Little Thompson Water District

District Manager:
Michael T. Cook
835 E Highway 56
Berthoud, CO 80513

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November 1, 2018

Anna Mauss, P.E.
Colorado Water Conservation Board
1313 Sherman St #718
Denver, CO 80203

RE: Request for Feasibility Study Grant for Increasing Storage Capacity in Dry Creek Reservoir for Little Thompson Water District

Dear Ms. Mauss:

We have submitted preliminary application for a CWCB loan to conduct a feasibility-level evaluation of the Dry Creek Reservoir dam to understand the technical feasibility of raising the dam to increase the active storage capacity of the reservoir. We have hired AECOM (with Ed Toms, PE, as Project Principal) to perform the required engineering. We request a grant, in a maximum amount of $25,500, to pay for up to 50% of the cost of the Feasibility Study for the project. The study would be in accordance with the CWCB Guidelines and would follow the format of the Sample CWCB Feasibility Study you have provided us.

The engineering scope of work and cost estimate are attached.

Sincerely,

Amber Kauffman, District Engineer
Little Thompson Water District

AECOM
6200 S Quebec Street
Greenwood Village, Colorado 80111
www.aecom.com

303-694 2770 tel
303 694 3946 fax

May 17, 2018

Mr. Michael T. Cook, P.E.
District Manager
Little Thompson Water District
835 E. State Highway 56
Berthoud, CO 80513

Subject: Scope of Services, Feasibility Study for Increasing Storage Capacity in Dry Creek Reservoir, near Berthoud, Colorado

Dear Mr. Cook:

AECOM is pleased to submit this Scope of Work (SOW) to provide technical services to evaluate the feasibility of increasing the storage capacity in Dry Creek Reservoir. This proposal is based on our discussions with Little Thompson Water District (LTWD) and site visit which occurred on May 4, 2018. Presented below is the proposed scope of work, schedule, and fee.

1. PURPOSE

LTWD requires the development of a feasibility-level evaluation of the Dry Creek Reservoir dam to understand the technical feasibility of raising the dam to increase the active storage capacity of the reservoir. This evaluation includes alternatives focused on raising the dam height and/or modifying the dam layout to increase the storage capacity, identifying potential fatal flaws or risks associated with constructing each of the alternatives, and potential encroachment on surrounding properties.

2. BACKGROUND

Dry Creek Reservoir is located in Weld County, Colorado, approximately 10 miles west of Berthoud. Owned and operated by the Little Thompson Water District, it acts as a municipal water storage reservoir to provide drought protection and operational flexibility within the District. The dam is a zoned embankment earthen dam, which was constructed in 2007. The dam is approximately 55 feet high at its maximum section, which includes 5 feet of freeboard. The reservoir covers an area of approximately 315 acres and has an active storage capacity of approximately 9,500 acre-feet. Other appurtenant structures to the dam include a Roller-Compacted Concrete (RCC) spillway, low-level outlet works, and a pump station.

3. SCOPE OF WORK

The SOW presented herein describes the work associated with a conceptual-level study to evaluate potential design alternatives for raising the dam to increase the storage capacity. Our scope includes the following tasks to complete the work:

- Task 1 – Conceptual-Level Layouts
- Task 2 – Construction Cost Estimate
- Task 3 – Permit Requirements
- Task 4 – Summary Report
- Task 5 – Project Management

Each of the above tasks is described in the following sections.

Task 1 – Conceptual-Level Layouts

The study will evaluate up to three (3) alternative layouts for raising the dam height and/or modifying the existing dam footprint. The following alternatives are proposed options, but will be discussed with LTWD during the project kickoff meeting and will be revised if required. The proposed alternatives are described below:

- Alternative 1 - The dam will be raised (assuming 5 feet of freeboard remains acceptable) such that the maximum water line matches the elevation of the existing access road near the northwest corner of the reservoir. Based on the available survey it appears that the road elevation is at 5,430 feet.

- Alternative 2 - The dam will be raised (assuming 5 feet of freeboard remains acceptable) such that the maximum water line matches elevation 5,440 feet which would require partial acquisition of private property between the road and homes located near the northwest corner of the reservoir.

- Alternative 3 - The dam will be raised (assuming 5 feet of freeboard remains acceptable) such that the maximum water line matches elevation 5,450 feet which would equal the maximum reservoir enlargement based on topography around the reservoir and would require the acquisition of the private property located near the northwest corner of the reservoir.

For each of these alternatives, we will develop conceptual-level drawings to about a 10%-level of design. The drawings are intended to serve as the basis for developing a construction cost estimate, and identify potential fatal flaws and risks associated with design and construction. We anticipate 1 drawing for each alternative and 1 to 2 drawings for potential typical details and critical sections, for a total of 6 drawings. For each alternative we will include a conceptual grading plan, profile, and cross-sections.

Deliverable(s)

- Conceptual-level drawings for each alternative.

Task 2 – Construction Cost Estimate

We will prepare total construction cost estimate for each of the alternatives developed. The cost estimate is expected to be a Class 5 estimate in accordance with American Association of Cost Engineering (AACE) classification system. This classification is defined as a screening-level estimate with a plus 50% and minus 30% range of accuracy. The estimate will be prepared based on material take-offs developed from our conceptual-level drawings. Unit pricing will be developed based on recent unit pricing developed for the region and/or our knowledge and understanding of earthworks pricing for the area. Allowances will be made for appurtenant structures and land acquisition where material take-offs cannot be obtained (e.g pump stations, property purchases, etc.). The final cost for each alternative will be reported in present value.

Deliverable(s)

- Class 5, screening-level cost estimate for each alternative.

Task 3 - Potential Permit Requirements

AECOM will research potential permit requirement for raising the Dry Creek Dam and increasing the reservoir capacity in coordination with LTWD. This will be a desk top study coordinated with LTWD to identify the potential permitting level required for the alternatives. A list of permits will be included in our Summary Report for reference.

Task 4 – Summary Report

We will prepare a report summarizing the development of each alternative and the assumptions made in their development. The summary report is expected to be a conceptual-level document that describes each of the alternatives and provides a relative comparison of each. Our primary focus will be the technical feasibility (i.e. implementability and constructability) of each

alternative, which includes identification of potential fatal flaws and the risks associated with the construction and operation each alternative. Upon completion of the draft report, drawings and cost estimate, we will provide LTWD a copy of the completed report for review and comment. In our schedule to complete the work we have allocated 2 weeks for LTWD review and return the draft document. Based on the comments prepared by LTWD, we will revise and compile a final report. The report is expected to be divided into the following sections:

1. Introduction
2. Background
3. Design Basis
4. Design Assumptions
5. Alternatives Summary
6. Alternative Cost Estimate
7. Alternative Evaluation
8. Conclusions and Recommendations

Deliverable(s)

- Conceptual Study Report (Draft)
- Conceptual Study Report (Final)

Task 5 – Project Management

We have allocated time for the AECOM Project Manager (PM) and Project Accountant to manage and maintain the project. The work associated with this task includes, but is not limited to, financial reporting and management (billing set-up, invoicing, forecasting, etc.); scheduling; PM communication with LTWD; and general oversight of the project to help ensure successful completion of the project, while keeping our cost within the estimates provided herein.

4. ESTIMATED COST

The work will be performed under a Lump Sum fee structure. The proposed budget below provides our best estimate of the expected costs using the assumptions and allocations described above. The estimated cost for the proposed SOW is summarized below.

Cost Estimate Summary
Dry Creek Reservoir – Dam Raise Feasibility Study

TASK	ESTIMATED COST
Task 1 – Conceptual-Level Drawings	$22,500
Task 2 – Construction Cost Estimate	$8,300
Task 3 – Potential Permit Requirements	$1,900
Task 4 – Summary Report	$13,700
Task 5 – Project Management	$4,600
Estimated Project Total:	**$51,000**

5. SCHEDULE

We plan to begin this work immediately following a written notice-to-proceed. We expect that the draft report work will be completed within 90 calendar days following notice-to-proceed.

We look forward to the opportunity to work with Little Thompson Water District. Please do not hesitate to call if you have any questions or comments.

Sincerely,

Ed A. Toms
Project Director

TABLE 1
COST ESTIMATE
DRY CREEK RESEVOIR - DAM RAISE FEASIBILITY STUDY
LITTLE THOMPSON WATER DISTRICT
BERTHOUD, COLORADO

PERSONNEL (2018 Rates)	Hourly	Total		Total	TASK 1 Conceptual-Level Layouts	TASK 2 Construction Cost Estimate	TASK 3 Permit Requirements	TASK 4 Summary Report	TASK 5 Project Management
Professional Personnel	Rate	Hours		Cost	Estimated Hours	Estimated Hours	Estimated Hours	Estimated Hours	Estimated Hours
Consultant 3 (Senior Reviewer)	$ 215.00	10	$	2,150.00	4	4	-	2	-
Consultant 1 (Project Manager)	$ 182.00	76	$	13,832.00	8	16	2	32	18
Consultant 1	$ 182.00	10	$	1,820.00	-	-	8	2	-
Project Engineer 1	$ 133.00	104	$	13,832.00	32	32	-	40	-
Total Estimated Professional Hrs and Cost		200	$	31,634.00	44	52	10	76	18
Support Personnel									
Project Accountant	$ 95.00	12	$	1,140.00	-	-	-	-	12
Civil Designer	$ 95.00	168	$	15,960.00	160	-	-	8	
Project Administrative Assistant	$ 72.00	11	$	792.00	1	1	-	8	1
Total Estimated Support Hrs and Cost		191	$	17,892.00	161	1	0	16	13
LABOR SUBTOTAL		391	$	49,526.00	205	53	10	92	31
LABOR SUBTOTAL WITH COMMUNICATION FEE (3%)			$	51,011.78					
					TASK 1	TASK 2	TASK 3	TASK 4	TASK 5
TOTAL ESTIMATED PROJECT COST			$	51,011.78	$ 22,499.32	$ 8,343.00	$ 1,874.60	$ 13,672.22	$ 4,622.64