COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Reservoir Dredging Grant Program

Application Type

☒ Feasibility Study Grant ☐ Construction Grant *(Feasibility Study required with application)*

Agency/Company Information

Grant Applicant Name: Jackson Lake Reservoir and Irrigation Company

Authorized Agent &Title: Cynthia Lefever, Office Manager

Address: 218 East Kiowa Avenue, Post OfficeBox 38, Fort Morgan CO 80701

Phone: (970) 867-7561 Email: fmrico@outlook.com

County: Morgan Federal ID Number: 84-0236480

Water District: 1 Proposed Storage Volume Recovery 15,000 acre-feet

Contact Information

Project Representative: Cynthia Lefever

Phone: (970) 867-7561 Email: fmrico@outlook.com

Engineer: Tom Dea, TZA Water

Phone: (303) 971-0030 Email: tdea@tza4water.com

Project Information

Project Name: Jackson Lake Dredging Feasibility Study

Brief Description of Project: see attached sheet

Provide an attached narrative detailing how the project meets all requirements of *Section 6: Application Evaluation Criteria* of the *CWCB Reservoir Dredging Program Grant Program Guidance*. Key elements include project match funding, organizational capability, and a realistic project budget and schedule. If applying for a construction grant, these items can be addressed within the feasibility study.

General Location: (Attach Map of Area) see attached

Estimated Engineering Costs:	Estimated Construction Costs:
Other Costs (Describe within narrative):	Estimated Total Project Costs: $48,800
Requested Grant Amount: $24,400	

Project Start Date(s) Design: May 1, 2017 Construction: n/a

Signature

Cynthia Lefever, Office Man. 2-1-17

Signature / Title Date

Return to: Finance Section Attn: Derek Johnson
1313 Sherman St #718
Denver, CO 80203
Ph. 303.866.3441 x3254
e-mail: derek.r.johnson@state.co.us

DESCRIPTION OF JACKSON LAKE DREDGING FEASIBILITY STUDY

BACKGROUND:

Jackson Lake Reservoir and Irrigation Company (the Company) owns and operates Jackson Lake Reservoir (Jackson Lake). The dam and reservoir were constructed in about 1905 for the purpose of storing water for irrigation.

The Company is a non-profit mutual ditch and reservoir company.

Jackson Lake is an off-stream reservoir located in Morgan County, Colorado, approximately 17 miles northwest of Fort Morgan, Colorado. Specifically, the reservoir is located in Sections 14, 15, 21, 22, 23, and 27, Township 5 North, Range 60 West of the 6th Prime Meridian. Access to the reservoir is via State Highway 144 to Morgan County Road 3. Jackson Lake is filled by water from the South Platte River. Water is diverted off of the South Platte River by a diversion headgate located on the north bank of the South Platte River and transported to Jackson Lake by means of an inlet canal.

Jackson Lake has an initial decree of 30,992 acre-feet at a depth of 28.7 feet above the bottom of the outlet tube with a Priority No. 20, an Appropriation Date of May 18, 1901, and an Adjudication Date of January 15, 1914. It further has a decree with a Priority No. 20 for filling to gage height 30.0 feet for an additional storage of 4,637 acre-feet. A refill decree was also granted for 8,269.92 acre-feet with a Priority number of 20R, Appropriation Date of December 31, 1929, and an Adjudication Date of June 8, 1965. The Company also has a right to store 1,200 acre-feet of seep water from what is known as the Day Seep which was granted through court case 85CW450 with an Appropriation Date of December 31, 1973 and a date of Adjudication of December 31, 1985.

The exact storage capacity of the reservoir at its current condition is not known due to sedimentation that has occurred over the past 100+ years.

Approximately 17,000 acres of farm ground gets water from Jackson Lake. Irrigation water is delivered through six different local irrigation companies. Water stored in Jackson Lake is released into the South Platte River, and the different irrigation companies then divert the water from Jackson Lake into their delivery ditches.

While its primary purpose is to store irrigation water, Jackson is also home to Jackson Lake State Park. In addition to water for agricultural irrigation, water from Jackson Lake is used to augment agricultural well depletions, as well as replacement water for the City of Fort Morgan and the City of Brush. During the winter months, Jackson Lake is also used to store Colorado Big-Thompson water for use at Xcel Energy's Pawnee Power Plant located 5 miles southeast of Fort Morgan, Colorado.

DREDGING OF JACKSON LAKE RESERVOIR

The Company has had discussions over the years of dredging some or all of the sediment from the bottom of the reservoir to recapture some or all of the original storage capacity. When the water level is low, water in storage on the north side of Jackson Lake is cut off from the outlet by accumulated sediment that have been deposited by the filler ditch. This can be seen in Figure 1. Figure 2 shows the stranded pool in October 2002. It is estimated that this stranded pool holds approximately 2,000 acre-feet of water.

The Company is considering dredging to restore the usable capacity of Jackson Lake. Prior to dredging, the Company plans to do a feasibility study to determine the following information:

- Survey the current bottom of the reservoir utilizing bathymetric surveying instruments;
- Develop current area-capacity curves for the reservoir;
- Construct test borings at various locations to obtain sediment samples to determine grain size distribution;
- Calculate the amount of storage lost due to sedimentation (compare existing conditions to available historic information);
- Evaluate and determine potential fee ranges for dredging operations needed to:
    - Construct a channel from the existing stranded pool to the reservoir outlet;
    - Restore the capacity of Jackson Lake to its original capacity;
    - Increase the capacity of Jackson Lake to a storage volume greater than its original capacity.

One option would be to dredge a channel from the stranded pool on the north side to the outlet on the south, thereby giving access to that water currently not obtainable. The Company is also considering dredging a larger portion of the reservoir bottom to recapture more of the original storage capacity of Jackson Lake and/or evaluate the feasibility of enlarging the original capacity of Jackson Lake.

A feasibility study is needed to determine whether dredging is feasible and to develop budgetary cost estimates for the Company shareholders. Part of the feasibility study will include a bathymetric survey of the reservoir bottom to identify the bottom contours and the current storage capacity of the reservoir. This will enable estimation of the amount of dredging needed to reconnect the existing stranded capacity to the reservoir outlet and estimation of the total dredging needed to recover the decreed capacity. The feasibility study will help the Company project the cost of work items that would restore and/or increase reservoir storage capacity by a dredging project.

Company shareholders feel that this feasibility project will meet all of CWCB's stated missions:

- Conservation of Water;
- Water Development;
- Protection of Water;
- Management of Colorado's water for present and future generations.

The Company has the ability to provide the matching funds for this CWCB grant request. The Company will create a special stockholder assessment needed for the funds, as we've done with the two CWCB loans obtained in 2002 and in 2003. There are a total of 1,550 outstanding shares in the Company that this special assessment will be levied against.


Jackson Lake
2013
Rd 4
Jackson Reservoir
Co Rd Bb
Jackson Lake State Park
Co Rd Aa
Inlet
Outlet
Indian Wy
Apache Rd
Z 5
305
3
4
5
Google earth
1 mi
N
Figure 1

FIGURE 2 - Jackson Lake October 2002

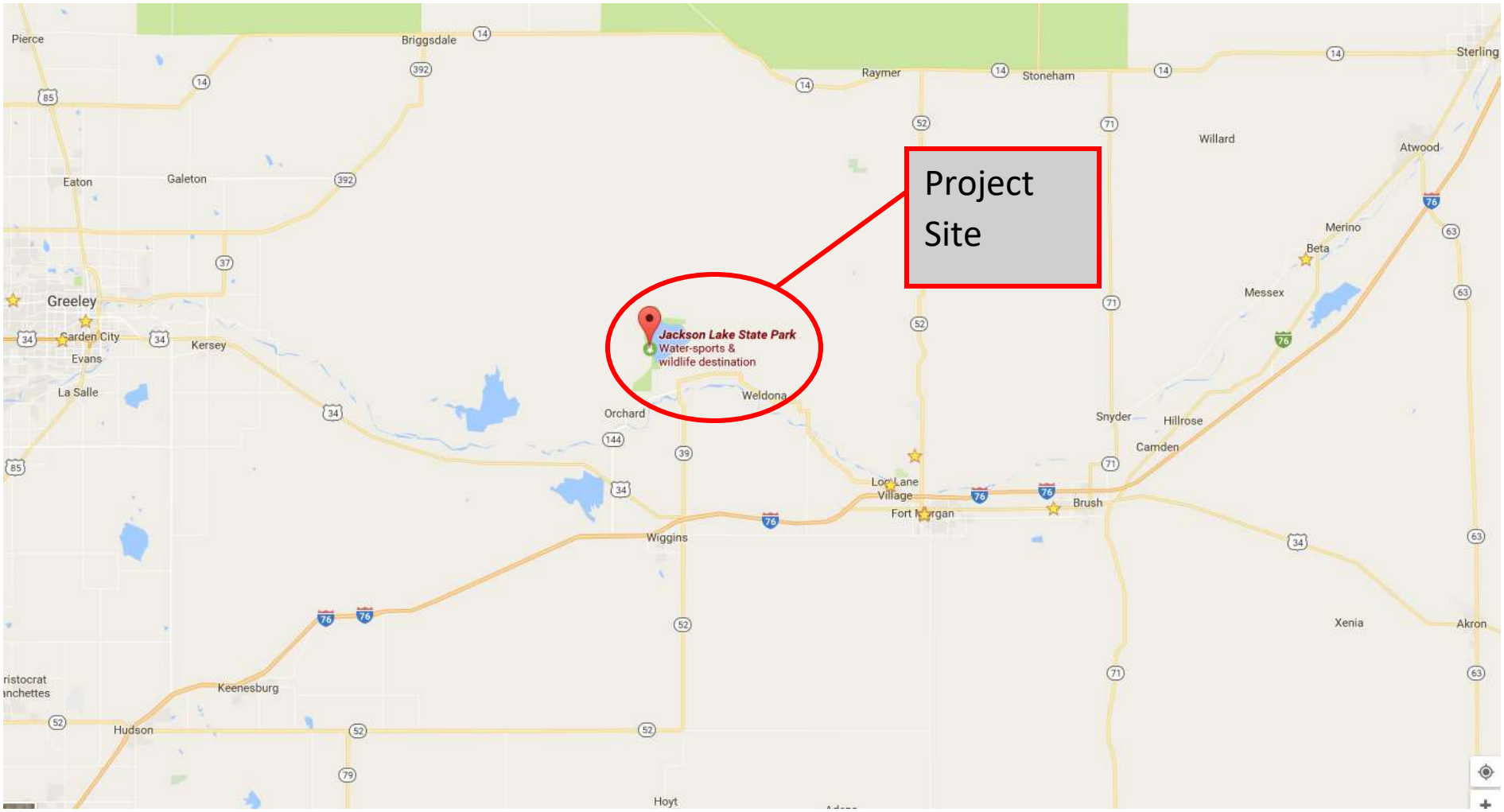

FIGURE 3 – SITE MAP

TZA Water Engineers
a Lamp Rynskon Company

Jackson Lake Dredging Feasibility Study **Proj. No.: 040000.G**
Fort Morgan, CO **By: Tom Dea, PE**
3/1/2017

Classification:	**Eng**	**Eng**	**Eng**	**Eng**	**Survey**	**Survey**	**Survey**	**Survey**	**Survey**		
Associate:	**Principal**	**PM**	**Tech**	**Tech**	**PM**	**Crew**	**Deisgner**	**Equipment**	**Mobilization**	**Subtotal of**	**Subtotal of**
Hourly Rate:	**$182.00**	**$175.00**	**$135.00**	**$111.00**	**$120.00**	**$115.00**	**$92.00**	**$92.00**	**$165.00**	**hrs per item**	**fee per item**
Dredging Feasibility Study											
Task 1: Historical Review and Data Gathering	2	2	2	6						12	$1,650.00
Task 2: Project Planning and Coordination	2	2		8						12	$1,602.00
Task 3: Reservoir Bathymetric Survey	4		12		2	30	18	30	24	120	$14,414.00
Task 4: Reservoir Perimeter General Survey	4	4			4	16	16	24	8	76	$8,748.00
Task 5: Office Computations-Dredging Options	1	2	32	16			16			67	$8,100.00
Task 6: 3D Reservoir Model			8	12			24			44	$4,620.00
Task 7: Cost Estimates	4	4	8	8						24	$3,396.00
Task 8: Feasibility Report	4	8		16						28	$3,904.00
Subtotal of hours per associate	21	22	62	66	6	46	74	54	32	383	
Subtotal of fee per associate	$3,822.00	$3,850.00	$8,370.00	$7,326.00	$720.00	$5,290.00	$6,808.00	$4,968.00	$5,280.00		
									Labor		$46,434.00
									Reimbursable Expenses	5.00%	$2,321.70
									Contingency	0.00%	$0.00
									Task Total		$48,755.70

Summary

Total Of Hours Per Associate	21	22	62	66	6	46	74	54	32	383	
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									Reimbursable Expenses	5.00%	$2,321.70
									Contingency	N/A	$0.00
									Task Total		$48,755.70