, of The Lake Canal Reservoir Company were authorized to certify the above facts under the seal of said Company as provided by law, and to file such certificate (and certifications thereof) in the office of The Secretary of State, of the State of Colorado, and in the office of the County Clerk and Recorder in Larimer and in Weld Counties in said State.

In certification of all which, witness our hands and the seal of said corporation this 18th day of April, A.D. 1942.

G. O. Fisher President of  
The Lake Canal Reservoir Company.

Bertha Peterson Secretary of  
The Lake Canal Reservoir Company.



*Copy*

Notice of Special Meeting

On Saturday Jan. 2, 1943 a special meeting of the Stockholders of The Lake Canal Reservoir Company will be held at 3:00 p.m. in the Schoolhouse at Timnath, Colorado for the purpose of voting upon the following amendments to the Articles of Incorporation of said Company:

1----The Lake Canal Reservoir Company, a mutual corporation of Colorado, was not organized for pecuniary profit, has never been operated for pecuniary profit, is in fact and it shall remain a "Corporation Not For Pecuniary Profit"

2----The directors shall have the power to make such prudential by-laws as said directors may deem proper for the management of the affairs of said corporation, not inconsistent with laws of the State of Colorado, for the purpose of carrying on all kinds of business within the objects and purposes of said corporation. Further, the said directors shall have power to amend, alter, annul and repeal any such by-laws as said directors may deem proper for the management of the affairs of said corporation.

Signed

B. O. Fisher  
President

Burlan Peterson  
Secretary

BY-LAWS OF  
LAKE CANAL RESERVOIR COMPANY

As Amended January 10, 2006

ARTICLE I.

BOARD OF DIRECTORS

Sec. 1. Number. The Board of Directors shall consist of five (5) persons. At least three of these persons shall be stockholders of the company. The other two persons shall be 1) stockholders of the company and/or; 2) an agent or representative of a stockholder authorized in writing by a stockholder and/or; 3) persons with water delivery or water management experience who have an interest in the company.

Sec. 2. Powers and Duties. The Board of Directors shall have control of all the property and affairs of the Company, the management thereof, and all contracts in relation thereto, and shall have directory powers over all the officers, agents and employees of the Company, and shall see that they properly perform their duties. The Board of Directors shall elect or appoint all officers provided by the By-Laws of said Company and may appoint or employ such additional superintendents, agents, ditch riders, and other employees as the business of the Company shall require. All officers, agents or employees by them elected or appointed may be removed by a majority vote of the Board of Directors. They shall prescribe the duties of all officers, agents or employees; fix their compensation; and may, when deemed necessary, require security of any officer or agent for the faithful performance of his or her duties. They may make all necessary rules, regulations, and policies not inconsistent with the law, the Articles of Incorporation, or the By-Laws of the Company, for the guidance of the officers and management of affairs of the Company. They may incur such indebtedness as they deem necessary to carry out the object of the Company and authorize the execution by the President and the Secretary of any note or obligation for such, and secure, where necessary, the same by a deed of trust, mortgage, financing statement and security agreement upon the property of the Company, as may be necessary. They may acquire by purchase, condemnation or otherwise, such property as is necessary to carry out the objects and purposes of the Company, and subject to any limitation in the Colorado law or the Company Articles, may sell and dispose of such property of the Company as may be advisable to carry out its objects and purposes.



Sec. 3. Meeting Time and Place. The Board of Directors shall meet at such times and place as they may from time to time determine, and a meeting of the Board may at any time be called by the President or any other two members of the Board by personal notice to the Directors, or by placing such notice in the United States mails, addressed to each Director, at least forty-eight (48) hours before the date of such proposed meeting.

Sec. 4. Quorum. Three (3) members of the Board of Directors shall constitute a quorum for the transaction of business at any meeting regularly called or adjourned. Any meeting of the Directors, however called, shall be valid when every member of the Board is present at such meeting, or shall give written consent in the recorded minutes thereof.

Sec. 5. Indemnification of Directors and Officers. The Board of Directors may authorize the Company to pay expenses incurred by or to satisfy a judgment or fine rendered or levied against a present or former employee of this Company in an action brought by a third party against such person, whether or not the Company is joined as a party defendant, to impose a liability or penalty on such person for an act alleged to have been committed by such person while an employee or by the Company or by both; provided, the Board of Directors determines in good faith that such employee was acting in good faith within what a Director reasonably believed to be the scope of a Director's employment or authority and for a purpose which a Director reasonably believed to be in the best interests of the Company or its shareholders. Payments authorized hereunder include amounts paid and expenses incurred in settling any such action or threatened action.

Each Director and officer of the Corporation, whether or not then in office, and the Director's personal representatives, shall be indemnified by the Corporation against all fees, costs and expenses actually and necessarily incurred by a Director or any judgment awarded against a Director in connection with the defense of any action, suit or proceeding in which a Director has or may be involved or to which a Director may be made a party by the Director being or having been such Director or officer, provided such Director or officer has voted in good faith. Such fees, costs and expenses shall include amounts reasonably paid in settlement for the purpose of curtailing the costs of litigation. The foregoing right of indemnification shall not be exclusive of other rights to which a Director may be entitled as a matter of law or by agreement.

No Director of the Lake Canal Reservoir Company shall have any personal liability to the Company or to its shareholders for monetary damages for breach of fiduciary duty as a Director. This

provision shall not eliminate or limit the liability of a Director to the Company or its shareholders for: Any breach of the Director's duty of loyalty to the Company or its shareholders; acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law; or any transaction from which the Director derived an improper personal benefit.

The provisions of this Section shall apply to the estate, executor, administrator, personal representative, legal representatives, heirs, legatees or devisees of a Director, officer or employee, and the term "person" where used in the foregoing Section shall include the estate, executor, administrator, personal representative, legal representatives, heirs, legatees or devisees of such person.

Article I, shall have the following paragraph added, to wit:

SEC. 6. VACANCIES Election to fill vacancies occurring in the Board of Directors shall be by ballot, and an affirmative vote of a majority of the whole Board of Directors for the time being, shall be necessary to elect a director. No director shall be elected except at a regular stated meeting of the Board of Directors or at a special meeting called for that purpose. The term of office of any Director elected by the Board of Directors to fill a vacancy shall be the completion of the term of the director that was replaced.

#### OFFICERS

The officers of this company shall consist of a President, Vice-President, Secretary and Treasurer, who shall be chosen at the first meeting of the Board of Directors after the annual meeting of the stockholders each year. The offices of the Secretary and Treasurer may be filled by the same person.

The officers shall be elected from the Board of Directors. These officers shall hold their respective offices until their successors are elected and have accepted and entered upon the duties of their offices respectively. Vacancies in any office or upon the Board of Directors occasioned by death, resignation or otherwise may be filled by the Board of Directors by ballot.

#### DUTIES OF OFFICERS

President. It shall be the duty of the President to preside at all meetings of the Board of Directors and of the stockholders, and to sign all bonds, deeds, agreements or other instruments of writing made and entered into by or on behalf of the Corporation, to sign all certificates of stock and perform all other acts incident to his office.

Vice-President. During the absence or inability of the President to perform the duties of that office, the same shall devolve upon and be performed by the Vice-President. In case of the absence or inability of both the President and Vice-President, the Board of Directors may elect a President pro tem who may temporarily perform the duties of the President.

Secretary. It shall be the duty of the Secretary, or a designated assistant, to give due notice of all the meetings of the stockholders and Board of Directors and to keep a proper record of the minutes thereof. The Secretary shall be the general clerical officer of the Corporation and shall have charge of all records, books and papers of the corporation as well as the corporate seal.

He shall countersign and register all certificates of stock and sign all other documents requiring the signature of the President and attach the corporate seal of the Company on all instruments requiring the seal. The Secretary shall keep such assessment books, books of account and other records as the Board of Directors may require. At the close of each fiscal year, the Secretary shall make, and submit to the Board of Directors and at the stockholders' annual meeting, a financial statement of the Company, showing the amount of money received and expended. The Secretary shall discharge such other duties pertaining to the office as shall be prescribed by the Board of Directors and as are incident to such office in like corporations and shall receive therefor such compensation as the Board of Directors shall or may determine. These duties may be delegated by the Secretary to permanent staff.

Treasurer. It shall be the duty of the Treasurer, or a designated assistant, to keep safe all the monies belonging to the Corporation and disburse the same in an appropriate manner.

## ARTICLE II.

### MEETINGS OF THE MEMBERS OF THE COMPANY

Sec. 1. Annual Meeting. The annual meeting of the stockholders of said Company shall be held on a date within the first forty-five (45) days of each calendar year, with such date and the place of meeting to be determined by the Board of Directors annually in advance. Notice of the time, date and place of meeting shall be given to the stockholders by placing such written notice in the United States mails, addressed to each member whose address is known, as provided by the Statutes of the State of Colorado.

Sec. 2. Quorum. At any meeting of the stockholders of the Company, there shall be required to be present, in person or by proxy, at 25% of stock at 1998 annual meeting of the stockholders

of the Company; but a lesser number shall have power to adjourn said meeting to a day certain, not exceeding a period of sixty (60) days. At any such meeting, it shall be first ascertained if a quorum is present, and if so, it shall proceed to the business of the meeting.

Sec. 3. Election of Directors. At each annual meeting, or adjourned meeting thereof, the members shall elect two (2) Directors, all of whom shall be stockholders of the Company, except when two (2) Directors have been elected at the annual meetings for the preceding two years, at which time the members shall elect three (3) Directors. This election shall be by ballot of the stockholders.

### ARTICLE III.

#### ASSESSMENTS ON STOCK

Sec. 1. Levy of Assessment. The Company shall raise all necessary funds for construction, maintenance, repair, repayment of indebtedness or interest thereon, and other expenses of operation, by assessment against the stock of the Company, pro rata, payable in money.

Sec. 2. Method of Levying. Assessments shall be levied at the annual meeting or at special meetings called for the purpose, but, if said stockholders fail to hold any such meeting or fail to make or authorize any assessment by the first of April of any year, the Directors shall have power to make such assessment at any regular or special meeting called therefor for that year.

Sec. 3. Delinquent Assessments.

A. If an assessment is not paid by the due date, an additional assessment shall be imposed. This additional assessment is not interest, a late charge, or a penalty, but rather a true assessment needed to cover the costs incurred by the Company or losses it suffers resulting from the failure to pay the original assessment.

B. No water shall be delivered until all assessments are paid.

Sec. 4. Forfeiture or Sale of Stock for Non-Payment of Assessment. The Directors or Trustees of the Company may prescribe either a forfeiture or a sale of stock on failure to pay the installments or assessments that from time to time become due. No forfeiture of stock or the amount paid thereon shall be declared

against any estate or against any stockholder before demand has been made for the amount due thereon either in person or by written or printed notice duly mailed to the last known address of such stockholder at least thirty (30) days prior to the time the forfeiture is to take effect.

When any stockholder shall be in default in the payment of any installment or assessment upon the stock for the period of thirty (30) days after personal notice thereof, and demand thereof by the Secretary or after a written or printed notice and demand therefor has been deposited in the post office, properly addressed to the last known post office address of such delinquent stockholders, the Board of Directors at any meeting may order that the share or shares of stock held by such delinquent stockholder therein be sold at Public Auction at some certain time and place to be designated in such order, to the highest bidder for cash. Notice of the sale shall be as provided by law. Any sale proceeds over and above the amount due on such share or shares and all expenses incident to such sale, shall be paid to the delinquent shareholder.

#### OTHER FEES

Sec 1. Review Fee. The Board of Directors shall have the right and power to charge a fee for review of crossing plans and agreements, development plans, drainage plans, etc. The amount of the fee charged shall be at the discretion of the Board of Directors.

### ARTICLE IV.

#### LOST STOCK CERTIFICATES

In any event any stockholder shall lose his certificate or certificates representing such shares, the provisions of C.R.S. § 7-42-114, et seq. (1973), as it shall from time to time be amended, shall apply. In the alternative, the stockholder may make a presentation of the facts to the Board of Directors at a regular meeting of the Board of Directors, or at a meeting called for such purpose, and the Board of Directors shall have the authority to prescribe for a lost instrument bond and such other steps for the issuance of a new certificate as the Board shall deem reasonable for the protection of the Company.

A price per share shall be set by the Directors upon request for the amount necessary to obtain a security bond for lost stock certificates.

### ARTICLE V.

## TRANSFER OF SHARES

No stock certificate shall be issued representing shares in a denomination of a lesser amount than one-half ( $\frac{1}{2}$ ) share. No shares of stock may be transferred on the records of the Company until all current assessments are paid in full.

## WATER DELIVERIES:

There shall not be any deliveries of water except in such places where water has been historically delivered in the past. Any change in delivery or a delivery which may be made shall meet reasonable requirements which protect the stockholders from damage.

## ARTICLE VI.

## CORPORATE SEAL

The corporate seal of this Company shall be and consist of an ordinary scroll with the name of the Company inscribed therein.

## ARTICLE VII.

## AMENDMENT

These By-Laws may be changed, amended, supplemented or revoked at any time by an affirmative vote of at least three (3) of the Directors at any meeting of the Board of Directors.

## ARTICLE VIII.

To the extent that Shareholders ("applicants") desire to change a water right as defined in the Water Right determination and Administration Act of 1969, Revised Statutes Sections 37-92-101 through 37-92-603, including, but not limited to, a change in the point of diversion or place of use of any water that the applicant is entitled to receive as a result of stock ownership, the following procedures shall apply:

- A. The applicant must first make a written application to the directors of the Company. A change of water right shall include the use of water the shareholder is entitled to as a result of stock ownership as augmentation water in a plan for augmentation or exchange. The request should detail the requested change and include adequate terms and conditions to

prevent injury to the Company and its Shareholders. If, in the reasonable opinion of the directors, such change may be approved without injury to the Company and all of its Shareholders, the directors shall then approve the change application subject to necessary terms and conditions. In evaluating whether the requested change of water rights can be made without injury to the Company and its Shareholders, the Company may obtain an engineering and legal analysis of the requested change by the applicant and the terms and conditions offered by the applicant.

- B. The Company shall evaluate the application for change of water right within a reasonable amount of time.
- C. No application for approval of a change of water right or plan for augmentation as described above may be made to the District Court for Water Division No. 1, State of Colorado ("Water Court"), unless the same has been approved by the Company. If an application has been approved by the Company, the applicant must include terms and conditions at least as stringent as those approved by the Company in an application to the District Court for Water Division No. 1, State of Colorado.
- D. An applicant for a change of water right must reimburse the Company for the Company's reasonable costs and fees, including a charge for time spent by the directors and Company employees in analyzing the application to the Company and in any judicial litigation that follows. This specifically includes a challenge to the Company's denial of an application. Prior to analyzing the proposed change, the Company shall obtain an estimate of the costs. The Company shall make said estimate of cost within 30 days of submission of an application and the applicant shall have 30 days after receipt of the estimate from the Company to make the deposit. The Company shall not take final action on any application until, and unless, the applicant makes said deposit. If the estimate and deposit needs to be adjusted by further payment or reimbursement, said adjustment shall be made upon the completion of the analysis. In no event shall the Company be required to finally approve or disapprove the application until all fees incurred by the Company are reimbursed.

- E. If any portion of this Article VIII is inconsistent with any other By-Laws, this portion shall govern.
- F. If any portion of this Article VIII is declared void by a court of law, the remaining portions of this by-law shall remain in full force and unaffected.



**APPENDIX F**  
State Engineer's Inspection Report

RECEIVED

JUN 27 2011



DEPARTMENT OF NATURAL RESOURCES

## DIVISION OF WATER RESOURCES

WATER RESOURCES  
DIVISION  
GREELEY, COLORADO

John Hickenlooper  
Governor

Mike King  
Executive Director

Dick Wolfe, P.E.  
Director and  
State Engineer

June 14, 2011

Mr. Justin Green, Superintendent  
Lake Canal Reservoir Company  
6649 LCR 1  
Windsor, CO 80550

**CERTIFIED: 7004 0550 0001 0703 6945**

When replying, please refer to:

**NORTH GRAY DAM**

Water Division 1, DAMID: 030201

**Subject:** Storage Restriction – Three feet below the spillway crest.

Dear Mr. Green:

On June 7, 2011, a dam safety inspection for the above referenced structure was performed in accordance with Section 37-87-107 of the Colorado Revised Statutes (C.R.S.), which assigns the responsibility for the determination for the safe storage level for the reservoirs within Colorado to the State Engineer. A copy of the inspection report is enclosed for your information and use.

During the inspection, conditions were noted that threaten the long-term safety of the dam. They are as follows:

- The deteriorated state of the emergency spillway conduit.
- Overdue outlet inspection and questionable operability of low outlet in west dam.
- Extensive trees and brush cover the dam which impede visual inspection of the dam.

The deteriorated spillway conduit poses a threat to the safety of the dam. Due to this condition, a storage restriction is hereby imposed *to a level of three feet below the spillway crest elevation or Gage Height 11.*

By copy of this letter, the Division Engineer is directed to enforce this restriction, but the primary responsibility is yours in accordance with Section 37-87-107, C.R.S. This restriction is the

Office of the State Engineer

1313 Sherman Street, Suite 818 • Denver, CO 80203 • Phone: 303-866-3581 • Fax: 303-866-3589

[www.water.state.co.us](http://www.water.state.co.us)

Mr. Justin Green – North Gray Dam  
Storage Restriction  
June 14, 2011

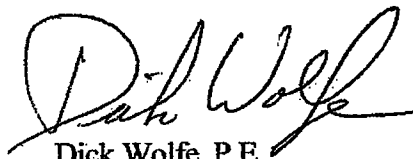
Page 2

minimum action you can take to improve the safety of the dam. Additional actions may be necessary based upon the recommendation of your engineer. You are reminded that as owner you are liable for the safety of this structure and that these minimum requirements do not relieve you of that liability.

If you wish to use the full storage capacity of the reservoir, you must clear all of the trees and brush from the dam, demonstrate the low outlets operability and submit an outlet inspection video to this office. You must also have a hydrology study and spillway design prepared by a professional engineer licensed to practice in the State of Colorado. The study and plans/specifications must be submitted to this office for approval prior to commencing construction of a new spillway. Upon approval of the plans and specifications, and completion of the work including outlet inspection and tree/brush removal, a final inspection will be made by this office. After the repair work has been inspected and found satisfactory, the storage restriction will be removed.

If you have any questions, please contact Jeremy Franz of our Dam Safety Branch in Greeley at 970-352-8712.

Sincerely,

A handwritten signature in black ink, appearing to read "Dick Wolfe", written over a horizontal line.

Dick Wolfe, P.E.  
Director and State Engineer

cc: Mark Haynes, Chief, Safety of Dams Program  
George Varra, Water Commissioner for District 3  
Jeremy Franz, Dam Safety Engineer  
Dave Nettles, Division Engineer

Enclosure: June 7, 2011 Dam Safety Inspection Report

# ENGINEER'S INSPECTION REPORT

INSPECTOR: JJF

OFFICE OF THE STATE ENGINEER - DIVISION OF WATER RESOURCES - DAM SAFETY BRANCH

1313 SHERMAN STREET, ROOM 818, DENVER, CO 80203, (303) 866-3581

DAM NAME: NORTH GRAY T: 080N R: 0680W S: 34 COUNTY: LARIMER DATE OF INSPECTION: 6/7/2011  
 DAM ID: 030201 YRComp: 1904 DAM HEIGHT(FT): 20.0 SPILLWAY WIDTH(FT): 3.0 PREVIOUS INSPECTION: 9/2/2008  
 CLASS: Significant hazard DAM LENGTH(FT): 2928.0 SPILLWAY CAPACITY(CFS): 434.0 NORMAL STORAGE (AF): 287.0  
 DIV: 1 WD: 3 CRESTWIDTH(FT): 10.0 FREEBOARD (FT): 4.1 SURFACE AREA(AC): 40.0  
 EAP: 1/26/1993 CRESTELEV(FT): 5000.0 DRAINAGE AREA (AC.): 275.0 OUTLET INSPECTED: 11/13/1997

CURRENT RESTRICTION: -- NONE --

OWNER: LAKE CANAL RESERVOIR COMPANY OWNER REP.: DON MAGNUSON  
 ADDRESS: P.O. BOX 104 CONTACT NAME: DON MAGNUSON  
 LUCERNE CO 80646-0000 CONTACT PHONE: (970) 352-0222

INSPECTION PARTY: Justin Green  
 REPRESENTING: LCRC

FIELD CONDITIONS OBSERVED WATER LEVEL: BELOW DAM CREST 4 FT. Below Spillway 0.8/0.5 FT. GAGE ROD READING 13.1  
 GROUND MOISTURE CONDITION: ☒ DRY ☐ WET ☐ SNOWCOVER OTHER

DIRECTIONS: MARK AN X FOR CONDITIONS FOUND AND UNDERLINE WORDS THAT APPLY

## UPSTREAM SLOPE

PROBLEMS NOTED: ☒ (0) NONE ☐ (1) RIPRAP - MISSING, SPARSE, DISPLACED, WEATHERED ☐ (2) WAVE EROSION - WITH SCARPS  
☐ (3) CRACKS WITH DISPLACEMENT ☐ (4) SINKHOLE ☐ (5) APPEARS TOO STEEP ☐ (6) DEPRESSIONS OR BULGES ☐ (7) SLIDES  
☐ (8) CONCRETE FACING - HOLES, CRACKS, DISPLACED, UNDERMINED ☐ (9) OTHER

No problems noted on the upstream slope.

CONDITIONS OBSERVED: ☒ Good ☐ Acceptable ☐ Poor

## CREST

PROBLEMS NOTED: ☐ (10) NONE ☒ (11) RUTS OR PUDDLES ☐ (12) EROSION ☐ (13) CRACKS - WITH DISPLACEMENT ☐ (14) SINKHOLES  
☐ (15) NOT WIDE ENOUGH ☒ (16) LOW AREA ☐ (17) MISALIGNMENT ☒ (18) IMPROPER SURFACE DRAINAGE ☐ (19) OTHER

The crest of the west dam lies nominally at GH 17.3. The south dam separating the two reservoirs is one foot higher at GH 18.3

(11/16/18) The crest is somewhat irregular with minor surface undulations, ruts and generally drains to the downstream face. It should be re-graded to a uniform elevation with cross-slope to the upstream face. Placement of a gravel wearing course would help to maintain its condition.

CONDITIONS OBSERVED: ☐ Good ☒ Acceptable ☐ Poor

## DOWNSTREAM SLOPE

PROBLEMS NOTED: ☐ (20) NONE ☐ (21) LIVESTOCK DAMAGE ☐ (22) EROSION OR GULLIES ☐ (23) CRACKS - WITH DISPLACEMENT ☐ (24) SINKHOLE  
☐ (25) APPEARS TOO STEEP ☐ (26) DEPRESSIONS OR BULGES ☐ (27) SLIDE ☐ (28) SOFT AREAS ☐ (29) OTHER

The trees and brush on the downstream slope make it impossible to inspect visually.

CONDITIONS OBSERVED: ☐ Good ☐ Acceptable ☒ Poor

## SEEPAGE

PROBLEMS NOTED: ☐ (30) NONE ☐ (31) SATURATED EMBANKMENT AREA ☐ (32) SEEPAGE EXITS ON EMBANKMENT  
☐ (33) SEEPAGE EXITS AT POINT SOURCE ☒ (34) SEEPAGE AREA AT TOE ☐ (35) FLOW ADJACENT TO OUTLET ☐ (36) SEEPAGE INCREASED / MUDDY  
 DRAIN OUTFALLS SEEN ☐ No ☒ Yes Show location of drains on sketch and indicate amount and quality of discharge. ☐ (37) FLOW INCREASED / MUDDY ☐ (38) DRAIN DRY / OBSTRUCTED  
☐ (39) OTHER

The owner recently installed a weir box on the drain outfall immediately north of the outlet conduit on the west dam. It was flowing at a trickle, measured at 0.03' in the 90-degree v-notch weir. The ground immediately north of the weir box is saturated.

(34.1) The northern-most seepage area occurs in the corral near the north abutment of the dam. Standing water was observed today.

(34.2) Previous inspections noted a seepage pond to the south of the outlet conduit on the west dam. This area was not visible due to heavy trees. The reason for the poor rating.

(34.3) There is extensive seepage below the south dike which is evident when the reservoir pool in South Gray is lowered. This is less of a concern when the South Gray Reservoir level is up. Typical operations result in lowering the reservoir level in North Gray prior to South Gray.

CONDITIONS OBSERVED: ☐ Good ☐ Acceptable ☒ Poor



## OUTLET

**PROBLEMS NOTED:** ☐ (40) NONE ☐ (41) NO OUTLET FOUND ☐ (42) POOR OPERATING ACCESS ☒ (43) INOPERABLE  
☐ (44) UPSTREAM OR DOWNSTREAM STRUCTURE DETERIORATED (45) OUTLET OPERATED DURING INSPECTION ☐ YES ☒ NO  
INTERIOR INSPECTED ☒ (120) NO ☐ (121) YES ☐ (46) CONDUIT DETERIORATED OR COLLAPSED ☐ (47) JOINTS DISPLACED ☐ (48) VALVE LEAKAGE  
☐ (49) OTHER

The operating scheme of this reservoir is to collect water from the Boxelder Ditch and release it to South Gray through the south outlet conduit.

(43) Functionality of low outlet which releases to Boxelder Creek is unknown. It has not been operated in many years.

(120) Outlet is 4 years overdue for an internal inspection. The owner should retain a plumber or pipeline maintenance company to perform an inspection with ROV mounted camera and submit the video for review.

CONDITIONS OBSERVED: ☐ Good ☐ Acceptable ☒ Poor

## SPILLWAY

**PROBLEMS NOTED:** ☐ (50) NONE ☐ (51) NO EMERGENCY SPILLWAY FOUND ☐ (52) EROSION WITH BACKCUTTING ☐ (53) CRACK - WITH DISPLACEMENT  
☐ (54) APPEARS TO BE STRUCTURALLY INADEQUATE ☒ (55) APPEARS TOO SMALL ☐ (56) INADEQUATE FREEBOARD ☐ (57) FLOW OBSTRUCTED  
☐ (58) CONCRETE DETERIORATED / UNDERMINED ☒ (59) OTHER Hole in Conduit

The service spillway at the south dike lies at GH 13.6.

The emergency spillway at the west dam lies at GH 14.1

(55) File research indicates that the spillway was designed based on an assumed Low Hazard Classification. The dam has since been upgraded to Significant Hazard.

(59) There is a large hole in the lower portion of the spillway conduit that has resulted in erosion of the surrounding embankment material.

CONDITIONS OBSERVED: ☐ Good ☐ Acceptable ☒ Poor

## MONITORING

EXISTING INSTRUMENTATION FOUND ☐ (110) NONE ☒ (111) GAGE ROD ☐ (112) PIEZOMETERS ☒ (113) SEEPAGE WEIRS / FLUMES  
☐ (114) SURVEY MONUMENTS ☐ (115) OTHER  
MONITORING OF INSTRUMENTATION ☒ (116) NO ☐ (117) YES PERIODIC INSPECTIONS BY: ☒ (118) OWNER ☐ (119) ENGINEER

The dam owner should commence collection of monitoring data from the seepage weir. The data should be collected on a monthly basis when the reservoir is greater than 50% capacity and should be submitted to this office annually.

CONDITIONS OBSERVED: ☐ Good ☐ Acceptable ☒ Poor

## MAINTENANCE AND REPAIRS

**PROBLEMS NOTED:** ☐ (60) NONE ☐ (61) ACCESS ROAD NEEDS MAINTENANCE ☐ (62) CATTLE DAMAGE  
☒ (63) BRUSH ON UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, TOE ☒ (64) TREES ON UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, TOE  
☐ (65) RODENT ACTIVITY ON UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, TOE ☐ (66) DETERIORATED CONCRETE - FACING, OUTLET, SPILLWAY  
☒ (67) GATE AND OPERATING MECHANISM NEED MAINTENANCE ☐ (68) OTHER

(63/64) The trees and brush on the downstream slope are preventing a thorough inspection.

(67) It appears that the low outlet in the west dam needs to be operated on a regular basis. At a minimum, it should be cycled through its full range of motion at least once annually.

CONDITIONS OBSERVED: ☐ Good ☐ Acceptable ☒ Poor

*Go to next page for Overall Conditions and Items Requiring Actions*



**OVERALL CONDITIONS**

**Unsatisfactory for full storage due to 1) eroded spillway conduit 2) questionable operability of low outlet, and 3) trees/brush on the downstream slope/toe that prevent thorough inspection.**

Based on this Safety Inspection and recent file review, the overall condition is determined to be:

☐ (71) SATISFACTORY

☐ (72) CONDITIONALLY SATISFACTORY

☒ (73) UNSATISFACTORY
**ITEMS REQUIRING ACTION BY OWNER TO IMPROVE THE SAFETY OF THE DAM****MAINTENANCE - MINOR REPAIR - MONITORING**
☐ (80) PROVIDE ADDITIONAL RIPRAP:

☒ (81) LUBRICATE AND OPERATE OUTLET GATES THROUGH FULL CYCLE **Annually**
☒ (82) CLEAR TREES AND/OR BRUSH FROM: **entire dam**
☐ (83) INITIATE RODENT CONTROL PROGRAM AND PROPERLY BACKFILL EXISTING HOLES:

☒ (84) GRADE CREST TO A UNIFORM ELEVATION WITH DRAINAGE TO THE UPSTREAM SLOPE:

☐ (85) PROVIDE SURFACE DRAINAGE FOR:

☒ (86) MONITOR: **Seepage - submit data annually**
☒ (87) DEVELOP AND SUBMIT AN EMERGENCY ACTION PLAN:

☐ (88) OTHER:

☐ (89) OTHER:

**ENGINEERING - EMPLOY AN ENGINEER EXPERIENCED IN DESIGN AND CONSTRUCTION OF DAMS TO:** (Plans and Specifications must be approved by State Engineer prior to construction.)

☐ (90) PREPARE PLANS AND SPECIFICATIONS FOR REHABILITATION OF THE DAM:

☐ (91) PREPARE AS -BUILT DRAWINGS OF:

☐ (92) PERFORM A GEOTECHNICAL INVESTIGATION TO EVALUATE THE STABILITY OF THE DAM:

☒ (93) PERFORM A HYDROLOGIC STUDY TO DETERMINE REQUIRED SPILLWAY SIZE:

☒ (94) PREPARE PLANS AND SPECIFICATIONS FOR AN ADEQUATE SPILLWAY:

☒ (95) SET UP A MONITORING SYSTEM INCLUDING WORK SHEETS, REDUCED DATA AND GRAPHED RESULTS:

☒ (96) PERFORM AN INTERNAL INSPECTION OF THE OUTLET:

☐ (97) OTHER:

☐ (98) OTHER:

☐ (99) OTHER:

The State Engineer, by providing this dam safety inspection report, does not assume responsibility for any unsafe condition of the subject dam. The sole responsibility for the safety of this dam rests with the reservoir owner or operator, who should take every step necessary to prevent damages caused by leakage or overflow of waters from the reservoir or floods resulting from a failure of the dam.

**SAFE STORAGE LEVEL: RECOMMENDED AS A RESULT OF THIS INSPECTION**
☐ (101) FULL STORAGE

☐ (102) CONDITIONAL FULL STORAGE

☒ (103) RECOMMENDED RESTRICTION

☐ (104) CONTINUE EXISTING RESTRICTION

RESTRICTED LEVEL  
OFFICIAL ORDER TO FOLLOW

11

FT. BELOW DAM CREST

FT. BELOW SPILLWAY CREST

FT. GAGE HEIGHT

NO STORAGE-MAINTAIN OUTLET FULLY OPEN

**REASON FOR RESTRICTION**

**Eroded Spillway Conduit, Trees/brush on dam, Questionable operability of low outlet.**

ACTIONS REQUIRED FOR ~~CONDITIONAL FULL STORAGE~~ OR CONTINUED STORAGE AT THE RESTRICTED LEVEL:

**Items 82, 93, 94 & 96 above.**

Engineer's  
Signature

INSPECTED BY

Owner's  
Signature

OWNER/OWNER'S REPRESENTATIVE

DATE: / /

## GUIDELINES FOR DETERMINING CONDITIONS

### CONDITIONS OBSERVED - APPLIES TO UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, OUTLET, SPILLWAY

#### GOOD

In general, this part of the structure has a near new appearance, and conditions observed in this area do not appear to threaten the safety of the dam.

#### ACCEPTABLE

Although general cross-section is maintained, surfaces may be irregular, eroded, rutted, spalled, or otherwise not in new condition. Conditions in this area do not currently appear to threaten the safety of the dam.

#### POOR

Conditions observed in this area appear to threaten the safety of the dam.

### CONDITIONS OBSERVED - APPLIES TO SEEPAGE

#### GOOD

No evidence of uncontrolled seepage. No unexplained increase in flows from designed drains. All seepage is clear. Seepage conditions do not appear to threaten the safety of the dam.

#### ACCEPTABLE

Some seepage exists at areas other than the drain outfalls, or other designed drains. No unexplained increase in seepage. All seepage is clear. Seepage conditions observed do not currently appear to threaten the safety of the dam.

#### POOR

Seepage conditions observed appear to threaten the safety of the dam. Examples:  
1) Designed drain or seepage flows have increased without increase in reservoir level.  
2) Drain or seepage flows contain sediment, i.e., muddy water or particles in jar samples.  
3) Widespread seepage, concentrated seepage, or ponding appears to threaten the safety of the dam.

### CONDITIONS OBSERVED - APPLIES TO MONITORING

#### GOOD

Monitoring includes movement surveys and leakage measurements for all dams, and piezometer readings for High hazard dams. Instrumentation is in reliable, working condition. A plan for monitoring the instrumentation and analyzing results by the owner's engineer is in effect. Periodic inspections by owner's engineer.

#### ACCEPTABLE

Monitoring includes movement surveys and leakage measurements for High and Significant hazard dams; leakage measurements for Low hazard dams. Instrumentation is in serviceable condition. A plan for monitoring instrumentation is in effect by owner. Periodic inspections by owner or representative. OR, NO MONITORING REQUIRED.

#### POOR

All instrumentation and monitoring described under "ACCEPTABLE" here for each class of dam, are not provided, or required periodic readings are not being made, or unexplained changes in readings are not reacted to by the owner.

### CONDITIONS OBSERVED - APPLIES TO MAINTENANCE AND REPAIR

#### GOOD

Dam appears to receive effective on-going maintenance and repair, and only a few minor items may need to be addressed.

#### ACCEPTABLE

Dam appears to receive maintenance, but some maintenance items need to be addressed. No major repairs are required.

#### POOR

Dam does not appear to receive adequate maintenance. One or more items needing maintenance or repair has begun to threaten the safety of the dam.

### OVERALL CONDITIONS

#### SATISFACTORY

The safety inspection indicates no conditions that appear to threaten the safety of the dam, and the dam is expected to perform satisfactorily under all design loading conditions. Most of the required monitoring is being performed.

#### CONDITIONALLY SATISFACTORY

The safety inspection indicates symptoms of structural distress (seepage, evidence of minor displacements, etc.), which, if conditions worsen, could lead to the failure of the dam. Essential monitoring, inspection, and maintenance must be performed as a requirement for continued full storage in the reservoir.

#### UNSATISFACTORY

The safety inspection indicates definite signs of structural distress (excessive seepage, cracks, slides, sinkholes, severe deterioration, etc.), which could lead to the failure of the dam if the reservoir is used to full capacity. The dam is judged unsafe for full storage of water.

### SAFE STORAGE LEVEL

#### FULL STORAGE

Dam may be used to full capacity with no conditions attached.

#### CONDITIONAL FULL STORAGE

Dam may be used to full storage if certain monitoring, maintenance, or operational conditions are met.

#### RESTRICTION

Dam may not be used to full capacity, but must be operated at some reduced level in the interest of public safety.

### HAZARD CLASSIFICATION OF DAMS

#### High hazard

Loss of human life is expected in the event of failure of the dam, while the reservoir is at the high water line.

#### Significant hazard

Significant damage to improved property is expected in the event of failure of the dam while the reservoir is at the high water line, but no loss of human life is expected.

#### Low hazard

Loss of human life is not expected, and damage to improved property is expected to be small, in the event of failure of the dam while the reservoir is at high water line.

NPH hazard - No loss of life or damage to improved property, or loss of downstream resource is expected in the event of failure of the dam while the reservoir is at the high water line.

**APPENDIX G**  
Project Photographs



**SOUTH OUTLET AND SERVICE SPILLWAY - RELEASES TO SOUTH GRAY**



**EMERGENCY SPILLWAY ENTRANCE AND LOW OUTLET  
WET WELL - RELEASES TO BOXELDER CREEK**



**LOOKING DOWN MAXIMUM SECTION - EMERGENCY  
SPILLWAY OUTLET AND WEIR BOX VISIBLE.**



**MOIST AREA IN CORRAL BELOW DAM NEAR NORTH  
ABUTMENT**





EXTENSIVE BRUSH AND TREES ON DOWNSTREAM SLOPE  
OF DAM. MOIST GROUND BELOW DAM.



TOE DRAIN OUTFALL AND EMERGENCY SPILLWAY OUTLET



MOIST GROUND UPSTREAM OF WIER BOX



ERODED/DETERIORATED SPILLWAY CONDUIT







PHOTOGRAPH 1 SPILLWAY OUTLET



PHOTOGRAPH 2 HOLE IN SPILLWAY OUTLET



PHOTOGRAPH 3 EROSION UNDER SPILLWAY OUTLET



PHOTOGRAPH 4 SPILLWAY

PROJECT: 11.047  
DATE: AUGUST 2011

# NORTH GRAY REHABILITATION