COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Last Updated: June 2018

Colorado Water Conservation Board

Water Plan Grant Application

Instructions

To receive funding for a Water Plan Grant, applicant must demonstrate how the project, activity, or process (collectively referred to as "project") funded by the CWCB will help meet the measurable objectives and critical actions in the Water Plan. Grant guidelines are available on the CWCB website.

If you have questions, please contact CWCB at (303) 866-3441 or email the following staff to assist you with applications in the following areas:

Water Storage Projects	Anna.Mauss@state.co.us
Conservation, Land Use Planning	Kevin.Reidy@state.co.us
Engagement & Innovation Activities	Ben.Wade@state.co.us
Agricultural Projects	Alexander.Funk@state.co.us
Environmental & Recreation Projects	Chris.Sturm@state.co.us

FINAL SUBMISSION: Submit all application materials in one email to *waterplan.grants@state.co.us* in the original file formats [Application (word); Statement of Work (word); Budget/Schedule (excel)]. Please do not combine documents. In the subject line, please include the funding category and name of the project.

Water Project Summary

Name of Applicant	Delta Brick & Climate Company Ltd
Name of Water Project	Paonia Reservoir Sediment Removal and Utilization

CWP Grant Request Amount	$19,000
Other Funding Sources _____	$9,556 Applicant Cash Match
Other Funding Sources _____	$
Other Funding Sources _____	$
Applicant Funding Contribution	$ 27,000 in kind
Total Project Cost	$ 55,556

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Applicant & Grantee Information
Name of Grantee(s) Delta Brick & Climate Company
Mailing Address 1732 Wazee St Ste 206 Denver CO 80202
FEIN 83-1321716
Organization Contact Christopher Caskey
Position/Title Founder
Email chris@cmcaskey.com
Phone 720-421-2633
Grant Management Contact Same as above
Position/Title
Email
Phone
Name of Applicant (if different than grantee)
Mailing Address
Position/Title
Email
Phone

Description of Grantee/Applicant
Provide a brief description of the grantee's organization (100 words or less).
Delta Brick & Climate Company (DBCC) is a startup headquartered in Denver with planned operations in the North Fork of the Gunnison River Valley. DBCC's mission is to utilize nuisance sediment in Paonia Reservoir and waste natural gas venting from North Fork coal mines by manufacturing ceramics such as brick and tile. Such activity also generates greenhouse gas offsets sellable on cap-and-trade markets.

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	Type of Eligible Entity (check one)
	Public (Government): Municipalities, enterprises, counties, and State of Colorado agencies. Federal agencies are encouraged to work with local entities. Federal agencies are eligible, but only if they can make a compelling case for why a local partner cannot be the grant recipient.
	Public (Districts): Authorities, Title 32/special districts (conservancy, conservation, and irrigation districts), and water activity enterprises.
	Private Incorporated: Mutual ditch companies, homeowners associations, corporations.
X	**Private Individuals, Partnerships, and Sole Proprietors:** Private parties may be eligible for funding.
	Non-governmental organizations (NGO): Organization that is not part of the government and is non-profit in nature.
	Covered Entity: As defined in Section 37-60-126 Colorado Revised Statutes.

	Type of Water Project (check all that apply)
X	Study
	Construction
	Identified Projects and Processes (IPP)
X	Other-- Sediment removal pilot project

	Category of Water Project (check the primary category that applies and include relevant tasks)
X	Water Storage - Projects that facilitate the development of additional storage, artificial aquifer recharge, and dredging existing reservoirs to restore the reservoirs' full decreed capacity and Multi-beneficial projects and those projects identified in basin implementation plans to address the water supply and demand gap.. *Applicable Exhibit A Task 1: Planning and analyzing for future sediment removal projects at large scale.* *Exhibit A Task 2: Removing tens of cubic yards of sediment in a pilot project.* *Exhibit A Task 2.1: Obtaining necessary permits for pilot sediment removal* *Exhibit A Task 1.1: Interfacing with stakeholders including local conservation groups, impacted landowners, US Bureau of Reclamation, Colorado Parks and Wildlife, Ditch Companies with decreed storage in Paonia Reservoir*
	Conservation and Land Use Planning - Activities and projects that implement long-term strategies for conservation, land use, and drought planning. *Applicable Exhibit A Task(s):*
	Engagement & Innovation - Activities and projects that support water education, outreach, and innovation efforts. Please fill out the Supplemental Application on the website. *Applicable Exhibit A Task(s):*
	Agricultural - Projects that provide technical assistance and improve agricultural efficiency. *Applicable Exhibit A Task(s):*
	Environmental & Recreation - Projects that promote watershed health, environmental health, and recreation.

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	Applicable Exhibit A Task(s):	
	Other	Explain:

Location of Water Project	
Please provide the general county and coordinates of the proposed project below in **decimal degrees**. The Applicant shall also provide, in Exhibit C, a site map if applicable.	
County/Counties	Gunnison
Latitude	107. 34 W
Longitude	38.93 N

Water Project Overview
Please provide a summary of the proposed water project (200 words or less). Include a description of the project and what the CWP Grant funding will be used for specifically (e.g., studies, permitting process, construction). Provide a description of the water supply source to be utilized or the water body affected by the project, where applicable. Include details such as acres under irrigation, types of crops irrigated, number of residential and commercial taps, length of ditch improvements, length of pipe installed, and area of habitat improvements, where applicable. If this project addresses multiple purposes or spans multiple basins, please explain. The Applicant shall also provide, in Exhibit A, a detailed Statement of Work, Budget, Other Funding Sources/Amounts and Schedule.

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The proposed project is an analysis of options for the long-term, gradual removal of sediment from Paonia Reservoir, as well as a pilot-scale removal. CWCB funds requested for this project will be spent to understand permitting, feasibility, and environmental compliance. Later implementation will restore decreed storage and have environmental and economic benefits.

The proposed project is part of a larger, for-profit sediment utilization effort wherein the Applicant converts the removed sediment into revenue-generating ceramics such as brick and tile. Conversion is accomplished using coal mine methane as a fuel. Coal mine methane (CMM) is natural gas venting from active and abandoned coal mines in close proximity to Paonia Reservoir. CMM itself is a problem, as methane is a potent greenhouse gas and climate change is increasing the need for reliable water storage. Thus, the overall project has multiple purposes: to address CMM pollution, restore reservoir storage, improve watershed health, and create economic activity.

Paonia Reservoir is located in north west Gunnison County on Muddy Creek just above its junction with Anthracite Creek. This junction forms the North Fork of the Gunnison River. Paonia Reservoir operates as storage for Fire Mountain Canal, which irrigates 15,300 acres in Delta County.

Measurable Results	
To catalog measurable results achieved with the CWP Grant funds, please provide any of the following values as applicable:	
Less than 1 af in this phase Up to 5,000 af in future implementation	New Storage Created (acre-feet)
	New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive
15,300 af given operational flexibility	Existing Storage Preserved or Enhanced (acre-feet)
	Length of Stream Restored or Protected (linear feet)
	Efficiency Savings (indicate acre-feet/year OR dollars/year)
	Area of Restored or Preserved Habitat (acres)
	Quantity of Water Shared through Alternative Transfer Mechanisms
	Number of Coloradans Impacted by Incorporating Water-Saving Actions into Land Use Planning
	Number of Coloradans Impacted by Engagement Activity

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	Other	Explain:

Water Project Justification

Provide a description of how this water project supports the goals of Colorado's Water Plan, the most recent Statewide Water Supply Initiative, and the applicable Roundtable Basin Implementation Plan and Education Action Plan. The Applicant is required to reference specific needs, goals, themes, or Identified Projects and Processes (IPPs), including citations (e.g. document, chapters, sections, or page numbers).

The proposed water project shall be evaluated based upon how well the proposal conforms to Colorado's Water Plan Framework for State of Colorado Support for a Water Project (CWP, Section 9.4, pp. 9-43 to 9-44;)

Thematically, all state and basin plans and initiatives emphasize multiple stakeholder processes with opportunities for wins in multiple areas (e.g., rural and municipal or environmental and agricultural). The proposed project is a project with a large number of stakeholders and a large number different benefits. Paonia Reservoir is owned by the Bureau of Reclamation, operated by an irrigation company, and located in a state park. The reservoir and downstream reaches are used by boaters and anglers. Many private persons own land along the highway and North Fork. This large number of stakeholders makes the project ideal for state support, as no private company would be willing to accept the risk and extended timeline of a stakeholder dialogue process.

This project is also ideal for state funding because it presents wins in multiple areas. Boating and fishing recreation would be enhanced by increased sediment downstream and the restoration of a fish pool in the reservoir. Jobs will be created at the ceramics factory in an area hard-hit by coal layoffs. Coal mine gases, including toxic components, will be mitigated. Finally, irrigation resilience will be enhanced by maintained the reservoir storage function.

These outcomes align with the Gunnison Basin Implementation Plan whose stated goals include:

3. Improve agricultural water supplies to reduce shortages.
5. Quantify and protect environmental and recreational water uses.
and
8. Restore, maintain, and modernize critical water infrastructure (ES 4)

The 2010 Statewide Water Supply Initiative recommends that the water community "Recognize the importance of environmental and recreational benefits derived from agricultural water use, storage reservoirs, and other consumptive water uses and water management." (ES 41) This project would highlight such benefits by restoring a fish pool in Paonia Reservoir and ease the transportation of sediment downstream.

The SWSI furthur states that climate change is not considered in the 2010 report, but that "Climate change is an important factor for consideration in conjunction with future water demands and should be included in subsequent forecasting efforts." Burning coal mine methane is a clear win for the climate. As the climate continues to change, snowpack melts earlier and evapotranspiration is higher. Thus storage high in the watershed becomes increasingly important. That is because high storage is above agricultural diversions and serves the same re-timing function as snow, and weather remains relatively cool, limiting evaporation.

The Colorado Climate Plan commits the state to "Reduce statewide greenhouse gas emissions by

more than 26 percent from 2005 levels by 2025." (Ex. Sum.) This project could eliminate millions of tons of CO2 equivalent annually. The Plan also commits to "Formalize and expand upon cross-agency actions to provide economic development strategies and other supportive services to communities impacted by the changing energy landscape". (Ex. Sum.)

Colorado's Water Plan States "Colorado must also develop additional storage to meet growing needs and face the changing climate." with a goal of 400,000 acre feet developed. (Ch 10+11) Because of its climate, water, and economic development aspects, this project provides CWCB an opportunity to align with Colorado Climate Plan goals as it attains Colorado's Water Plan goals. There are over 5,000 acre feet of lost storage available for recovery in Paonia Reservoir.

All public projects should have an educational aspect. This project has already received local press, and the Applicant has enjoyed communicating to the community the challenges of sediment utilization and coal mine methane utilization, as well as the benefits to the community of a successful project. This project functions to bring people together and has received the verbal support of groups as disparate as coal mines, conservationists, a hardware store, and an artist collective. This education will continue, as the Applicant has budgeted travel time and mileage to visit stakeholders and engage the community. The Applicant will present at Colorado Mesa University's Water Center in November, as well as the Engage Delta County energy entrepreneurship Spark Tank in September. The Applicant will find similar opportunities to educate the public during the lifetime of the grant.

Overall, the project Paonia Reservoir Sediment Removal and Utilization is a good fit for the Colorado's Water Plan funding because it provides numerous stakeholders with positive impacts across agricultural, recreational, environmental, and economic areas.

Related Studies

Please provide a list of any related studies, including if the water project is complementary to or assists in the implementation of other CWCB programs.

North Fork of the Gunnison Environmental and Recreational Needs Assessment
Western Slope Conservation Center 2018

Paonia Reservoir Sediment Sampling and Testing Summary – 2016
Paonia Project, CO – Western Colorado Area Office Upper Colorado Region, US Bureau of Reclamation
Report No. SRH-2018-04

Paonia Reservoir Sediment Management Planning Alternatives
Paonia Project, CO – Western Colorado Area Office Upper Colorado Region, US Bureau of Reclamation
Report No. SRH-2018-05

Previous CWCB Grants, Loans or Other Funding

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List all previous or current CWCB grants (including WSRF) awarded to both the Applicant and Grantee. Include: 1) Applicant name; 2) Water activity name; 3) Approving RT(s); 4) CWCB board meeting date; 5) Contract number or purchase order; 6) Percentage of other CWCB funding for your overall project.
Applicant and grantee has not received CWCB funds in the past. However, applicant is listed as a subcontractor on a pending Healthy Rivers Fund grant application.

Taxpayer Bill of Rights

The Taxpayer Bill of Rights (TABOR) may limit the amount of grant money an entity can receive. Please describe any relevant TABOR issues that may affect your application.
None known

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Submittal Checklist	
x	I acknowledge the Grantee will be able to contract with CWCB using the Standard Contract.
Exhibit A	
x	Statement of Work(1)
x	Budget & Schedule(1)
	Engineer's statement of probable cost (projects over $100,000)
	Letters of Matching and/or Pending 3rd Party Commitments(1)
Exhibit C	
x	Map (if applicable)(1)
	Photos/Drawings/Reports
x	Letters of Support (Optional)
	Certificate of Insurance (General, Auto, & Workers' Comp.) (2)
	Certificate of Good Standing with Colorado Secretary of State(2)
	W-9(2)
	Independent Contractor Form(2) (If applicant is individual, not company/organization)
Engagement & Innovation Grant Applicants ONLY	
	Engagement & Innovation Supplemental Application(1)

(1) Required with application.
(2) Required for contracting. While optional at the time of this application, submission can expedite contracting upon CWCB Board approval.

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ENGAGEMENT & INNOVATION GRANT FUND SUPPLEMENTAL APPLICATION

Introduction & Purpose

Colorado's Water Plan calls for an outreach, education, public engagement, and innovation grant fund in Chapter 9.5.

The overall goal of the Engagement & Innovation Grant Fund is to enhance Colorado's water communication, outreach, education, and public engagement efforts; advance Colorado's water supply planning process; and support a statewide water innovation ecosystem.

The grant fund aims to engage the public to promote well-informed community discourse regarding balanced water solutions statewide. The grant fund aims to support water innovation in Colorado. The grant fund prioritizes measuring and evaluating the success of programs, projects, and initiatives. The grant fund prioritizes efforts designed using research, data, and best practices. The grant fund prioritizes a commitment to collaboration and community engagement. The grant fund will support local and statewide efforts.

The grant fund is divided into two tracks: engagement and innovation. The Engagement Track supports education, outreach, communication, and public participation efforts related to water. The Innovation Track supports efforts that advance the water innovation ecosystem in Colorado.

Application Questions

*The grant fund request is referred to as "project" in this application.

Overview (answer for both tracks)
In a few sentences, what is the overall goal of this project? How does it achieve the stated purpose of this grant fund (above)?
The goal of this project is to restore irrigation capacity to Paonia Reservoir by making value-added products from the sediment. The sediment in the reservoir is fired into ceramics using heat generated by burning waste natural gas leaking from local coal mines. This addresses the pollution problem of venting gas and reservoir sedimentation. This proposal supports an innovative project with local (sediment) and global (greenhouse gas) benefits. The benefits are measurable and soundly based in materials science.
Who is/are the target audience(s)? How will you reach them? How will you involve the community?
There are four main audiences: water stakeholders, energy stakeholders, customers, and the community at-large. I have been interviewed by the local radio station and passed out fliers at Paonia Cherry Days. DBCC attends the Gunnison Basin Roundtable and the North Fork Coal Mine Methane Working Group.
Describe how the project is collaborative or engages a diverse group of stakeholders. Who are the partners in the project? Do you have other funding partners or sources?

The project's stakeholders are diverse culturally, politically, and economically. Less so racially, though outreach can improve that. We engage the stakeholders through the Basin Roundtable, the North Fork Coal Mine Methane Working Group, and community events.

Funding to date includes founder capital and a grant from Gunnison County, Delta County, and DOLA. This fall, DBCC will submit proposals to the USDA SBIR, NSF SBIR, and COEDIT Advanced Industries. DBCC is too early for private investment, but the present application, if funded, will move the project towards investability.

Likely partners include Vessels Coal Gas, Oxbow Mining, and the Western Slope Conservation Center. It is highly unusual for a conservation group to collaborate with a coal mine, but this project provides an opportunity.

Describe how you plan to measure and evaluate the success and impact of the project?

Stakeholder success will be measured by acquiring letters of support.
Customer success will be measured with revenue and pre-orders.
In the long term, success will be measured by a reservoir slowly regaining capacity, the Colorado construction industry adopting an environmentally-beneficial material, and the quantifiable destruction of greenhouse gases.

What research, evidence, and data support your project?

I have made and tested ceramics products: I recently took a bag of Paonia Reservoir sediment and several bricks I made to the National Brick Research Center (a real place!) where a brick expert said, "I don't yet see any reason why this material couldn't be used" in ceramics manufacturing.

The Bureau of Reclamation has authored several studies on the sedimentation challenge, and the Colorado Energy Office has written a study on methane capture. Both are cited in the main application.

Describe potential short- and long-term challenges with this project.

There are a large number of stakeholders, forming a short-term challenge: The Reservoir is owned by Reclamation, operated by a private ditch company, and in a state park. The heat source is natural gas owned by the Bureau of Land Management, sometimes included in a coal lease but other times leased through the fluid minerals office, access is on public and private land, and gas acquisition requires specialized knowledge of oil and gas operations.

Long term challenges include, the logistics of transport from a relatively remote area to population centers with need of business materials, effective blending of heterogeneous alluvial sediment into consistent ceramic projects, and the eventual (decades) depletion of coal mine methane.

Please fill out the applicable questions for either the Engagement Track or Innovation Track, unless your project contains elements in both tracks. If a question does not relate to your project, just leave it blank. Please answer each question that relates to your project. Please reference the relevant documents and use chapters and page numbers (Colorado's Water Plan, Basin Implementation Plan, PEPO Education Action Plan, etc.).

Engagement Track
Describe how the project achieves the education, outreach, and public engagement measurable objective set forth in Colorado's Water Plan to "significantly improve the level of public awareness and engagement regarding water issues statewide by 2020, as determined by water awareness surveys."
Describe how the project achieves the other measurable objectives and critical goals and actions laid out in Colorado's Water Plan around the supply and demand gap; conservation; land use; agriculture; storage; watershed health, environment, and recreation; funding; and additional.
Describe how the project achieves the education, outreach, and public engagement goals set forth in the applicable Basin Implementation Plan(s).
Describe how the project achieves the basin roundtable's PEPO Education Action Plans.

Innovation Track
Describe how the project enhances water innovation efforts and supports a water innovation ecosystem in Colorado.
DBCC is looking at water challenges through an innovation lens. The successful transformation of liabilities (sediment and methane pollution) into assets (ceramics) will inspire other entities to think outside of the box. I did not have an out-of-the-box metaphor for that last sentence.
Describe how the project engages/leverages Colorado's innovation community to help solve our state's water challenges.

DBCC is currently participating in the ICELab accelerator (icelab.co) at Western State Colorado University in Gunnison. We will continue to engage with the startup and investment community. This project grew out of the North Fork Coal Mine Methane Working Group, which was formed as a diverse community of stakeholders looking for innovative solutions. DBCC will likely pitch at the Engage Delta County Energy Summit.
Describe how the project helps advance or develop a solution to a water need identified through TAP-IN and other water innovation challenges. What is the problem/need/challenge?
The need is additional storage and irrigation security in the face of climate change. The 2017 TAP-IN reverse pitch event identified reservoir evaporation as a problem. This project addresses this challenge by deepening a reservoir, which will increase storage without adding to surface area. Because most valleys have a flared-v cross-section, surface area and evaporation increase with additional dam height. Deepening a reservoir does not cause additional evaporation.
Describe how this project impacts current or emerging trends; technologies; clusters, sectors, or groups in water innovation.
Greenhouse gas management is an emerging trend. It has not yet touched water innovation, but the water-energy-climate nexus ties these ideas firmly together. Waste-to-value is also an emerging trend. Water re-use and composting are examples. Turning Paonia Reservoir sediment into building materials will be a good example of waste-to-value at scale.

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Water Plan Grant - Exhibit A

Statement Of Work	
Date:	**29 July 2018**
Name of Grantee:	**Delta Brick & Climate Company**
Name of Water Project:	**Paonia Reservoir Sediment Removal and Utilization**
Funding Source:	**Colorado's Water Plan Grant**
Water Project Overview:	
The proposed project is an analysis of options for the long-term, gradual removal of sediment from Paonia Reservoir, as well as a pilot-scale removal. This project is designed to understand permitting, feasibility, and environmental compliance. Later implementation will restore decreed storage and have environmental and economic benefits. The proposed project is part of a larger, for-profit sediment utilization effort wherein the Applicant converts the removed sediment into revenue-generating ceramics such as brick and tile. Conversion is accomplished using coal mine methane as a fuel. Coal mine methane (CMM) is natural gas venting from active and abandoned coal mines in close proximity to Paonia Reservoir. CMM itself is a problem, as methane is a potent greenhouse gas and climate change is increasing the need for reliable water storage. Thus, the overall project proposes to solve two problems by pointing the problems at each other while creating economic activity.	
Project Objectives:	

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Secure needed permits for pilot-scale sediment removal
Understand best options for large-scale removal
Understand permits and stakeholders for large-scale sediment removal
Remove approximately 60 cubic yards of sediment and transport sediment to a ceramics factory

Tasks

Task 1 – Evaluation of Sediment Removal Options

Description of Task:

The objective of this task is to evaluate sediment removal options that would operate on a scale of tens of acre feet per year. There are three categories of variables: Removal (floating dredge vs land-based excavation during low water); Transport (slurry pipe, trucking, conveyor belt); and Access (existing road access points or new access). Approximate cost and feasibility of each option will be evaluated, as well as stakeholder and environmental consideration.

Method/Procedure:

Engage with stakeholders including Colorado Parks and Wildlife, US Bureau of Reclamation, Fire Mountain Canal and Reservoir Company, Colorado Department of Transportation, local conservation groups, landowners, tribes, excavation contractors, and others.

Identify possible access points and times of year points are accessible. Identify suitable technologies for each access point. Identify required improvements to access points and approximate costs.

In parallel, but not a funded portion of this grant, the Applicant will secure space to store the sediment prior to and during utilization. This will likely be on the Elk Creek Mine site near Somerset, 7 miles downstream of Paonia Dam.

Deliverable:

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The deliverable for this task will be a report detailing all findings for various sediment removal options and transportation options. Recommendations will be presented.

Tasks
Task 2 --Pilot Sediment Removal
Description of Task:
In Task 2, 60 cubic yards of sediment will be removed from Paonia Reservoir near the boat ramp. The sediment will be removed with an excavator (or similar), and transported by truck to the Delta Brick & Climate pilot facility. This factory is in the planning stage and will likely be co-located with an existing coal mine methane capture system near Somerset, Colorado.
Method/Procedure:

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During low water, an excavator will be brought to the Paonia State Park boat ramp. This area is likely a jurisdictional wetland and disturbing it will require NEPA compliance. Much of the sediment in Paonia Reservoir is unconsolidated clay, and the excavator may need to put down gravel or similar to prevent it from getting stuck. This is listed as Access Improvements in the budget.

Sediment will be trucked to a utilization facility planned near Somerset.

Permitting and compliance will be accomplished through the Army Corps of Engineers in collaboration with the Bureau of Reclamation and Fire Mountain Canal and Reservoir Company.

Deliverable:

The deliverable for Task 2 is the removal of sediment from Paonia Reservoir, access improvements, the required permits and to accomplish such removal and improvements, and the delivery of the sediment to a utilization facility.

Repeat for Task 3, Task 4, Task 5, etc.

Budget and Schedule

This Statement of Work shall be accompanied by a combined Budget and Schedule that reflects the Tasks identified in the Statement of Work and shall be submitted to CWCB in excel format.

Reporting Requirements

Progress Reports: The applicant shall provide the CWCB a progress report every 6 months, beginning from the date of issuance of a purchase order, or the execution of a contract. The progress report shall describe the status of the tasks identified in the statement of work, including a description of any major issues that have occurred and any corrective action taken to address these issues.

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Final Report: At completion of the project, the applicant shall provide the CWCB a Final Report on the applicant's letterhead that:

- Summarizes the project and how the project was completed.
- Describes any obstacles encountered, and how these obstacles were overcome.
- Confirms that all matching commitments have been fulfilled.
- Includes photographs, summaries of meetings and engineering reports/designs.

The CWCB will pay out the last 10% of the budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the purchase order or grant will be closed without any further payment.

Payment

Payment will be made based on actual expenditures and must include invoices for all work completed. The request for payment must include a description of the work accomplished by task, an estimate of the percent completion for individual tasks and the entire Project in relation to the percentage of budget spent, identification of any major issues, and proposed or implemented corrective actions.

Costs incurred prior to the effective date of this contract are not reimbursable. The last 10% of the entire grant will be paid out when the final deliverable has been received. All products, data and information developed as a result of this contract must be provided to CWCB in hard copy and electronic format as part of the project documentation.

Performance Measures

Performance measures for this contract shall include the following:
(a) Performance standards and evaluation: Grantee will produce detailed deliverables for each task as specified. Grantee shall maintain receipts for all project expenses and documentation of the minimum in-kind contributions (if applicable) per the budget in Exhibit B. Per Water Plan Grant Guidelines, the CWCB will pay out the last 10% of the budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the purchase order or grant will be closed without any further payment.
(b) Accountability: Per Water Plan Grant Guidelines full documentation of project progress must be submitted with each invoice for reimbursement. Grantee must confirm that all grant conditions have been complied with on each invoice. In addition, per Water Plan Grant Guidelines, Progress Reports must be submitted at least once every 6 months. A Final Report must be submitted and approved before final project payment.
(c) Monitoring Requirements: Grantee is responsible for ongoing monitoring of project progress per Exhibit A. Progress shall be detailed in each invoice and in each Progress Report, as detailed above. Additional inspections or field consultations will be arranged as may be necessary.
(d) Noncompliance Resolution: Payment will be withheld if grantee is not current on all grant conditions. Flagrant disregard for grant conditions will result in a stop work order and cancellation of the Grant Agreement.

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Water Plan Grant - Exhibit B
Budget and Schedule

Date:

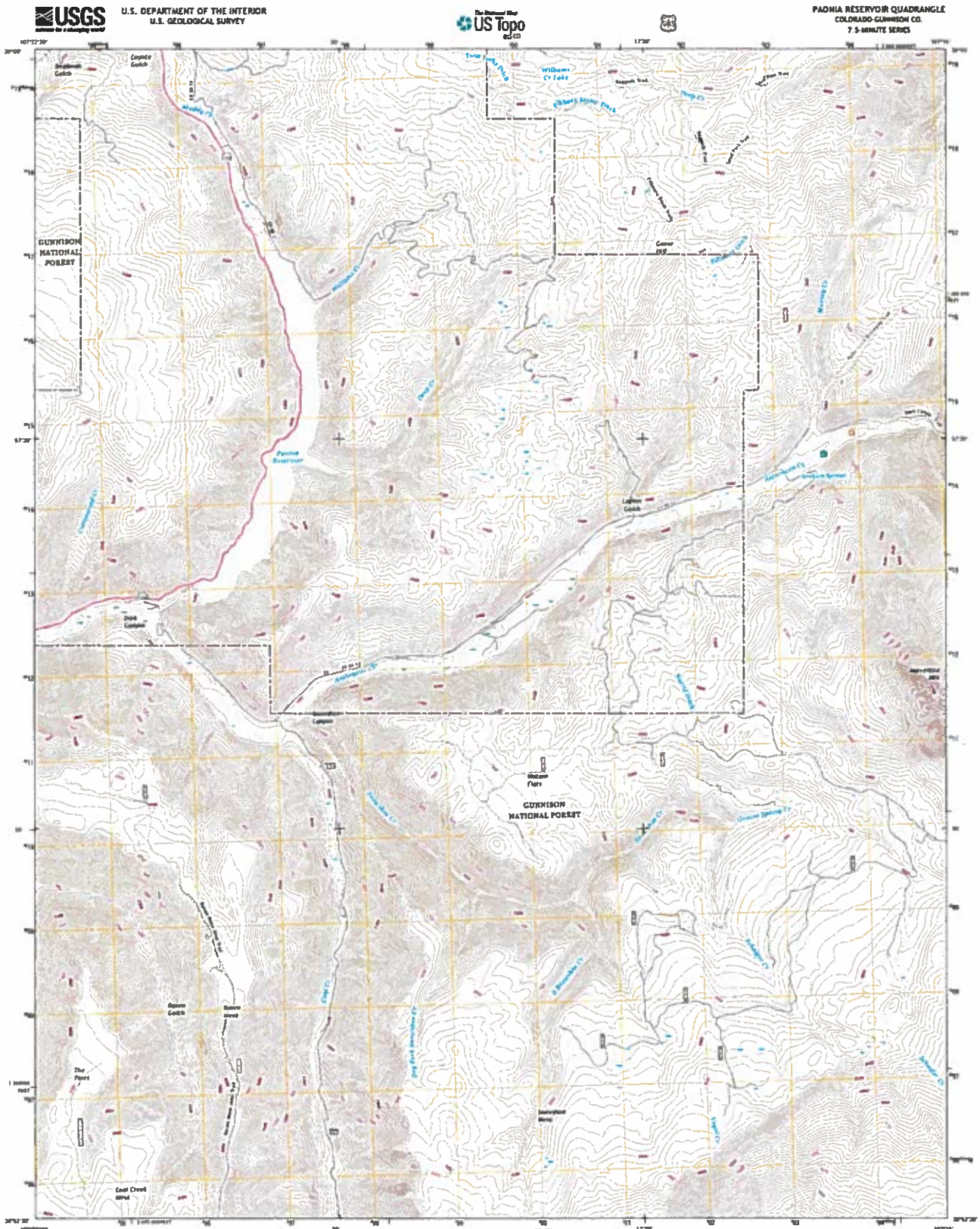
Name of Applicant: Delta Brick & Climate Company

Name of Water Project: Paonia Reservoir Sediment Removal and Utilization

Project Start Date: December 1, 2018

Project End Date: March 30, 2019

Task No.	Task Description	Task Start Date	Task End Date	Grant Funding Request	Match Cash	Match In-Kind	Total
1	Options Analysis	December 2018	March 2019	15,000		$27,000	$42,000
2	Pilot sediment removal	Feburary 2019	March 2019	$4,000	$8,000		$12,000
3	Other Direct Costs				$1,556		$1,556
			Total	$19,000	$9,556	$27,000	$55,556


U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY
USGS
US Topo
PAONIA RESERVOIR QUADRANGLE
COLORADO-GUNNISON CO.
7.5-MINUTE SERIES
GUNNISON NATIONAL FOREST
GUNNISON NATIONAL FOREST
Produced by the United States Geological Survey
SCALE 1:24 000
ROAD CLASSIFICATION
PAONIA RESERVOIR, CO
2016

July 31, 2018

Christopher M. Caskey, PhD
Delta Brick & Climate Company
1723 Wazee Street #206
Denver, CO 80202

Colorado's Water Plan Grant Review Committee
1313 Sherman Street
Denver, CO 80203

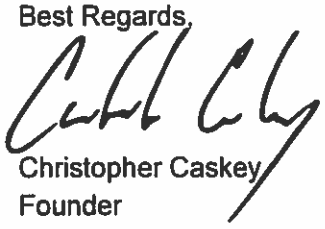
Dear Review Committee,

I am pleased to submit my application for Water Plan Grant funding for the project *Paonia Reservoir Sediment Removal and Utilization*. Successful implementation of this project would create benefits for agricultural, environmental, and economic stakeholders, and aligns well with Colorado's goals as enumerated in our Water Plan.

Delta Brick & Climate Company commits $27,000 of staff time and $9,556 in cash to the project. $8,000 of the cash will be spent on excavation and transport of sediment in a pilot project. This activity depends upon the successful completion of a utilization pilot facility at which the sediment can be off-loaded. This facility is in the planning phase with a prefered site selected, and likely secured by the time of this grant's implementation. I will communicate with CWCB staff as the pilot facility goes forward.

Please reach out to me at chris@cmcaskey.com for any additional information.

Best Regards,



Christopher Caskey
Founder
Delta Brick & Climate Company

Gunnison County Board of County Commissioners
Phone: (970) 641–0248 • Fax: (970) 641–3061
Email: bocc@gunnisoncounty.org • www.GunnisonCounty.org

Christopher Caskey
Delta Brick & Climate Company
1732 Wazee Street #206
Denver, CO 80202

Dear Christopher Caskey,

Gunnison County is a high-elevation county in western Colorado containing the headwaters of several significant river systems. As such, watershed health in our county has enormous impact on water users in Gunnison County and downstream. Northwest Gunnison County is the watershed of the North Fork of the Gunnison River, an important stream supporting wildlife, recreation, towns, ranches, farms, orchards, and vineyards. Much of the North Forks' flow is mediated by Paonia Dam and Reservoir, which is at the end of its planned life as it fills with fine, clay-like sediment. The resilience of our water system is threatened by this sedimentation, which reduces storage capacity and requires sediment flushing in ways that impact the downstream environment. We are therefore interested in solutions that will mitigate reservoir siltation.

This North Fork area is also a location of a number of different coal mines --active, inactive, and abandoned—which vent significant amounts of methane as waste. To facilitate stakeholder dialogue, Gunnison and Delta counties convened the North Fork Coal Mine Methane Working Group whose stated mission is "the support of the coal mines and surrounding communities in the North Fork Valley through the development of a comprehensive strategy for education, capture, exploration of mitigation, and economic utilization of coal mine methane."

We appreciate your work on developing a potential solution to both these challenges by using heat from burning methane to fire ceramics (such as brick, tile, and pots) from Paonia Reservoir clay. We support your proposal to further study such utilization, as there are engineering, market, stakeholder acceptance, and environmental questions outstanding. Successful utilization would bring many positive impacts including increased water supply resilience, improved recreation opportunities in Paonia State Park and the river system downstream, mitigation of the climate impact of methane venting, and job creation. Please keep us informed of your progress and we would be happy to continue to offer our perspective and introductions as appropriate.

Sincerely,

Phil Chamberland, Chairperson Jonathan Houck, Commissioner John Messner, Commissioner

DELTA COUNTY, COLORADO

BOARD OF COUNTY COMMISSIONERS

COUNTY COURTHOUSE • 501 PALMER STREET • SUITE 227 • DELTA • COLORADO • 81416-1796

PHONE: (970) 874-2100 FAX: (970) 874-2114

www.deltacounty.com

Dist. 1: C. Douglas Atchley - Dist. 2: Don Suppes - Dist. 3: J. Mark Roeber

April 24, 2018

To: To Whom It May Concern

Delta Board of County Commissioners endorses the potential project being submitted by Chris Caskey. Delta County's economy is based on coal mining, agriculture and recreation. Our coal industry has seen a significant reduction with the closing of two of the three mines and a work force that has decreased by over 800 mining families. Delta County has taken significant steps to further diversify its economy and embracing entrepreneurial endeavors.

The Paonia Dam and Reservoir provides an integral resource for the East end of Delta County and all of related agriculture. The downside of the Paonia Reservoir is that it is filling up with fine, clay-like sediment. The resilience of the water system is threatened by this sedimentation, which reduces storage capacity and requires periodic sediment flushing. In addition, the coal mines in the area--active, inactive, and abandoned--vent methane gas as a waste. To facilitate stakeholder dialogue, Delta County convened the North Fork Coal Mine Methane Working Group whose stated mission is "the support of the coal mines and surrounding communities in the North Fork Valley through the development of a comprehensive strategy for education, capture, exploration of mitigation, and economic utilization of coal mine methane."

Chris Caskey has brought forward an interesting potential solution to both of the sedimentation and methane challenges. He proposes to use heat from burning methane to fire ceramics (such as brick, tile, and pots) from Paonia Reservoir clay. Delta County Board of Commissioners supports this proposal to further study such utilization, as there are engineering, market, stakeholder acceptance, and environmental questions outstanding. If you have further questions, contact Robbie LeValley, Delta Count Administrator at 970-874-2102 or rlevalley@deltacounty.com.

Sincerely,

Delta Board of County Commissioners

C. Douglas Atchley, Chairman

J. Mark Roeber, Vice Chairman

Don Suppes, Commissioner

ELSEWHERE STUDIOS

5/5/2018

To Whom it May Concern:

This is a letter of support for the Clay Utilization Project.

Elsewhere Studios was founded in 2008 to serve the local community of Paonia and the global community of artists with the following mission:

> Elsewhere Studios Residency Program is a bridge between local and global communities. We provide a unique and fertile landscape that nurtures artists and their artistic processes. We offer focused time and space for artists to transcend to new levels in their work, ideas, and lives.

Since its inception in 2011, the Elsewhere Studios Residency Program has hosted over 170 artists from 29 states and 13 countries for residencies lasting between one and six months. The residencies act as a research and development lab for artists, allowing them to push the boundaries of their art by experimenting with new techniques and to focus on process, not production. Elsewhere residents share their work and process with the community through bimonthly events. They expose our small community to contemporary art from around the world and serve as ambassadors between Paonia and their communities.

In addition to the residency program we have initiated other projects that engage and add vibrancy to our community:

- The Alleyscape Art Wall project built by Elsewhere artist residents and over 100 local community members, modeled after Portland's Village Building Convergence. The Art Wall showcased green building techniques and provides a fun informal gathering place..
- The Paonia Community Garden that hosts free monthly summer workshops on permaculture, biodynamics, composting, food forests, vermiculture, etc

Elsewhere is part of the North Fork Valley Creative District and has helped to spearhead the Space to Create initiative, funded through CO Creative Industries and ArtSpace, which is creating affordable housing and work spaces for artists.

In 2017 we received a very competitive grant (23 funded out of a field of 263 applications) from Art in Society (a project funded by Bonfils Stanton, Hemera Foundation, and Colorado Creative Industries) for a project titled *INSPIRED: Art at Work*.

Colorado Watershed Assembly
P.O. Box 211729
Denver, Colorado

Dear Colorado Watershed Assembly Review Panel,

We support the Western Slope Conservation Center's proposal to the Colorado Healthy Rivers Fund. Fire Mountain Canal and Reservoir Company manages Paonia Reservoir Dam, which impounds Muddy Creek, stores agricultural water for 488 shareholders, and irrigates approximately 15,300 acres of land.

The North Fork of the Gunnison River is a vital stream supporting wildlife, recreation, towns, ranches, farms, orchards, and vineyards. The primary function of Paonia Reservoir is to provide water for Fire Mountain Canal diversion decrees. However, the Reservoir greatly benefits the entire North Fork system by extending the irrigation season beyond what would be the normal run-off period for the watershed. Constructed in 1962, Paonia Dam and Reservoir is at the end of its planned life as it fills with a fine, clay-like sediment. The Reservoir and North Fork river are now facing substantial challenges due to high sediment loads.

Located approximately 4 miles downstream from Paonia Reservoir are number of different coal mines--active, inactive, and abandoned—which vent significant amounts of methane as waste. A local stakeholder group, The North Fork Coal Mine Methane Working Group, has convened to discuss practical options for mitigating this issue.

The Western Slope Conservation Center is working on a solution to both of these challenges that would use heat from burning methane to fire ceramics (such as brick, tile, and pots) from Paonia Reservoir clay. We support this proposal to further study such utilization, as there are engineering, market, stakeholder acceptance, and environmental questions outstanding. Successful utilization would bring many positive impacts including increased water supply resilience, improved health to the North Fork river, increased recreation opportunities to our local community, mitigation of the climate impact of methane venting, and job creation.

We strongly support this planning project and look forward to the next steps in this important enterprise.

Sincerely,

Dixie Luke, Fire Mountain Canal and Reservoir Company, President
Steve Fletcher, Fire Mountain Canal and Reservoir Company, Manager

United States Department of the Interior

BUREAU OF RECLAMATION
Upper Colorado Region
Western Colorado Area Office
445 West Gunnison Avenue, Suite 221
Grand Junction, CO 81501

IN REPLY REFER TO:

WCG-Plpson
2.2.3.18

JUN 11 2018

VIA ELECTRONIC MAIL ONLY

Mr. Christopher Caskey
Delta Brick & Climate Company
1732 Wazee St. #206
Denver, Colorado 80202

Subject: Response to Inquiry for Use of Sediment in Paonia Reservoir, Paonia Project, Colorado

Dear Mr. Caskey:

Thank you for meeting with us to discuss your proposal of using sediment from Paonia Reservoir to make ceramics. We are very interested in this proposal and are willing to work with you and your partners, Western Slope Conservation Center and Colorado Farm and Food Alliance, to explore the necessary steps to allow removal of sediment from Paonia Reservoir. If you have any questions, please contact Phil Ipson at 970-248-0663 or pipson@usbr.gov.

Sincerely,

Ed Warner
Area Manager

cc: Mr. Steve Fletcher, Superintendent
Fire Mountain Canal and
Reservoir Company
P.O. Box 543
Hotchkiss, CO 81419

Ms. Dixie Luke
Fire Mountain Canal and
Reservoir Company
P.O. Box 543
Hotchkiss, CO 81419

Mr. Tom Alvey, President
North Fork Water Conservancy District
P.O. Box 217
Hotchkiss, CO 81419

WCG-TFowlds, WCG-LMcWhirter, WCG-MWerkmeister