EXHIBIT “A”

RJH
CONSULTANTS, INC.

GEOTECHNICAL AND
WATER RESOURCES ENGINEERING

DESIGN SUMMARY REPORT
SEO REVIEW SUBMITTAL

NORTH LAKE DAM REHABILITATION PROJECT
LAS ANIMAS COUNTY, COLORADO

Submitted to
City of Trinidad
P.O. Box 880
Trinidad, Colorado 81082

Submitted by
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October 2009
Project 07104

Robert J. Huzjak, P.E.
Project Manager

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SECTION 1 – INTRODUCTION

1.1 Purpose

The City of Trinidad (City) retained RJH Consultants, Inc. (RJH) to provide design engineering services to address outstanding dam safety issues at North Lake Dam. The primary elements of the North Lake Dam Rehabilitation Project (Project) include:

- A seepage collection system and stability berm to address seepage and high embankment foundation pressures downstream of the dam and to improve downstream slope stability. Replacement of the outlet works pipe at the downstream toe of the dam is required due to external loading concerns from the new stability berm.
- A new pipe spillway on the left abutment of the dam and abandonment of the existing spillway to address structural and hydraulic deficiencies with the existing spillway.
- Abandonment of the upper inlet pipe into the gate tower because the pipe is separated within the embankment near the gate tower.
- Secondary grouting of a 15-inch pipe located below the dam that extends from the original dam to complete abandonment of the pipe. Primary grouting of the pipe was performed in 2001.

The purposes of this report are to document the design analyses and design decisions for the Project and to meet the requirements and guidelines of the Colorado Office of the State Engineer (SEO).

1.2 Background

1.2.1 General

The dam is located about 35 miles west of Trinidad, Colorado, along Colorado State Highway 12, in Las Animas County, as shown on Figure 1.1. The project site (Site) is located in Section 19, Township 32 South, Range 68 West of the 6th Principal Meridian. The dam is owned and operated by the City and provides raw water storage for municipal use. The reservoir is filled from two sources: North Fork of the Purgatoire River through an aqueduct about 2,000 feet long that drains into the upper part of the reservoir, and from precipitation from a 0.76 square-mile watershed basin upstream of the dam. A smaller dam was constructed before 1950 in a location upstream of the existing dam, but

has since been abandoned. The following is a summary of construction and engineering evaluation activities that have occurred at the existing North Lake Dam:

- 1964: Construction of the existing dam.
- 1977: First identification of clear, steady seepage from a concentrated source on the right abutment downstream of the dam.
- 1998: The SEO identified possible safety concerns including insufficient slope stability, seepage issues, and deterioration of the auxiliary outlet conduit.
- 1999: GEI Consultants, Inc. (GEI) completed a geotechnical investigation and an engineering evaluation of the dam. GEI identified deterioration and holes in the auxiliary outlet conduit, high foundation pressures, and shallow fractured bedrock conveying seepage in the right abutment.
- 2001: The SEO identified additional safety concerns including spillway deterioration and uplift pressures below the spillway. Also in 2001, additional investigations were performed to confirm the stability of the upstream slope, and to observe the condition of the inlet pipes to the gate tower. The upstream slope of the dam was determined to have an acceptable stability with no limit on the rate of reservoir drawdown. A pipe separation was identified in the upper inlet pipe to the gate tower.
- 2002: The topography of the reservoir floor was surveyed and an updated stage-capacity relationship was developed. The total storage at normal pool was computed to be 4,214 acre-feet (ac-ft). The auxiliary outlet conduit was abandoned by grouting and the downstream impact basin was removed. Grouting of the 15-inch outlet works pipe that extends below the dam to the original dam was completed. All valves in the gate tower were replaced and a new stream release structure was constructed between the downstream toe and the existing valve house. A small sinkhole above the upper inlet pipe and adjacent to the gate tower was filled.

1.2.2 Previous Studies

A bibliography of previous reports and design documents is presented in the Geotechnical Data Report (RJH, 2008a). A brief summary of previous reports for North Lake Dam is summarized below:

- *Geotechnical Evaluation of North Lake Dam*, GEI, October 1999. Data was presented from five borings, and the results were used to perform initial stability and seepage analyses. Based on the results, safety issues were identified for

seepage, stability, and potential piping into and along the auxiliary outlet conduit. Several repair alternatives were recommended.

- *Upstream Slope Stability Evaluation During Rapid Drawdown*, GEI, April 2001. Data was presented from three borings upstream of the dam crest, and the results were used to perform stability analyses for the upstream slope. Based on the results, the upstream slope was determined to have an acceptable slope stability factor of safety under rapid drawdown conditions.
- Construction Drawings and Technical Specifications for North Lake Dam Stilling Basin Modifications, GEI, August 2002. This included adding a tee connection on the outlet pipe, a plug valve in the new pipe, and a new reinforced outlet works stream release structure.
- *Storage Capacity Report*, GEI, November 2002. Bathymetric survey results were presented for both North Lake and Monument Lake.
- *Technical Memorandum: North Lake Dam Relief Well Project*, GEI, December 2002. Hydraulic conductivities were selected for various dam and foundation materials based on seepage modeling. A series of relief wells were designed to improve stability of the downstream slope and the foundation.
- Construction Drawings and Specifications – North Lake Dam Foundation Pressure Relief Project, GEI, July 2003. Drawings and technical specifications for a series of relief wells were approved by the SEO, but the project was not constructed.
- *Spillway Assessment Report*, GEI, May 2005. The existing spillway was evaluated for structural and hydraulic performance. As a result of the investigation and analyses, abandonment of the existing spillway and construction of a new spillway were recommended.
- North Lake Dam Letter and Memorandum, GEI, June 2005. The preliminary option of probable cost for spillway repair was presented for the construction of a new pipe spillway on the left abutment.
- *Construction Completion Report – North Lake Dam Outlet Works Modifications*, GEI and RJH, April 2007. This report documented modifications to the outlet works including abandonment of the auxiliary outlet conduit, repairs to the gate tower, and abandonment of the old dam 15-inch pipe. Video surveys of outlet works pipes were presented.

- Construction Drawings for North Lake Dam Outlet Works Rehabilitation Project, GEI, July 2007. As-constructed conditions were presented for the work described in the Construction Completion Report.
- *Hydrology Report - North Lake Dam Rehabilitation Project*, RJH, June 2008. RJH performed hydrologic and hydraulic analyses to develop the Inflow Design Flood (IDF) for use in the final design of a replacement spillway.
- *Geotechnical Data Report - North Lake Dam Rehabilitation Project*, RJH, December 2008. This report documented the geotechnical data collected to support design of the primary elements of the Project.

1.3 Scope of Work

RJH performed the following services for final design of the project:

- Evaluated the collected geotechnical field and laboratory data and developed material properties for the foundation and embankment materials.
- Performed settlement analyses to estimate the expected settlement of the existing outlet pipe from construction of the berm and evaluated ground modifications to reduce settlement.
- Performed seepage analyses and two-dimensional limit equilibrium stability analyses to size a downstream stability berm and confirm that the final stability berm configuration provides the required factors of safety.
- Performed seepage, flow analyses, and filter compatibility to design the drainage system under the stability berm.
- Performed reservoir flood routings using the information in the *Hydrology Report* (RJH, 2008b) to design the spillway intake structure, spillway conduit, and stilling basin (outlet) structure.
- Performed structural analyses to design the spillway.
- Performed hydraulic analyses for the outlet works rehabilitation. Hydraulic analyses included an evaluation of the hydraulic impacts of the proposed outlet works rehabilitation on the system discharge capacity including abandonment of the upper inlet pipe and replacement of the 24-inch-diameter outlet pipe.
- Performed hydrologic analyses to design the surface drainage ditches and a new access road crossing downstream of the dam.
- Prepared this report documenting the final design of the Project.

SECTION 2 - PROJECT DESCRIPTION

2.1 Existing Site Description

North Lake Dam is a 72-foot-high, high hazard, earthen embankment with a total storage capacity of 4,214 acre-feet (ac-ft) at normal pool. The dam was built in 1964 as a replacement for a smaller, older dam located about 900 feet upstream. The existing dam has a maximum normal pool at Elevation (El.) 8586.5, which corresponds to a gage height of 67 feet. The dam crest is at about El. 8591.5. The crest is about 20 feet wide and 630 feet long, with an upstream slope at approximately 3 horizontal to 1 vertical (3H:1V) and a downstream slope at approximately 2H:1V as shown on Figure 2.1.

Record drawings of the existing dam are not available, but based on construction drawings, the dam should have a low permeability upstream shell, a very low permeability core extending to bedrock, and a random-fill downstream shell. There are no internal drains or filters. Based on data from previous geotechnical investigations, bedrock near the maximum section is about 117 feet below the crest of the dam and the general internal configuration of the dam appears to agree with the design drawings. The bedrock consists of moderately to intensely weathered claystone. The upper 5 to 10 feet of the bedrock is intensely weathered.

The spillway is a reinforced concrete chute at about the maximum section of the dam. The spillway has a crest width of about 6 feet at El. 8586.5. Transverse cracks are present along the chute. Slabs are cracked and separated at all major transitions in the spillway including the upstream end of the crest, the downstream end of the crest, and the transition to the stilling basin. At the spillway approach area on the upstream slope of the dam, the concrete apron is separated from embankment material by up to 1 foot.

The outlet works consists of a concrete wet-well gate tower located in the upstream face of the dam. The gate tower has three inlet pipes at different elevations and a single outlet pipe. The inlet pipes are 20-inch steel pipes with 24-inch butterfly valves located in the gate tower. The outlet pipe is a 30-inch-diameter, concrete-lined, welded steel pipe. Near the downstream toe of the embankment, the outlet pipe transitions to a 24-inch-diameter, 10-gauge, asbestos-bonded, double-riveted, asphalt-dipped pipe. The top of the pipe is about 4 feet below the existing ground. The pipe extends to a valve house about 190 feet downstream of the toe of the dam.

One 15-inch pipe extends from the old dam to the toe of the existing dam. The upstream end of the pipe is about 920 feet upstream of the existing dam centerline. The old dam 15-inch pipe has been partially abandoned on the lower end by previous grouting operations. The grouting apparatus on the downstream end of the pipe consists of a 5-inch-diameter grout pipe, with a 6-inch gate valve. The 5-inch grout pipe daylights to the right of the 24-inch-diameter outlet pipe about 40 feet downstream of the toe of the dam. The end of the partially-abandoned 15-inch pipe is encased in filter sand, and a 4-inch-diameter PVC drainpipe extends from the filter sand to the ditch downstream of the spillway. Additional information is provided in the *Construction Completion Report – North Lake Dam Outlet Works Rehabilitation* (GEI, 2007).

A 24-inch CMP auxiliary outlet located to the left of the spillway has been abandoned by grouting and the outlet structure and grouting apparatus have been removed. The end of the auxiliary outlet is encased in filter sand, and a 4-inch-diameter PVC drainpipe extends from the filter sand to the ditch downstream of the spillway. Additional information is provided in the *Construction Completion Report - North Lake Dam Outlet Works Rehabilitation* (GEI, 2007).

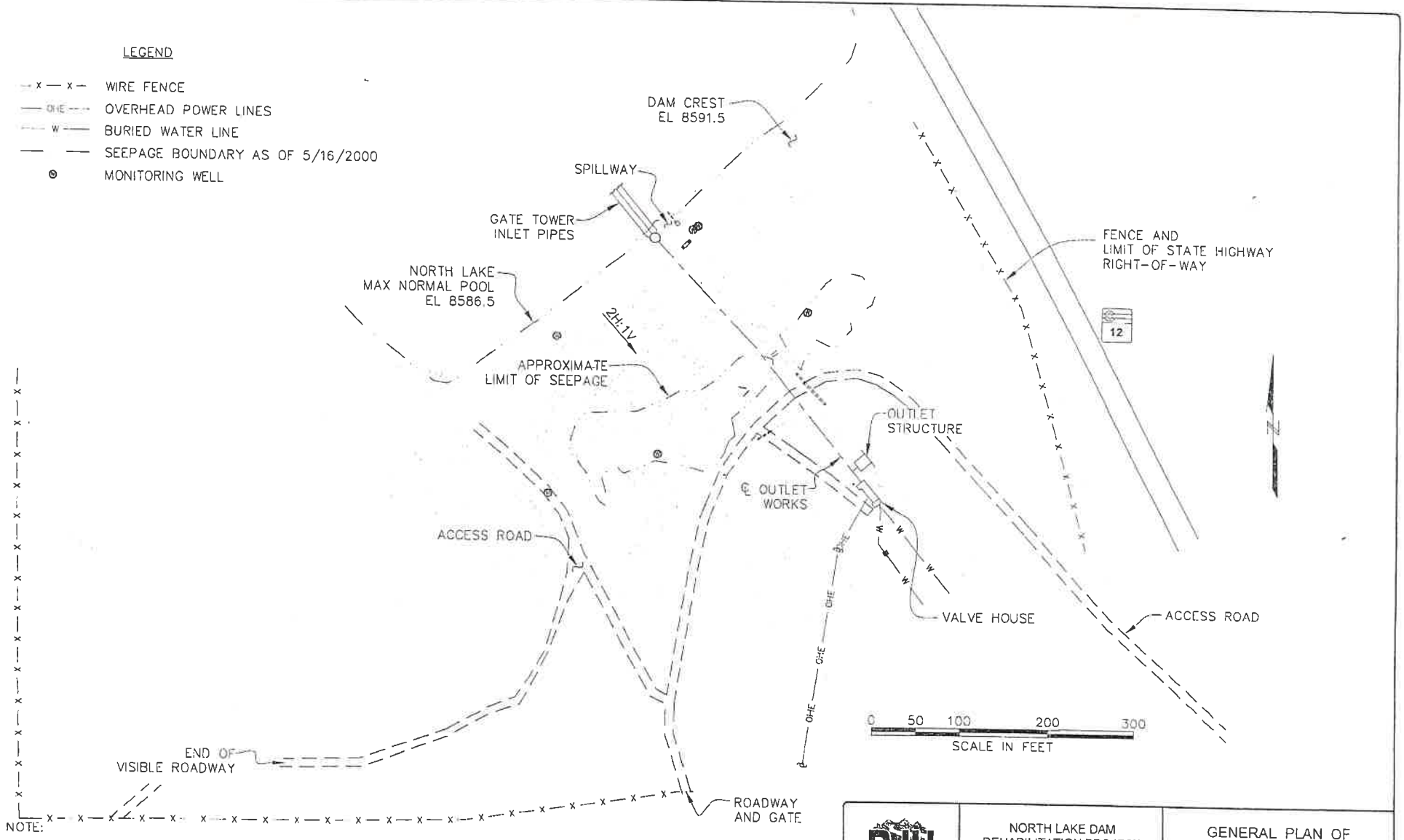
The lower half of the downstream shell of the dam is moist at the surface, and surface soils at the toe are soft and wet. The extent of the wet area is outlined on Figure 2.1. The source of the moisture appears to be seepage primarily through a concentrated flow on the right groin. The beginning of channelized flow is located about 20 feet downstream of the dam at about El. 8544. This seepage flows into a small swale on the right groin, which connects to the streambed downstream of the spillway stilling basin. About 50 feet from the end of the ditch, a sharp-crested weir is installed to measure the quantity of seepage.

2.2 Primary Project Components

The primary components of the North Lake Rehabilitation Project are shown on Figure 2.2 and described as follows:

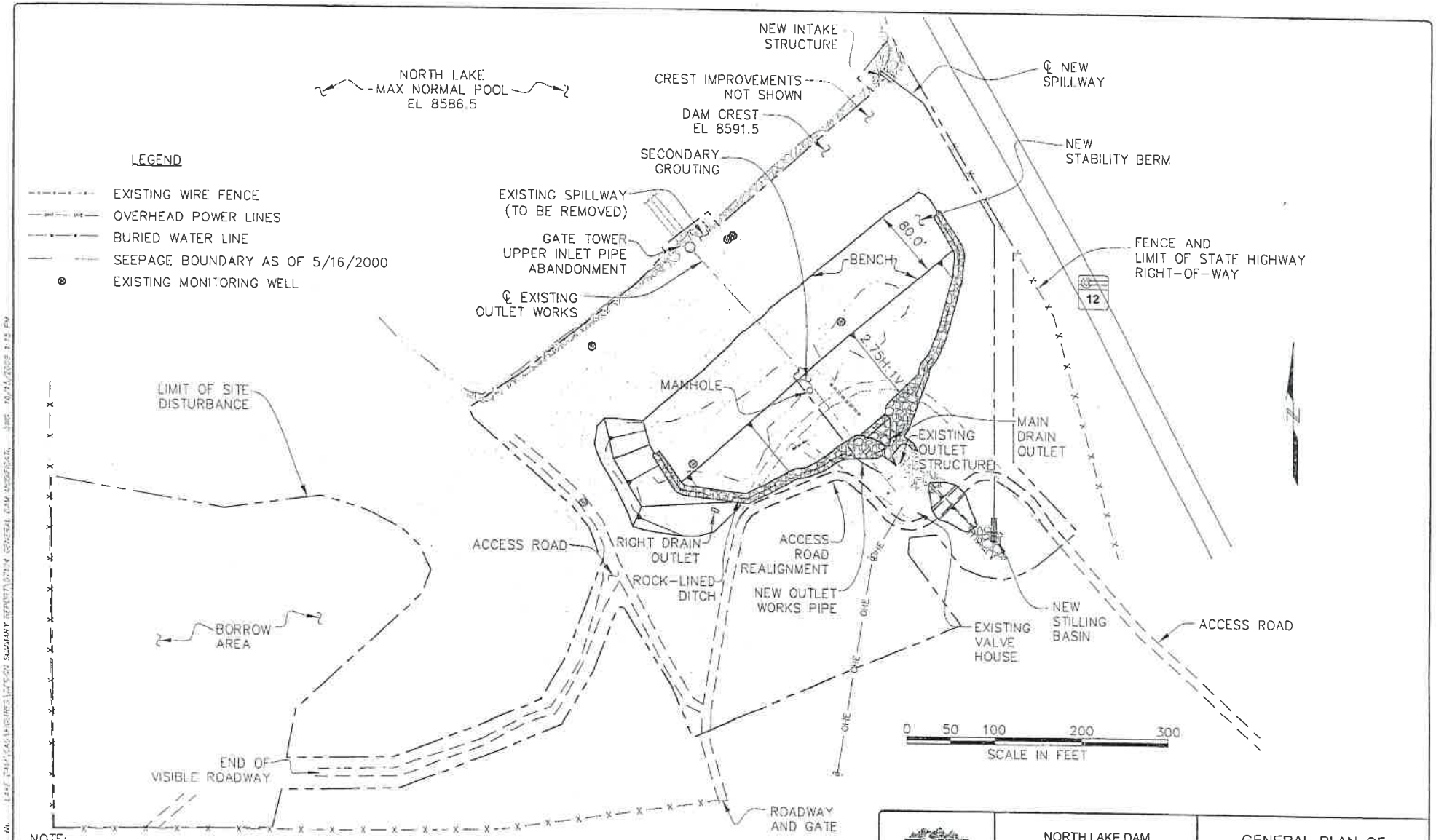
- DOWNSTREAM STABILITY BERM: An 80-foot-wide berm with a crest at El. 8550 and a downstream slope of 2.75H:1V will be constructed on the downstream slope of the dam across the entire valley. A filter drain system will be placed below the berm to collect seepage. The rehabilitation will require replacement of a section of the lower 24-inch outlet pipe with a manhole with sleeve couplings and a 30-inch-diameter outlet pipe.

- SPILLWAY: The existing spillway will be demolished and removed and the excavation will be restored by placing fill. A new spillway consisting of a reinforced concrete intake structure with trashrack, a 36-inch diameter reinforced concrete pipe (RCP), and a reinforced concrete stilling basin will be constructed in the left abutment.
- UPPER INLET PIPE ABANDONMENT: The separated upper inlet pipe to the gate tower will be abandoned by filling 14 feet of the pipe immediately upstream of the gate tower with grout, removing the 24-inch butterfly valve, and placing a blind flange on the pipe at the tower.
- SECONDARY GROUTING OF THE OLD DAM 15-INCH PIPE: Low mobility grout will be injected into the pipe through the existing grouting apparatus to plug voids that resulted from the Phase I grouting to complete the abandonment of the pipe.
- ACCESS ROAD: A segment of the access road will be relocated. The approximately 400-foot-long segment is located downstream of the dam in the vicinity of the proposed stability berm. The new alignment will be downstream of the outlet works stream release stilling basin. An embankment with a culvert will be constructed where the road crosses the incised channel in the center of the valley. The new access road will tie in to the existing access road on either side of the valley.
- SITE WORK: Additional site work will include crest regrading, riprap-lined ditches along the downstream groin of the embankment, reclamation of work areas, and instrumentation.



RJH CONSULTANTS, INC.

NORTH LAKE DAM REHABILITATION PROJECT		GENERAL PLAN OF EXISTING CONDITIONS
PROJECT NO. 07104	October 2009	Figure 2.1



NOTE:

1. TOPOGRAPHIC SURVEYING WAS PERFORMED BY TERRY LAND SURVEYING, INC. IN MAY, 2000 AND JULY, 2007. COORDINATES WERE OBTAINED BY GPS AND PROJECTED TO A LOCAL COORDINATE SYSTEM.

RJH CONSULTANTS, INC.

NORTH LAKE DAM REHABILITATION PROJECT	GENERAL PLAN OF MODIFICATIONS
PROJECT NO. 07104	October 2009 Figure 2.2

Colorado, United States, North America

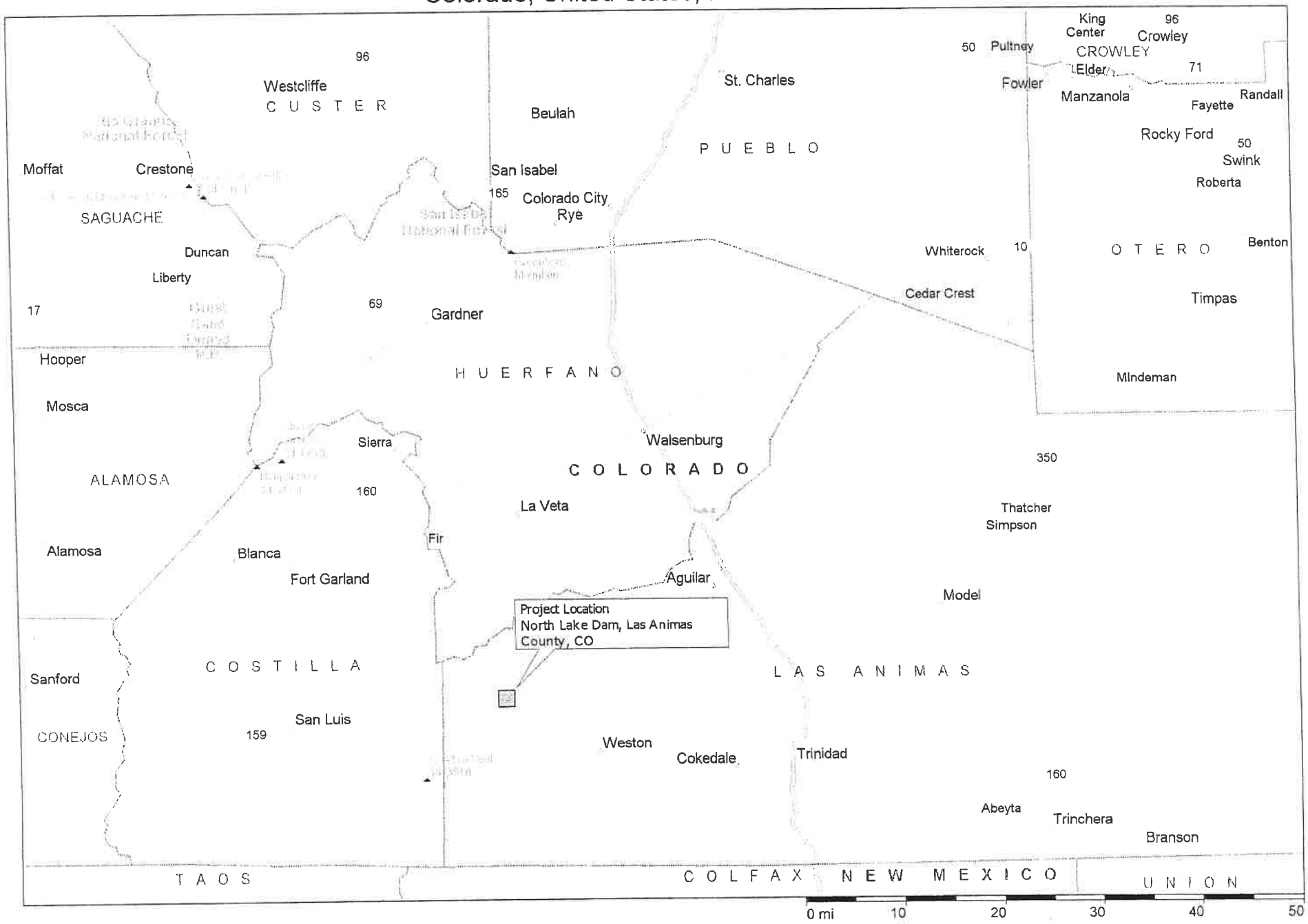


EXHIBIT “B”

June 28, 2010
Project 07104

Mr. Jim Fernandez
City of Trinidad
P.O. Box 880
Trinidad, CO 81082

Re: North Lake Dam Rehabilitation Project
Opinion of Probable Construction Costs

Dear Jim:

RJH Consultants, Inc. (RJH) developed an Opinion of Probable Construction Cost (OPCC) to implement the modifications described in the SEO Submittal design drawings and technical specifications for the North Lake Dam Rehabilitation Project.

This OPCC is based on professional opinion. Actual costs would be affected by a number of factors beyond current control, such as supply and demand for the types of construction required at the time of bidding and in the project vicinity; changes in material supplier costs; changes in labor rates; the competitiveness of contractors and suppliers; changes in applicable regulatory requirements; and changes in design standards. Therefore, conditions and factors that arise as project development proceeds through bidding and construction may result in construction costs that differ from the estimate provided in this letter.

The lump sum item costs are based on qualitative estimates of the summation of the various activities required for a particular item of work. Quantities for unit price items are based on the drawings. The line items in the attached cost opinion correspond to the items in the bid tabulation that will be used for bidding. Estimated unit prices and costs of the listed work items were derived from the following sources:

- Published and non-published bid price data for similar work from similar projects.
- R.S. Mean Heavy Construction Cost Data for 2009.
- Manufacturer's budgetary price quotes.
- Engineering News Record (ENR).

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- RJH's experience on similar construction work and engineering judgment.

The sum of the bid items is defined for this study as the "Direct Construction Subtotal" (DCS). We anticipate the DCS would represent a contractors' "bid price." We have included allowances to the DCS to account for other project costs. These allowances include the following:

- 15 percent of the DCS to account for construction contingencies. This allowance is intended to cover unanticipated items and issues that may arise during construction.
- 3 percent of the DCS for City administration.
- Approximately 20 percent of the DCS for construction engineering.
- Approximately 3 percent of the DCS for materials testing during construction.

The Opinion of Probable Construction Costs (OPCC) is the sum of the DSC and the above allowances. A summary of our OPCC for this project is presented in the following table.

OPINION OF PROBABLE CONSTRUCTION COST

Item	Quantity	Unit	Unit Price ($)	Total Cost ($)
1 – Mobilization	1	LS	75,000.00	75,000.00
2 – Erosion Protection and Sediment Control	1	LS	20,000.00	20,000.00
3 – Clearing and Grubbing	9	Acre	2,500.00	22,500.00
4 – Reservoir Control	1	LS	55,000.00	55,000.00
5 – Dewatering	1	LS	70,000.00	70,000.00
6 – Site Access Road Improvements	1	LS	12,500.00	12,500.00
7 – Crest Earthwork	1	LS	7,500.00	7,500.00
8 – New Spillway Structure	1	LS	60,000.00	60,000.00
9 – Spillway Pipe	536	LF	200.00	107,200.00
10 – Removal of Existing Spillway	1	LS	25,000.00	25,000.00
11 – Secondary Pipe Grouting	1	LS	5,000.00	5,000.00
12 – Gate Tower Repair	1	LS	15,000.00	15,000.00
13 – Outlet Works Disposal	1	LS	30,000.00	30,000.00
14 – Furnishing and Placing Low-Permeability Fill	210	CY	12.50	2,625.00
15 – Furnishing and Placing Berm Fill	32,000	CY	3.00	96,000.00
16 – Furnishing and Placing Filter Sand	3,700	CY	50.00	185,000.00
17 – Furnishing and Placing Drain Gravel	1,550	CY	50.00	77,500.00
18 – Topsoil	7,300	CY	5.50	40,150.00
19 – Type M Riprap	220	CY	70.00	15,400.00
20 – Type L Modified Riprap	410	CY	170.00	69,700.00
21 – Riprap Bedding	85	CY	60.00	5,100.00
22 – Outlet Works Pipe	1	LS	120,000.00	120,000.00
23 – Manhole	1	LS	15,000.00	15,000.00
24 – Toe Drain Pipe	525	LF	100.00	52,500.00
25 – Instrumentation	1	LS	15,000.00	15,000.00
26 – Seeding	9	Acre	2,500.00	22,500.00
27 – All Other Work Not Listed Separately	1	LS	95,000.00	95,000.00
Direct Construction Subtotal (DCS)				1,316,175.00
Construction Engineering and Administration				260,000.00
Materials Testing				35,000.00
City Administration at 3 Percent of DCS				39,485.00
Construction Contingencies at 15 Percent of DCS				197,426.00
Opinion of Probable Construction Cost (OPCC, 2010)				**$1,848,086.00**

Please call if you have any questions or require additional information.

Sincerely,

RJH CONSULTANTS, INC.

Robert J. Huzjak, P.E.
Project Manager

RJH/jmm

EXHIBIT “C”

Jm 4

EXPENSE CHECK REGISTER REPORT
EIAF #4120 Trinidad North Lake Dam

EIAf Grant	300,000
City Share	550,000
Total Budget	850,000

Vendor	Date Paid	Check No.	EXPENSE INCURRED (Budget Line Item) Repair & Replace Piping	Enbankment Stablization	Spillway Repair	Subtotal	Monument Lake Stabilization	Total Project Expense
GEI Consultants, Inc.	06-30-00	4028	9,458.44	882.50		10,340.94		10,340.94
Engineering Serv	06-30-00	4028	20,544.12	10,172.50		30,716.62		30,716.62
" "	07-31-00	4262	9,097.66	380.00		9,477.66		9,477.66
" "	08-31-00	4510	9,623.00	1,420.00		11,043.00		11,043.00
" "	09-15-00	4650	6,209.86	0.00		6,209.86		6,209.86
" "	10-31-00	5018	37,862.35	37,168.00		75,030.35		75,030.35
" "	11-15-00	5153	97,777.28	2,141.75		99,919.03		99,919.03
" "	12-31-00	5488	33,410.71	0.00		33,410.71		33,410.71
" "	01-31-01	5665	11,104.18	3,488.50		14,592.68		14,592.68
" "	01-15-01	6110	52,908.49	0.00		52,908.49		52,908.49
" "	03-31-01	6225	2,795.42	3,009.50		5,804.92		5,804.92
" "	05-31-01	6699	68,850.08	3,435.47		72,285.55		72,285.55
" "	06-15-01	6856	89,885.76	502.50		90,388.26		90,388.26
" "	06-15-01	6856	34,274.46	0.00		34,274.46		34,274.46
" "	07-31-01	7227	4,205.58	0.00		4,205.58		4,205.58
" "	09-30-01	7740	444.50	0.00		444.50		444.50
" "	10-31-01	7978	370.00	0.00		370.00		370.00
" "	10-31-01	7978	1,064.00	0.00		1,064.00		1,064.00
COSTS INCURRED 6-30-00 THRU 10-31-01)			**489,885.89**	**62,600.72**	**0.00**	**552,486.61**		**552,486.61**
GEI Consultants, Inc.	12-31-01	8452	2,718.18	0.00		2,718.18		2,718.18
Engineering Serv	01-31-02	8752	1,533.76	0.00		1,533.76		1,533.76
" "	01-31-02	8752	2,766.95	0.00		2,766.95		2,766.95
" "	03-15-02	9070	7,237.51	0.00		7,237.51	4,289.22	11,526.73
" "	04-15-02	9269	1,861.45	0.00		1,861.45	36,295.04	38,156.49
" "	04-30-02	9385	940.50	0.00		940.50	2,548.10	3,488.60
" "	05-31-02	9631	260.00	0.00		260.00	520.35	780.35
" "	06-30-02	9875	989.01	0.00		989.01	1,468.69	2,457.70
" "	07-31-02	10102		8,800.95		8,800.95	1,641.37	10,442.32
" "	08-15-02	10252		8,375.89		8,375.89	30,587.96	38,963.85
" "	09-30-02	10595		12,859.71		12,859.71	5,374.50	18,234.21
" "	10-31-02	10845		51,971.41		51,971.41		51,971.41
" "	12-31-02	11294		6,679.25		6,679.25	96,298.37	102,977.62
" "	12-31-02	11294		18,121.01		18,121.01	7,155.52	25,276.53
" "	01-15-03	11408		3,397.39		3,397.39		3,397.39
" "	02-28-03	11832	1,785.00		2,024.43	3,809.43	4,278.56	8,087.99
" "	03-31-03	12073	410.40		1,317.72	1,728.12	8,850.00	10,578.12
" "	04-30-03	12317				0.00	1,656.94	1,656.94
" "	05-15-03	12470		2,781.46	2,770.97	5,552.43		5,552.43
" "	06-30-03	12865		4,325.00	4,820.91	9,145.91	3,365.70	12,511.61
" "	07-31-03	13124		3,047.50		3,047.50	27,153.63	30,201.13
" "	08-31-03	13396		3,220.15		3,220.15	18,144.50	21,364.65
" "	09-30-03	13642		2,492.00	5,766.13	8,258.13	742.80	9,000.93
" "	11-15-03	14059		408.50	220.44	628.94		628.94
" "	12-15-03	14305		2,814.09	2,353.80	5,167.89		5,167.89
" "	12-31-03	14401		8,568.46	4,841.82	13,410.28	1,104.50	14,514.78
" "	03-31-04	15155				0.00	2,962.10	2,962.10
" "	04-30-04	15421				0.00	1,165.04	1,165.04
" "	04-30-04	15421		978.61		978.61	39,768.51	40,747.12
" "	05-31-04	15669				525.00	525.00	1,050.00
	06-30-04	15944				12,915.62	12,915.62	25,831.24
" "	07-31-04	16228					827.14	827.14
	08-15-04						17,709.50	17,709.50
Schrepfer Industries	10-15-01	7904			20,000.00	20,000.00		20,000.00
" "	12-15-01	8379			27,746.00	27,746.00		27,746.00
" "	01-31-02	8755			21,746.80	21,746.80		21,746.80
" "	03-15-02	9113			8,999.20	8,999.20		8,999.20
	06-30-02	9907			19,353.00	19,353.00		19,353.00
COSTS INCURRED 11-02-02 THRU 06-30-04			**20,502.76**	**138,841.38**	**121,961.22**	**294,745.98**	**327,348.66**	**622,094.64**
TOTAL PROJECT EXPENDITURES			510,388.65	201,442.10	121,961.22	847,232.59	327,348.66	**1,174,581.25**
				LESS: ADVANCE PAYMENT				**(30,000.00)**
				GRANT REQUEST				**300,000.00**
				CITY SHARE TO-DATE		552,486.61		874,581.25

EXHIBIT “D”

Las Animas County

Board of County Commissioners

Gary D. Hill	Jim D. Montoya	James Vigil
Chairman Pro Tem	Chairman	Commissioner

June 28, 2010

Ms. Susan Kirkpatrick, Executive Director
Colorado Department of Local Affairs
1313 Sherman Street, Suite 500
Denver, CO 80203

Dear Executive Director Kirkpatrick,

We, the Board of County Commissioners of Las Animas County, wish to express our support for the Energy Impact Assistance Fund grant application submitted by the City of Trinidad, seeking funding support for its project to repair the dam at its North Lake Reservoir.

The North Lake Reservoir holds the City of Trinidad's primary supply of raw water which is then processed and delivered to the City and throughout the Purgatoire River Valley, serving the majority of residents within Las Animas County.

Please take notice that Las Animas County is not submitting an application seeking Energy Impact Assistance Funds so as not to compete with the City of Trinidad and to demonstrate our support for its application.

We respectfully request your favorable consideration of the EIAF application submitted by the City of Trinidad for its North Lake Reservoir.

Sincerely,

Jim D. Montoya, Chairman

Gary D. Hill, Chairman Pro Tem

James Vigil, Commissioner

200 E. First St. Room 110, Trinidad, Colorado 81082 Phone (719)845-2568 Fax (719) 845-2598
Email: lasanimascounty@sensonics.org

PIONEER
NATURAL RESOURCES

Pioneer Natural Resources USA, Inc.
1401 17th Street, Suite 1200
Denver, Colorado 80202
Tel: (303) 298-8100 Fax: (303) 298-7800

July 19, 2010

Lee Merkel
Department of Local Affairs
132 West "B" Street, Suite 260
Pueblo, CO 81003

Dear Mr. Merkel:

Please accept this letter as an indication of Pioneer's support for the application of the City of Trinidad in their submission of a grant to the Department of Local Affairs Energy and Mineral Impact Assistance Program Tier II funding program.

The City of Trinidad is submitting a grant request to provide funding for the North Lake Dam Rehabilitation Project. Additional funding would be provided through a 25% cash match out of the City of Trinidad Water Fund if the grant is approved.

As the largest energy operator and severance tax revenue generator in Las Animas County, we support the city's request that part of the $23 million in severance tax revenues generated in 2009 for Las Animas County be directed to the City of Trinidad project.

We understand that the project is a response to the State Water Engineer's requirement that the City construct a new spillway and earthen reinforcement for the North Lake reservoir/dam, and that if the project is not completed, the State Water Engineer will require the City to significantly lower the level and volume of water held in the reservoir, which would adversely impact system users throughout Las Animas County.

Discussion with the applicant yielded that the City of Trinidad is unable to borrow money at this time due to restrictions on indebtedness by municipal governments. With limited abilities to borrow, it is critical that the City be able to secure DOLA funds to support the repairs and ensure continued access to adequate volumes of water.

Further, it was explained that this particular project is part of the Water Fund, which is set up as an enterprise fund. It is funded by the utility fees and charges that the Water Department collects. Sales and property taxes fund other programs, and cannot be used for enterprise fund programs.

PIONEER
NATURAL RESOURCES

Pioneer Natural Resources USA, Inc.
1401 17th Street, Suite 1200
Denver, Colorado 80202
Tel: (303) 298-8100 Fax: (303) 298-7800

Additionally, monies that might normally have come back to the County from various energy related taxes are much lower this year due to the fact that the State has retained nearly all of the Las Animas County and City of Trinidad portions in an effort to get closer to balancing its own budget.

The City has looked at raising rates and determined that such a rate increase at this time is unwarranted. Despite the impact of energy jobs paying well above the state average, the average Las Animas County resident earns below average wages and would be significantly impacted by a rate increase of the magnitude needed to complete this project – possibly putting some ratepayers in financial distress.

In reviewing the Seven Principles of Sustainability, this grant falls squarely within the "Supporting Existing Communities" and will strategically optimize goal driven infrastructure funding to maximize investment, support long term viability and revitalize this community.

From April 2000 to July 2007, the population in Trinidad, Las Animas County and the unincorporated areas increased (4.3%, 9% and 18% respectively.) These increases were due, in part, to impacts from energy development as energy operators responded to increasing gas prices and development opportunities. As activity increased, more employees, contractors, and vendors moved to Las Animas County and the surrounding areas. In addition, many contractors and vendors also filled the local hotels for short to long term stays. This increased activity and part-time to permanent population put extra demands on the City of Trinidad to ensure that basic necessities such as water are available.

As energy operators respond to moderating and increasing gas prices and lower contractor and vendor costs, activity is slowly picking up again in Trinidad. It is critical that the City have adequate and reliable supplies of water for the existing population and be prepared to again address increases in population due to increasing energy development – which includes adequate sources of water. We support this request and urge that the requested funding be made available.

Sincerely,

Pioneer Natural Resources USA, Inc.

By: _____
Thomas D. Sheffield
Vice President-Rockies Asset Team

EXHIBIT “E”

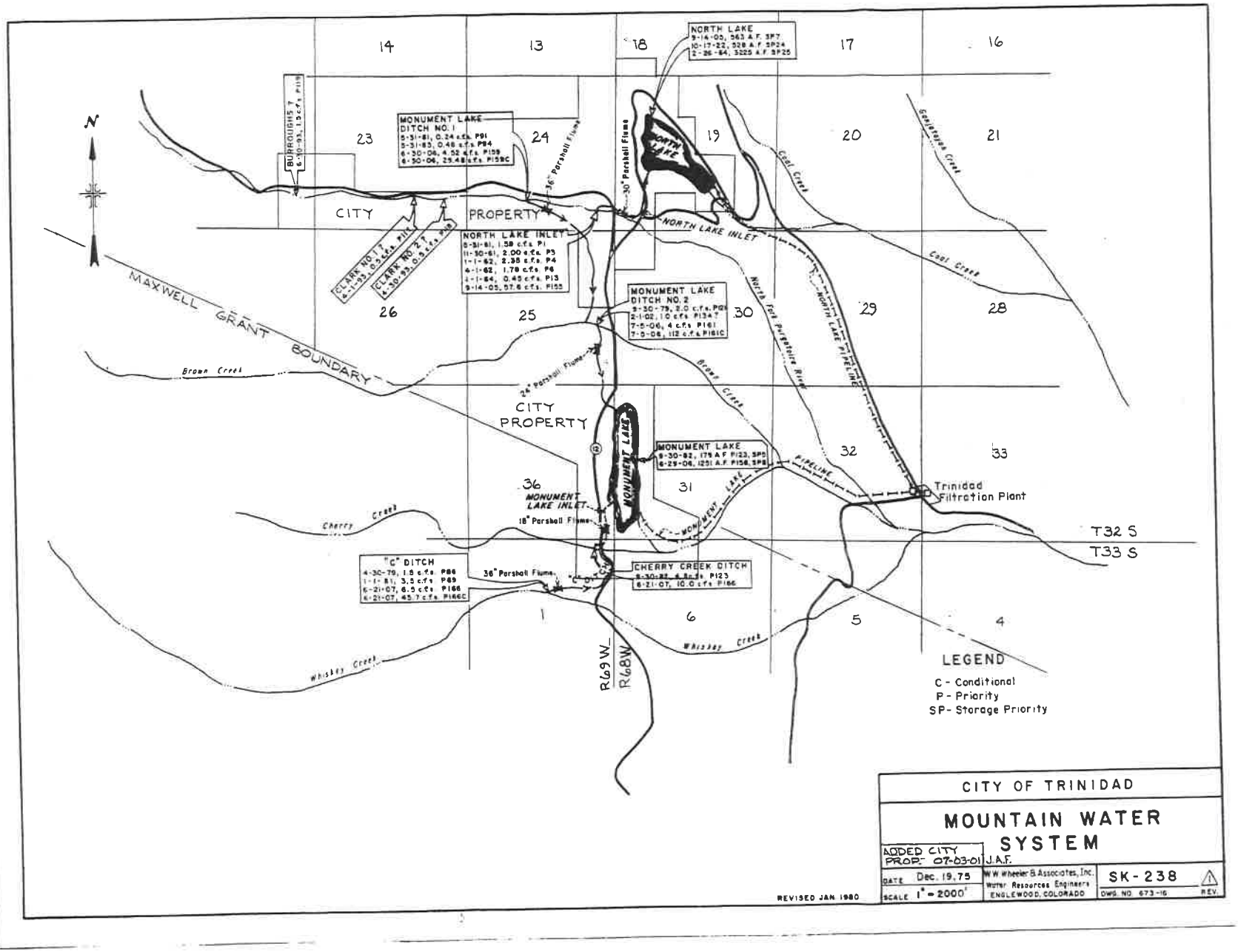
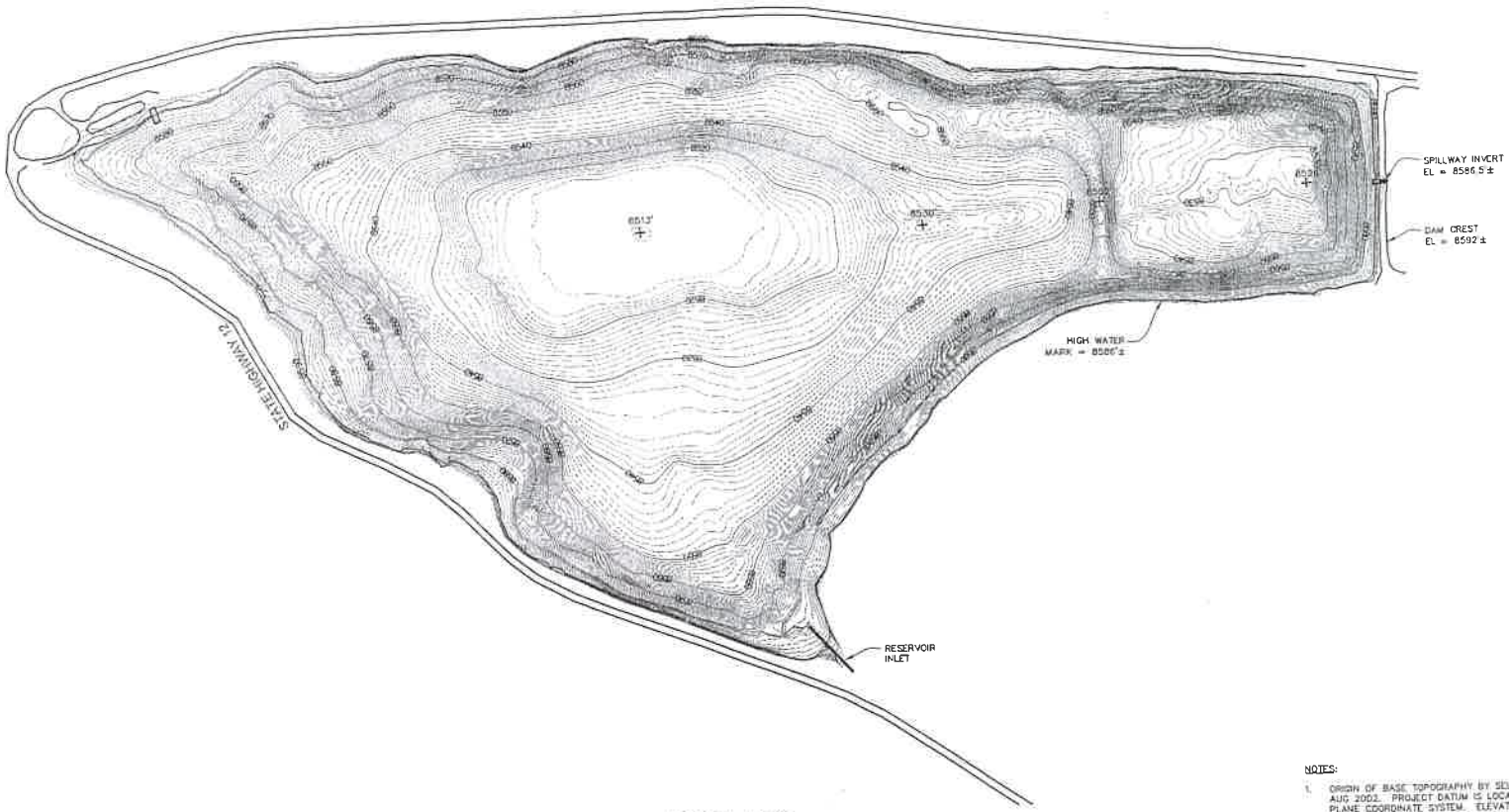

NORTH LAKE
9-14-05, 363 A.F. SP7
10-17-22, 528 A.F. SP24
2-26-84, 3225 A.F. SP25
MONUMENT LAKE DITCH NO. 1
5-31-81, 0.24 c.f.s. P91
5-31-83, 0.48 c.f.s. P84
6-30-06, 4.52 c.f.s. P159
6-30-06, 25.48 c.f.s. P159C
BURROUGHS 7
6-10-93, 1.5 c.f.s. P119
CLARK NO. 1
6-17-93, 0.3 c.f.s. P114
CLARK NO. 2
6-30-93, 0.5 c.f.s. P115
NORTH LAKE INLET
5-31-81, 1.58 c.f.s. P1
11-30-61, 2.00 c.f.s. P3
1-1-62, 2.38 c.f.s. P4
6-1-62, 1.78 c.f.s. P6
1-1-64, 0.45 c.f.s. P13
9-14-05, 57.6 c.f.s. P155
MONUMENT LAKE DITCH NO. 2
5-30-79, 2.0 c.f.s. P126
2-1-02, 1.0 c.f.s. P134.7
7-5-06, 4 c.f.s. P161
7-5-06, 112 c.f.s. P161C
MONUMENT LAKE
5-30-82, 179 A.F. P123, SP5
6-29-06, 1251 A.F. P156, SP8
"C" DITCH
4-30-79, 1.8 c.f.s. P86
1-1-81, 3.5 c.f.s. P69
6-21-07, 8.5 c.f.s. P166
6-21-07, 45.7 c.f.s. P166C
CHERRY CREEK DITCH
5-30-82, 4.5 c.f.s. P123
6-21-07, 10.0 c.f.s. P166
CITY PROPERTY
CITY PROPERTY
MAXWELL GRANT BOUNDARY
36" Parshall Flume
30" Parshall Flume
24" Parshall Flume
18" Parshall Flume
NORTH LAKE
NORTH LAKE INLET
MONUMENT LAKE
MONUMENT LAKE INLET
PIPELINE
Trinidad Filtration Plant
Coal Creek
Goodyear Creek
Brown Creek
Cherry Creek
Whiskey Creek
North Fork Purgatoire River
T32 S
T33 S
R69W
R68W
14
13
18
17
16
23
24
19
20
21
26
25
30
29
28
36
31
32
33
1
6
5
4
LEGEND
C - Conditional
P - Priority
SP- Storage Priority
CITY OF TRINIDAD
MOUNTAIN WATER SYSTEM
ADDED CITY PROP. 07-03-01 J.A.F.
DATE Dec. 19,75
SCALE 1" = 2000'
W.W. Wheeler & Associates, Inc.
Water Resources Engineers
ENGLEWOOD, COLORADO
SK-238
DWG. NO. 673-16
REV.
REVISED JAN. 1980

EXHIBIT “F”



NORTH LAKE

0 100 200 400 800
SCALE IN FEET

NOTES:

1. ORIGIN OF BASE TOPOGRAPHY BY SELLARDS & CRIGG, INC, AUG 2002. PROJECT DATUM IS LOCAL MODIFIED STATE PLANE COORDINATE SYSTEM. ELEVATIONS CORRESPOND TO MEAN SEA LEVEL (MSL) AS DEFINED BY THE NATIONAL GEODETIC VERTICAL DATUM OF 1988 (NAVD-88).
2. BLACKHAWK GEOSCIENCES PERFORMED THE UNDERWATER SURVEY.

CITY OF TRINIDAD	NORTH LAKE	PROJECT MAP	
GEI Consultants, Inc.	PROJECT NO. 00128	NOV 2002	FIGURE 3.2

P:\PROJECTS\00128\MONUMENT LAKE\FIGURE 3.2.DWG 11/02

EXHIBIT "G"

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WATER RESOURCES

John W. Hickenlooper, Governor

Mike King
Executive Director

Dick Wolfe, P.E.
Director and
State Engineer

Office of Received
JUN 22 2011
Utilities Superintendent

June 13, 2011

Mr. James Fernandez
Utilities Superintendent
City of Trinidad
135 N. Animas Street
Trinidad, CO 81082

CERTIFIED NO.: 7004 0550 0001 0703 6938

When replying please refer to:
NORTH LAKE DAM
Water Division 2, DAMID 190116

RE: Reservoir Restriction Order 5 feet Below Emergency Spillway Crest

Dear Mr. Fernandez:

I understand that you have had several recent meetings with my staff to discuss our on-going safety concerns with North Lake Dam. I also understand that the City of Trinidad is trying to obtain grant money to construct the safety modifications to the dam that your engineer has designed. We applaud this effort and hope you are successful. However, in the meantime we believe artesian pressures in the dam's foundation create an unsafe condition when the reservoir is full, such as has been documented in a geotechnical report by your engineer. We believe you have had adequate time to attempt to fix the problem and that the time has come where we must act to restrict the reservoir level. We are also concerned about seismic activity in the area of the dam and the elevated risk it creates for potential failure modes associated with your dam.

In light of these events and in order to increase the safety of the dam, **the reservoir is hereby restricted to a level 5.0 feet below the emergency spillway crest or gage height 60.0 feet.** As my staff has discussed with you, the reservoir shall be drawn down slowly, at a rate of approximately 1 foot per month, during which time the reservoir and piezometric levels shall be monitored and recorded at least one time per week. Please provide the data to my office on a monthly basis. During this period the dam shall be monitored visually on a daily basis with particular attention to cracking of soils at the downstream toe of the dam and any new seepage or change in the rate or increase in turbidity of the existing seepage or for any other new or unusual conditions. We recommend that you cut herbaceous vegetation and remove large vegetation at the toe and groins of the dam in order to facilitate close visual

inspection. Please notify the Dam Safety Branch when the full 5 foot reservoir restriction has been attained. At that time, the reduction in the piezometric level in the foundation will be evaluated to determine if additional restrictions are needed to achieve a significant drop in pressure.

I also understand that there is a historical slide area along Colorado Highway 12 on the north rim of the reservoir that could be re-activated if the reservoir is dropped quickly. Please contact your local CDOT staff in charge of monitoring the slide area and inform them of the planned drawdown of the reservoir.

By copy of this letter the Division Engineer is directed to enforce the restriction; however, the primary responsibility rests with you as the dam owner. This restriction is the minimum action you can take to improve the safety of your dam. Additional actions may be necessary based upon the recommendations of your engineer. You are reminded that, as owner, you are liable for the safety of this structure and these minimum requirements do not relieve you of that liability.

Failure to comply with this order will result in our office initiating legal action in accordance with Colorado Revised Statute 37-87-114. Court action could result in the imposition of a fine of not less than $500 per day, and a District Court Order requiring the breach of the dam.

We appreciate your cooperation in this matter. Should you have any questions, please contact Mark Perry at 719-542-3368, ext 2109.

Sincerely,

Dick Wolfe, P.E.
Director and State Engineer

xc: Steve J. Witte, Division 2 Division Engineer
Mark Haynes, Chief, Safety of Dams Program
Mark Perry, Division 2 Dam Safety Engineer
Jeff Montoya, Division 2 W.D. 19 Water Commissioner
Robert Huzjak, RJH Consultants Inc.

TABLE 4.2
RESERVOIR CAPACITY TABLE – NORTH LAKE

Elevation (ft)	Dead Storage		Active Storage		Total Storage (ac-ft)
	Surface Area (acre)	Accumulated Storage (ac-ft)	Surface Area (acre)	Accumulated Storage (ac-ft)	
8512	0	0			0
8513	0	0			0
8514	6	3			3
8515	8	10			10
8516	9	18			18
8517	10	27			27
8518	11	37			37
8519	11	49			49
8520	12	60			60
8521	13	73			73
8522	14	86			86
8523	14	100			100
8524	15	115			115
8525	16	131			131
8526	17	148	0	0	148
8527	18	165	0	0	165
8528	19	184	0	0	184
8529	20	204	1	1	204
8530	22	225	1	2	227
8531	23	247	2	4	250
8532	24	270	3	6	276
8533	26	295	3	9	304
8534	28	322	4	12	335
8535	30	351	4	16	367
8536	31	381	5	21	402
8537	33	413	5	26	439
8538	34	446	6	32	478
8539	36	481	6	38	519
8540	37	518	7	44	562
8541	39	556	7	51	607
8542	40	595	7	58	653
8543	42	637	7	65	702
8544	44	680	8	73	753
8545	46	725	8	81	806
8546	48	773	8	89	861
8547	50	822.	8	97	919
8548	52	873	8	105	979
8549	54	926	9	114	1,040
8550	55	981	9	123	1,103
8551	57	1,037	9	131	1,168
8552			67	198	1,235
8553			69	266	1,303
8554			70	335	1,372
8555			71	406	1,443
8556			73	478	1,515

Elevation (ft)	Dead Storage		Active Storage		Total Storage (ac-ft)
	Surface Area (acre)	Accumulated Storage (ac-ft)	Surface Area (acre)	Accumulated Storage (ac-ft)	
8557			74	552	1,588
8558			75	626	1,663
8559			76	702	1,739
8560			77	779	1,816
8561			78	857	1,894
8562			79	936	1,973
8563			80	1,016	2,052
8564			81	1,097	2,133
8565			82	1,178	2,215
8566			83	1,261	2,298
8567			84	1,345	2,382
8568			85	1,430	2,466
8569			86	1,515	2,552
8570			87	1,602	2,638
8571			88	1,689	2,726
8572			89	1,777	2,814
8573			90	1,866	2,903
8574			91	1,956	2,993
8575			92	2,047	3,084
8576			93	2,139	3,176
8577			94	2,233	3,269
8578			95	2,327	3,364
8579			96	2,422	3,459
8580			97	2,518	3,555
8581			98	2,616	3,653
8582			99	2,714	3,751
8583			101	2,814	3,851
8584			102	2,916	3,953
8585			104	3,019	4,056
8586			106	3,124	4,161
8586.5			106	3,177	4,214
8587			107	3,230	4,267
8588			107	3,337	4,374
8589			108	3,445	4,481
8590			109	3,553	4,590
8591			109	3,662	4,699
8592			110	3,772	4,808