



**Cherry Creek Basin Water Quality Authority
Technical Advisory Committee Meeting Agenda
Thursday, May, 4, 2023, 9:00 a.m.**

**In-Person: SEMSWA
7437 S. Fairplay St.
Centennial, CO 80112**

**Virtual: Zoom¹
<https://us06web.zoom.us/j/87425775963> Passcode: CCBWQA
Phone (646)931-3860 Mtg ID: 874 2577 5963# Passcode: 815374**

TAC Meeting Documents can be found online at the link below.

<https://drive.google.com/drive/folders/12BoEhmFbnnMCxivnpjY2l7T5TzP8Azlq?usp=sharing>

1. Call to Order (9:00)
2. Meeting Minutes from April 6, 2023 (enclosed)
3. Highlights from April 20, 2023 Board Meeting (Clary)
4. Action Items (9:10) (20 minutes)
 - a. Recommend Preparation and Authorization of Piney Creek Reaches 1 and 2 IGA Amendment (Borchardt, enclosed)
 - b. Recommend Preparation and Authorization of RESPEC's Amendment for East Shade Shelters Phase 3 and Tower Loop Phase 2 (Borchardt, enclosed)
5. Discussion Items (9:30) (25 minutes)
 - a. Lake Nutrients Criteria Update (DiToro, enclosed)
 - b. Monitoring Report Timeline (Stewart, enclosed)
 - c. Emerging Technologies in Nutrient Remediation and Colorado Watershed Projects (Stewart)
6. Presentations
7. Updates (9:55 am)
 - a. Cherry Creek Stewardship Partners (Davenhill)
 - b. TAC Members
 - c. TAC Subcommittees
 - d. Contractors
 - i. [Water Quality Update](#) (Stewart, enclosed)
 - ii. Pollution Abatement Projects - CIP Status Report (Borchardt, enclosed)
 - iii. In-Park PRF and RDS Maintenance and Operations Report (Goncalves)
 - iv. Regulatory (DiToro)
 - v. [Land Use Referral Tracking](#) (Endyk)
 - e. Manager
 - f. Other
8. Upcoming Events
 - a. 25th Annual Cherry Creek Watershed Conference - August 24, 2023 - PACE Center, Parker
 - b. Watershed Plan Process Workshop - September 21, 2023 - 8:30-11:30 am
9. Adjournment (10:00)

¹ If you are unable to participate on the CCBWQA's Zoom platform, please email val.endyk@ccbwwqa.org



Cherry Creek Basin Water Quality Authority
Minutes of the Technical Advisory Committee Meeting
Thursday, April 6, 2023, 9:00 a.m.

TAC Members Present

Alex Mestdagh, Town of Parker
Ashley Byerley, SEMSWA (zoom)
Caitlin Gappa, Douglas County Health Department (zoom)
Casey Davenhill, Board Appointee, Cherry Creek Stewardship Partners
David Van Dellen, Town of Castle Rock (zoom)
Gene Seagle, US Army Corps of Engineers (zoom)
Jacob James, City of Lone Tree
James Linden, SEMSWA - Alternate (zoom)
Jason Trujillo, Board Appointee, Cherry Creek State Park
Jeremiah Unger, CDOT
Jim Watt, Board Appointee, Mile High Flood District (zoom)
Joseph Marencik, City of Castle Pines (zoom)
Jon Erickson, TAC Chair, Board Appointee, Colorado Parks and Wildlife
Lisa Knerr, TAC Vice Chair, Arapahoe County (zoom)
Rebecca Tejada, Board Appointee, Special Districts, Parker Water and Sanitation District
Rick Goncalves, Board Appointee (zoom)
Ryan Adrian, Douglas County (zoom)
Steve Chevalier, Arapahoe County Public Health
Sherry Scaggiari, City of Aurora - Alternate (zoom)

Board Members Present

Tom Downing, Governor's Appointee

Others Present

Alan Leak, RESPEC
Erin Stewart, LRE Water
Jane Clary, Wright Water Engineers, CCBWQA Technical Manager
Jessica DiToro, LRE Water
Larry Butterfield, CPW (zoom)
Richard Borchardt, R2R Engineers
Val Endyk, CCBWQA

1. Call to Order

Jon Erickson called the meeting to order at 9:00 am.

2. Meeting Minutes from March 2, 2023

Link to Science Fair update added to item 7a.
Rick Goncalves name spelling corrected in item 4b.

Rick Goncalves moved to approve the March 2, 2023 meeting minutes as amended. Seconded by Alex Mestdagh. The motion carried.

3. Highlights from March 16, 2023 Board Meeting

Jane Clary provided an update on actions taken at the March 16, 2023 Board meeting. Minutes from the meeting can be found [here](#). Following the Board meeting, several members of the TAC and Board attended a workshop focusing on Cherry and Piney Creeks (led by Rich Borchardt and Muller Engineers) and the BMP Effectiveness Study (led by Jane Clary).

4. Action Items

a. Recommend Muller for Alternatives Analysis/Selection of Preferred Alternative and Preparation and Authorization of the Corresponding Agreement

Rich Borchardt provided an [Action Item Memo](#) to the TAC detailing his recommendations following the March workshop on Cherry and Piney Creeks. The TAC reviewed [Muller's Scope for Cherry Creek Reach 1 Alternatives Analysis and Conceptual Design](#) and [Muller's Fee Estimate](#).

Discussion included:

- Partners involved include: CPW, USACE, CWCB, City of Aurora. Will also reach out to MHFD for future partnership.
- Staff is planning a field visit with partners.
- Recommendation to relay the same justification of the sole source agreement to Board and have legal review before presenting to the Board.
- Rich Borchardt and Jane Clary agree that they believe the fee is reasonable for the work needed to be done. TAC requests that this be communicated with the Board.

Rick Goncalves moved to recommend that the Board: 1. Contract directly with Muller Engineering for the Alternatives Analysis on Cherry Creek from the Reservoir to Lake View Drive (aka Reach 1), 2. Authorize the preparation and execution of the necessary consulting agreement, 3. and an expenditure of \$256,715. Seconded by Casey Davenhill. The motion carried.

b. Recommend Authorization of Happy Canyon Creek at Jordan Rd. IGA Amendment - MHFD IGA Amendment 21-05.24B

Rich Borchardt presented background information on the Happy Canyon Creek stream reclamation project at Jordan Rd. Project details can be found in the [Action Item Memo](#) provided to the TAC. The project sponsors are CCBWQA, the Southeast Metro Stormwater Authority (SEMSWA), and the Mile High Flood District (MHFD) which is the project lead. Jacobs is the design consultant. This IGA Amendment includes additional funding of \$580,000 (\$290,000 MHFD; \$202,000 SEMSWA; and \$88,000 CCBWQA). The [IGA Amendment](#) includes comments from CCBWQA's legal counsel. The total project is currently estimated at \$1,323,000 in this IGA Amendment, additional amendments will be needed to bring future funding as the partners' capital improvement programs currently include funding through 2026 when construction is anticipated. CCBWQA's 2023 budget includes \$88,000 for the project.

Lisa Knerr recommended that the Board authorize the execution of the Amendment to the Intergovernmental Agreement (IGA Amendment) for stream improvements on Happy Canyon Creek at Jordan Road (Project), pending satisfactory resolution of CCBWQA's comments, and an expenditure of \$88,000. Seconded by Jacob James. The motion carried.

c. Recommend Acceptance of 2022 Wetland Harvesting Update and Authorization of the Pilot Project for 2023

Rich Borchardt and Erin Stewart presented an update on the [2022 Wetland Harvesting Project](#). [Background information](#) on the project can be found in the [Action Item Memo](#) provided to the TAC. The memo includes a table detailing the lessons learned from the 2022 Harvest and recommendations for 2023.

CCBWQA will continue to review water quality over the course of the pilot project to evaluate if estimates of the nutrient load reduction achieved as a result of the harvesting project can be calculated. L&M has successfully completed the harvesting for 2 years and was critical to the optimization effort in 2022, so it is recommended that CCBWQA continue their partnership for 2023. For 2023, LRE Water will be managing the wetlands harvesting project.

CCBWQA's 2023 budget includes \$90,000 for the pilot project.

Discussion included:

- Possible ways to account for the increases in fuel and disposal without affecting the removal amounts.
- Projects that have been delayed could provide additional budget for cost increases, if needed.
- Recommendation to provide justification of the sole source agreement with L&M to the Board.

Lisa Knerr recommended that the Board accept the 2022 Wetland/Cattail Harvesting Pilot Project Update (2022 WHPP Update) and authorize Wetland/Cattail Harvesting Pilot Project to continue in 2023, an expenditure of not to exceed \$90,000, the direct selection of L&M Enterprises to perform the harvesting, and that the recommendations for the 2023 harvest be implemented. Seconded by Ashley Byerley. Jeremiah Unger abstained from the vote. The motion carried.

5. Discussion Items

a. TAC Subcommittees

i. Watershed Plan Update

ii. Modeling - Reservoir and Watershed

Jane Clary provided a [memo](#) to the TAC with an update on the formation of the Watershed and Modeling Subcommittees. The memo includes details on the purpose of each Subcommittee and a list of the interested participants as of March 30, 2023. Next steps include scheduling initial meetings with TAC and Board participants on each subcommittee, refining committee objectives and developing meeting schedules. The Technical Manager and Administrative Assistant will provide facilitation and administrative support for the subcommittees. CCBWQA staff and contractor support will vary depending on the subject matter of the subcommittee.

Modeling Subcommittee first meeting will be scheduled within the next month.

Tom Downing, Jacob James, Rick Goncalves, Rebecca Tejada also on the Modeling Subcommittee
Rebecca Tejada and Rick Goncalves also on the Watershed Plan Subcommittee

b. Cherry and Piney Creeks Workshop Follow-Up

i. Project Overview and Outreach Handout

ii. Discuss Workshop Notes, Follow-Up, and Multi-Pronged Approach

Rich Borchardt led the TAC in a follow-up discussion from the Cherry and Piney Creek Workshop and provided a project overview and outreach [handout](#).

The outreach handout provides an explanation of the partnership between CCBWQA and Colorado Parks and Wildlife, includes a map of Cherry Creek State Park, and details the erosion issues threatening the surrounding environment, wildlife corridors, critical infrastructure, and water quality. Additional background and a request for additional funding partners provided in the handout.

Director Piko brought this handout to

Rich presented [notes and main takeaways](#) from the March 16, 2023 Workshop with options for a multi-pronged approach moving forward.

Discussion included:

- ~50% of the CCBWQA budget is currently identified going towards priority projects identified in the Muller project and workshop.
- This project really identified that the tools that have been used are on the right track to identify priorities and ensure the CCBWQA is on the correct trajectory.

- Muller continuing with the analysis is vital to evaluate the project feasibility and refine the costs to determine the funding requirements and potential schedule.
- CPW commented on looking for funding opportunities (USFWS) and ensuring that the project is proactive vs reactive.

c. Cherry Creek Watershed Conference

i. August 24th at the Parker Arts, Culture & Events Center

Casey Davenhill provided an update to the TAC regarding the 2023 Watershed Conference planning efforts and encouraged TAC participation in upcoming planning meetings. The conference planning team is currently reaching out to other local watershed groups to attend/present at this year’s conference.

d. Lake Nutrients Criteria RMH

Jessica DiToro provided an update on the Lake Nutrients Criteria. On Monday April 3, 2023 the WQCD’s Consolidated Proposal was released, and in this proposal the WQCD stated that they no longer are proposing TP or TN standards in Cherry Creek Reservoir at this RMH. Only select lakes (upstream of qualified dischargers) are now receiving TP and TN standards as part of the WQCD’s proposal. The WQCD is not including TP or TN TVS with delayed effective dates of December 31, 2027 in the segment tables in Regulations 32-38 at this hearing. Instead they are including strongly worded language that they intend to re-propose these TVS for all lakes and reservoirs at a RMH in 2027. CCBWQA staff plans to present to the WQCC at the RMH to emphasize CCBWQA’s intent and efforts to develop site-specific standards for this 2027 RMH.

[WQCC Lake Nutrients Criteria RMH Presentation](#) April 10-11, 2023

6. Presentations

No Presentations

7. Updates

a. Cherry Creek Stewardship Partners

Casey Davenhill provided an update on the beaver activity at the park and highlighted the opportunity for community engagement in the complex conversations and management goals.

USACE hosted a silver jackets meeting. Notes from the meeting can be found [here](#). Casey highlighted that the USACE is considering an upcoming dam safety outreach event in conjunction with dam release and is coordinating with other flood control dams in the area.

Turf replacement strategy conversations occurring in many local municipalities.

Stewardship Partners have started work on the Water Quality Brochure for Cherry Creek State Park.

b. TAC Members

Jason Trujillo stated that the water level in CCR is currently ~3 feet below normal water level. If we have a normal water evaporation regarding what is normally seen in CCR, there could be an additional 3 feet of water loss which could potentially impact boat access via boat ramps.

c. TAC Subcommittees

d. Contractors

i. [Water Quality Update](#) (Stewart)

Erin Stewart noted that a [Water Quality Update Memo](#) is included in the packet which outlines the last few months of data. Reservoir monitoring for the year started last week as CPW was wrapping up with the Walleye harvest.

ii. [Pollution Abatement Projects - CIP Status Report](#) (Borchardt)

Noted Dove Creek and Happy Canyon Upstream of I-25 projects well underway.

iii. [In-Park PRF and RDS Maintenance and Operations Report](#) (Goncalves)

RDS startup testing will be completed tomorrow April 7th to ensure the system is fully operational prior to the startup scheduled on April 15th.

iv. Regulatory (DiToro)

v. [Land Use Referral Tracking](#) (Endyk)

80 LURs came into the CCBWQA in the first quarter of 2023. All referrals have received responses from the CCBWQA regarding the new process.

e. Manager (Clary)

- Reg 72 Water Quality Control Division [Memo](#) to Water Quality Control Commission: The Control Regulation 72 Informational Hearing is scheduled for 9:00 a.m. Monday April 10, 2023. CCBWQA has submitted a letter stating that they have no intentions of being the proponent if the WQCC sets a formal RMH for CR72 as a result of this Informational Hearing. The WQCD made a similar statement in their letter for the Informational Hearing. Parker Water and Sanitation District (PWSD) and the Town of Castle Rock submitted a joint letter for the Informational Hearing requesting that the WQCC set a formal hearing date for CR72 to consider removal of the 0.05 mg/L construction dewatering TP limit. CCBWQA will be prepared to participate in the Informational Hearings, and if asked what the CCBWQA's position is on PWSD and Castle Rock's proposal, the response will be that currently CCBWQA does not have a position on this issue. This issue will be brought back to the Board for discussion and direction if a RMH is set by the WQCC. CDPHE's Google Drive with hearing documents is available here: https://drive.google.com/drive/u/1/folders/18yzpgUk_TRBPQE_Oc6RhtM-Ujw41i4en
- Ongoing maintenance responsibilities for Peoria Pond are still underway with SEMSWA, Greenwood Village, MHFD and CCBWQA.
- Receiving pervious area (RPA) volume reduction study co-sponsored with MHFD and SEMSWA had a kickoff meeting yesterday.
- CLRMA spring luncheon will be held on April 18th 2023. Ashley Rust, CPW will be presenting on the use of the CYAN Network in monitoring for cyanobacteria blooms.

8. Upcoming Events

a. Watershed Plan Process Workshop - September 21, 2023 - 8:30-11:30 am

9. Adjournment

Jon Erickson adjourned the meeting at 11:08 am.

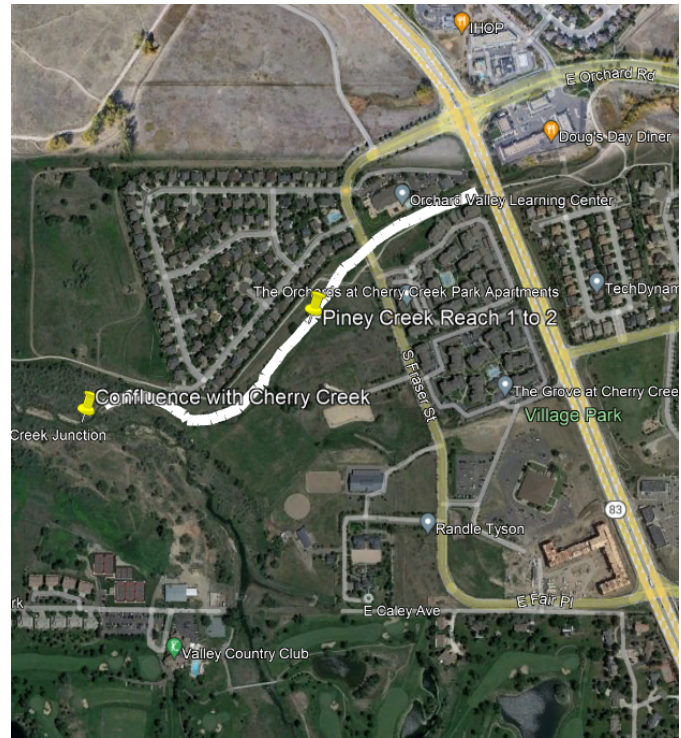


ACTION ITEM MEMORANDUM

To: CCBWQA Technical Advisory Committee (TAC)
 From: Richard Borchardt, Pollution Abatement Project Manager
 Date: May 4, 2023
 Subject: Piney Creek Reaches 1 and 2 IGA Amendment

Request: TAC recommends that the Board authorize the preparation of the Amendment to Intergovernmental Agreement (IGA Amendment) for the Stream Reclamation on Piney Creek Reaches 1 and 2, an expenditure for an amount not to exceed \$63,000, and a member of the executive committee to execute the IGA Amendment.

Project: The Project is located on Piney Creek between the confluence of Cherry Creek and Parker Road in the City of Centennial and Arapahoe County (Project, see figure on right). It is a partner project with the Southeast Metro Stormwater Authority (SEMSWA) which is the project lead. The proposed stream reclamation benefits the water quality in Piney Creek and the Cherry Creek Reservoir by reducing bed and bank erosion which immobilizes Phosphorus in the adjacent soils. It is estimated that this 0.55 mile long-project will immobilize 49 pounds of phosphorus annually. CCBWQA had a workshop on March 16, 2023 which included the Project and reinforced its priority and importance to the whole system.



Funding: The IGA Amendment would include additional funding of \$252,000 (\$63,000 CCBWQA which is in the 2023 approved budget and \$189,000 SEMSWA). The IGA Amendment would include total funding of \$404,000. The table below provides a breakdown of funding by sponsors and shows CCBWQA’s participation is 25% which is consistent with the limit historically used on partner projects. Additional IGA Amendments are anticipated to bring in future funding from the sponsors’ capital improvement programs which currently include funding through 2028, when construction is anticipated.

Funding Source	2022		2023	
	Funding	Project Sponsor %	Additional Annual Funding	Cumulative Project Funding
SEMSWA	\$114,000	75%	\$189,000	\$303,000
CCBWQA	\$38,000	25%	\$63,000	\$101,000
Total	\$152,000	100%	\$252,000	\$404,000

Budget: CCBWQA's 2023 Budget includes \$63,000 for this Project.

Motion: I move to recommend that the Board authorize the preparation of the Amendment to Intergovernmental Agreement (IGA Amendment) for the Stream Reclamation on Piney Creek Reaches 1 and 2, an expenditure for an amount not to exceed \$63,000, and a member of the executive committee to execute the IGA Amendment.



Photo of Piney Creek downstream of Fraser Street (courtesy of Muller Engineering)



Photo of Piney Creek in Cherry Creek State Park (courtesy of Muller Engineering)



ACTION ITEM MEMORANDUM

To: CCBWQA Technical Advisory Committee (TAC)
From: Richard Borchardt, Pollution Abatement Project Manager
Date: May 4, 2023
Subject: RESPEC's Amendment for East Shade Shelters Phase 3 and Tower Loop Phase 2

Request: TAC recommends that the Board approve RESPEC's scope of work for Additional Services and authorize legal counsel to prepare the necessary consulting amendment for an amount not to exceed \$42,619.

Project: The East Shade Shelters Phase 3 and Tower Loop Phase 2 Shoreline Stabilization Projects are located on the east shoreline of Cherry Creek Reservoir (Projects, see figure on right). The proposed shoreline stabilization benefits the water quality in Cherry Creek Reservoir by reducing bank erosion which immobilizes phosphorus in the adjacent soils. It is estimated that these projects totaling 1,100 feet of shoreline will immobilize 123 pounds of phosphorus annually.



Background: In May 2021, CCBWQA selected RESPEC for design services through a competitive proposal process. In November 2022, RESPEC provided a Preliminary Plans and Design Report for these two areas and an updated estimated construction cost of \$790,100 for Tower Loop and \$879,900 for East Shade Shelters (\$1.670M combined). The Projects were initially budgeted for \$1.045M; therefore, the scope, scale, and costs of the Projects is significantly higher than anticipated (by ~\$625,000). As a result, a value engineering meeting was held with RESPEC, CCBWQA, and Colorado Parks and Wildlife (CPW) in February 2023 to identify potential cost savings, prioritize resources, and investigate alternative funding sources from CPW. The value engineering process concluded that the East Shade Shelter Phase III Project is a higher priority because the erosion is more severe, the risk to adjacent infrastructure is greater, and it is a higher use area within the park. RESPEC has prepared the attached scope of work and fee for a cost of \$42,619 which implements the recommendations from the value engineering and additional items that were not anticipated in their original scope of work. I believe that RESPEC's fees are in alignment with current market conditions and are reasonable for their scope of work (see Table 1 below for more information). I would expect the design cost to be around 15% of the project cost for this size of these Projects.

Table 1. Comparison of Original 2021 Contract to Proposed 2023 Contract by Design and Construction Costs

Contracts	Design Cost	Design % of Total Project Cost	Construction Cost	Project Cost
2021 – Original Contract	\$141,000	13.5%	\$1,004,000	\$1,045,000
Proposed 2023 – Original Contract, plus Amendment, plus cost of Final Design of Tower Loop ¹	\$212,000	11.1%	\$1,670,000	\$1,910,000

Budget: CCBWQA’s Budget includes \$559,000 for Reservoir Shoreline Stabilization - East Shade Shelter, so there is sufficient funding for this amendment. Since the construction is delayed and the Projects cost of \$1,910,000 exceeds the \$1,821,000 that is currently included in the CIP, the Projects will need to be adjusted during CCBWQA’s upcoming Budget and CIP cycle. Ideally, the value engineering efforts will bring the total Projects cost back in line with CIP funding and it will only be a schedule adjustment.

Motion: I move to recommend that the Board approve RESPEC’s scope of work for Additional Services and authorize legal counsel to prepare the necessary consulting amendment for an amount not to exceed \$42,619.



Photo of Tower Loop Shoreline Erosion – Courtesy of RESPEC

¹ Since RESPEC’s amendment eliminates Final Design for Tower Loop. R2R Engineers estimated the design cost to complete the Tower Loop design at \$27,907 and included it in the design total. Since the design % of total cost drops from 13.5% to 11.1% with RESPEC’s amendment and new construction costs, their fee seems reasonable.



Photo of East Shade Shelters Shoreline Erosion – Courtesy of RESPEC



Photo of East Shade Shelters Shoreline Erosion – Courtesy of RESPEC



April 27, 2023

Manager
CCBWQA
P.O. Box 3166
Centennial, Colorado 80161

(via e-mail: manager@ccbwwqa.org; cc: rborchardt@r2engineers.com,
clary@wrightwater.com)

RE: East Shade Structures and Tower Loop Additional Services Proposal

Dear CCBWQA Manager:

RESPEC is pleased to present this letter proposal to the Cherry Creek Basin Water Quality Authority (CCBWQA) to provide additional design services for the East Shade Shelters and Tower Loop shoreline stabilization pollution reduction facilities at Cherry Creek State Park. A brief project history and the objectives of the additional services are included in this memo. This proposal is based on our recent conversations and emails.

PROJECT DESCRIPTION & HISTORY

The CCBWQA originally contracted with RESPEC to evaluate the East Shade Shelters and Tower Loop sites at the Cherry Creek State Park for their potential to discharge phosphorus and other contaminants into the Cherry Creek Reservoir and to design improvements to those sites to limit this potential. It was known to both RESPEC and the CCBWQA that the originally proposed scope of the project may need to be adjusted as the site investigation and design proceeded and as the CCBWQA refined its understanding of the project site and associated goals.

Upon submittal of the 30% design plans and construction costs estimate, the CCBWQA determined that additional services and a shift in scope were needed. Below is a summary of additional services and other changes to the original scope that are proposed by this amendment.

SCOPE OF SERVICES

TASK A1—ADDITIONAL PROJECT COORDINATION

The length of the project schedule exceeded what was originally proposed for multiple reasons. As the schedule lengthens, additional time is spent on coordination and meetings with project stakeholders, site visits, and developing submittals. Task A1 captures the additional costs that have been or are anticipated to be incurred for these aspects of the project as well as for a tree survey that was conducted together with Corvus Environmental Consulting, LLC (Corvus), our environmental subconsultant, to determine the obstacles that trees may present at the site as well as to evaluate the ability to use existing trees as a mechanism to prevent access to existing habit paths.

TASK A2—REVISED DESIGN SCOPE

RESPEC completed additional analysis and design for various options at both the East Shade Structures and Tower Loop sites based on feedback from stakeholders. This amendment proposal assumes that the design plans for the Tower Loop site will be refined to include

720 SOUTH COLORADO BLVD.
SUITE 410 S
DENVER, CO 80246
303.757.3655



value engineering and a new cost estimate provided, but that the Tower Loop site will not be taken to final construction plans at this time. Despite this elimination of a final submittal for Tower Loop, additional work beyond a 30% deliverable was completed for this site and additional work remains. Additional work also remains at the East Shade Structures site. Work may be required to separate the plans and estimates into work to be completed and funded by the CCBWQA and work to be completed or funded by Colorado Parks and Wildlife. The level of effort required for this aspect of the design is unclear, but some of this work has been completed. A small contingency has been added to our initial estimate of this work to provide flexibility. Finally, a contingency has been added to account for design changes that may occur due to the findings of the phosphorus sampling that is being conducted by others.

TASK A3—ENVIRONMENTAL SERVICES

Corvus has completed additional services beyond the original scope, including additional project coordination and management and on-site tree assessment and mapping services. Additionally, they have added seed and planting tables to their services, which were not originally included as it wasn't clear it would be needed. Their detailed scope and fee proposal for this amendment is attached to this memo.

TASK A4—CONSTRUCTION COST ESTIMATING SERVICES

Given the current volatility in construction costs, RESPEC proposes using a subconsultant to provide the CCBWQA with a more accurate construction cost estimate. RESPEC has used Canterbury Construction Management Services, Inc. (CCMS) on past projects and recommends their services for this project. CCMS have been provided with the 30% plan set and a detailed scoping meeting was held to provide them with insight into project history and development. Their scope and fee proposal for this amendment is attached to this memo.

COMPENSATION

RESPEC will invoice monthly for the work performed during the prior month in accordance with the Consultant's current hourly rate schedule. The total fee for these additional services is included in the attachments.

ANTICIPATED SCHEDULE

We anticipate that upon NTP for this amendment that CCMS and Corvus can begin work on their scopes of work immediately. RESPEC will work with the CCBWQA to determine the additional plan revisions at the East Shade Shelters site based on the findings of the phosphorus samplings, cost estimate from CCMS, and available funding.

Thank you for the opportunity to present our proposal. If you have any questions about the information presented herein or would like to discuss how RESPEC can provide assistance, please contact Ms. Jessica Nolle by telephone (720.775.6412) or email (Jessica.Nolle@respec.com).

Sincerely,

Jessica Nolle, PE, CFM
Senior Project Manager

RESPEC Company, Inc. - Professional Services Fee Amendment 1 Proposal
 East Shade Shelters and Tower Loop Shoreline Stabilization
 4/27/2023

Labor Detail and Summary of Direct Costs by Task

Task	Description	RESPEC							Total RESPEC Hours	RESPEC Labor Cost	Subconsultants / Direct Costs	Grand Total Costs
		Project Executive	Project Manager	Project Engineer	Design Engineer	Engineering Tech	Clerical					
	<i>Hourly Rate</i>	\$225	\$190	\$135	\$125	\$105	\$70					
A1	Additional Project Coordination											
	Additional Project Coordination	4	18					22	\$4,320		\$4,320	
	Tree Survey & Processing				24			24	\$3,000	\$50	\$3,050	
	Subtotal	4	18	0	24	0	0	46	\$7,320	\$50	\$7,370	
A2	Revised Design Scope											
	Additional Analysis & Research		4		16			20	\$2,760		\$2,760	
	Additional Concept Development	2	4		10			16	\$2,460		\$2,460	
	Additional Plan & Cost Revision	2	6		24	12		44	\$5,850		\$5,850	
	Costs Sharing Contingency	2	6		14			22	\$3,340		\$3,340	
	Phosphorus Findings Contingency	2	12		18			32	\$4,980		\$4,980	
	Subtotal	8	32	0	82	12	0	134	\$19,390	\$0	\$19,390	
A3	Environmental Services (Corvus)											
	Project Coordination and Management									\$863	\$863	
	Tree Assessment / Mapping									\$3,938	\$3,938	
	Seed and Planting Tables									\$3,058	\$3,058	
	Equipment & Mileage									\$400	\$400	
	Subtotal	0	0	0	0	0	0	0	\$0	\$8,259	\$8,259	
A4	Cost Estimating (CCMS)											
	Opinion of Probable Cost							0		\$7,600	\$7,600	
	Subtotal	0	0	0	0	0	0	0	\$0	\$7,600	\$7,600	
	Total	12	50	0	106	12	0	180	26,710	15,909	42,619	

Statement of Work for Cherry Creek Reservoir East Shade Shelters and Tower Loop

Modification Request No 1

October 6, 2022

Presented to:

RESPEC

Prepared by:



CORVUS

Environmental Consulting LLC

Project Information Summary

CORVUS Client Name	RESPEC
Client Project Manager	Jessie Nolle
Project Name	CCESTL
Project Purpose	Bank stabilization for water quality improvements.
Location	Cherry Creek Reservoir – East Shade Shelters and Tower Loop
CORVUS Project Role	<p>CORVUS' role will be to implement a Clean Water Act (CWA) Section 404 permitting approach for impacts to jurisdictional waters of the U.S.</p> <p>CORVUS will lead U.S. Fish and Wildlife Service (USFWS) Endangered Species Act compliance as part of Section 7 consultation for 404 permitting.</p> <p>CORVUS will also assist with planning, mapping trees in impact areas, and restoration specifications.</p>

Tasks

Tasks with no new budget proposed under this scope are shown in lighter font color below.

Task 1. Delineation of Waters of the U.S. – CORVUS will conduct a site visit to delineate assumed Waters of the U.S. (WOTUS) including open waters and wetlands. This task includes finalizing wetland data forms, and GPS/GIS data collected. CORVUS will provide the Client with a geo-referenced file of the delineation boundaries for use by the Client in project base mapping and impact calculations.

Task 2. Endangered Species Act Compliance – CORVUS will assess the study area for the potential to support species listed as threatened or endangered (T&E) under the Endangered Species Act and will include the results in a section of the submittal to the USACE.

Based on current knowledge of the study area, CORVUS assumes that suitable habitat for T&E species is not present and presence/absence surveys will not be required.

CORVUS further assumes that improvements will not trigger the need for consultation regarding depletions to the Platte River system. If depletions consultation is required, CORVUS will discuss with the Client Project Manager and determine a revised statement of work (SOW). CORVUS will summarize the findings in the submittal to the Corps and will not submit directly to the U.S. Fish and Wildlife Service.

Task 3 - Agency Coordination (pre and post submittal) – CORVUS will coordinate with the USACE, both the permitting office, and real property office. This task also includes time for coordination with other agencies such as CO Parks and Wildlife or US Fish and Wildlife.

Task 4. Pre-construction Notification (PCN) and 408 Coordination – Once impacts have been identified (generally when the project is near 60% design), and after coordination with USACE, CORVUS will prepare and submit a PCN requesting authorization using a regional general or nationwide permit. The PCN submittal will include project plans and impacts to jurisdictional areas prepared by the Client.

This task includes one round of revisions to the submittal package based on Client comments. This task also includes responding to USACE requests for additional information.

If the USACE determines the work will require an Individual Permit application, CORVUS will prepare a revised scope and fee.

Task 5. Survey, Document, and Record Potential Historic Properties (performed by PaleoWest Archaeology) – As part of the CWA Section 404 compliance process, the USACE must comply with Section 106 of the National Historic Preservation Act (NHPA). To do this, the USACE typically requires prospective permittees to submit the results of a survey for potential historic properties in the USACE permit area [also known as the area of potential effect (APE)]. Potential historic properties include archaeological sites, farmsteads, irrigation ditches, transmission lines, and railroads.

Since Cherry Creek Reservoir has been previously disturbed and the immediate work area does not appear to contain structures 50 years or older, CORVUS believes that a file search will be sufficient for

Section 106 compliance. A few hours have been included for high-level coordination regarding documenting the lack of historic features.

Task 6. Project Coordination and Management – This task includes general coordination with the team, including up to four meetings, and time spent by CORVUS on quality control, project set up, and managing project budget, schedule, and billing.

Task 7 – Tree Assessment / Mapping – CORVUS will use sub-meter to sub-foot accurate GPS data collectors to map trees with the project impact and staging areas. Trees will be assessed for potential removal and protection. Additional data will also be collected, such as species, height, growth habit, and visible health.

Task 8 – Seed and Planting Tables – CORVUS will provide the following elements to the team for use in the landscape plans:

- 1-3 Native upland grass seed mixes
- Containerized plant list for upland shrubs
- Wetland/riparian grass and forb mix for bio-swale
- Willow planting plan (if applicable)

Deliverables

The following deliverables will be completed for this project:

- Geo-referenced file of WOTUS, including the ordinary high-water mark and wetlands
- PCN Submittal Package
- T&E species habitat assessment section
- Tree Mapping results
- Plant and Seed Mix Tables
- Responses to comments

Assumptions

The following assumptions have been made for this project:

- The Client will be responsible for preparing project plans, including impacts.
- The project may be authorized under a CWA 404 NWP or RGP (not Individual Permit).
- Colorado Stream Quantification Tool (CSQT) will not be required.
- No Class III cultural resource survey will be required (only a Class I file search).
- T&E species habitat is not present and no presence/absence surveys for specific species, nor consultation with Fish and Wildlife Service, will be required.
- Unless otherwise requested by the Client, all CORVUS deliverables will be provided in digital format such as Portable Document Format (PDF), Microsoft Word, or other suitable format.

Change Management Process

In the event revisions to the study area and/or the SOW tasks are determined necessary or desirable, either by CORVUS or the Client, CORVUS will coordinate with the Client Project Manager to determine if a formal request for contract modification is necessary. CORVUS will not perform work not described in this SOW or a revised SOW without written authorization from the Client.

Cost

CORVUS will perform the tasks described for the estimated costs in the attached cost proposal. CORVUS bills on a time-and-materials basis, with expenses such as postage, copies, equipment rental, and subconsultants billed at cost.

Estimate



Date 10-06-2022
Project 21-039 - CC East Shade Shelters and Tower Loop Shoreline Stabilization

Client
RESPEC Engineering
 720 South Colorado Blvd. Suite 410 S
 Denver, CO 80246
 Attn: Jessie Nolle

Project Totals

Task	Estimate	Previous	Grand Total
1 - Site Visit/Waters of US Delineation	\$0.00	\$1,740.00	\$1,740.00
2 - ESA Compliance/Habitat Assessment	\$0.00	\$1,160.00	\$1,160.00
3 - Agency Coordination (pre and post submittal)	\$0.00	\$1,160.00	\$1,160.00
4 - Pre-construction Notification and 408 Coordination	\$0.00	\$3,480.00	\$3,480.00
5 - Historic Properties (Coordination only, no survey)	\$0.00	\$580.00	\$580.00
6 - Project Coordination and Management	\$863.00	\$580.00	\$1,443.00
7 - Tree Assessment / Mapping	\$3,938.00	\$0.00	\$3,938.00
8 - Seed and Planting Tables	\$3,058.00	\$0.00	\$3,058.00
Labor Subtotal	\$7,859.00	\$8,985.00	\$16,559.00
Direct Expenses	\$400.00	\$285.00	\$685.00
Total	\$8,259.00	\$8,985.00	\$17,244.00

Task Details

1 - Site Visit/Waters of US Delineation (T&M)

Staff	Hours	Rate	Value
	0		\$0.00

2 - ESA Compliance/Habitat Assessment (T&M)

Staff	Hours	Rate	Value
	0		\$0.00

3 - Agency Coordination (pre and post submittal) (T&M)

Staff	Hours	Rate	Value
	0		\$0.00

Estimate



4 - Pre-construction Notification and 408 Coordination (T&M)

Staff	Hours	Rate	Value
	0		\$0.00

5 - Historic Properties (Coordination only, no survey) (T&M)

Staff	Hours	Rate	Value
	0		\$0.00

6 - Project Coordination and Management (T&M)

Staff	Hours	Rate	Value
Kelly Anolin - Project Administrator	2	\$80.00	\$160.00
Korby Mintken - Lead Biologist / Project Manager	1	\$123.00	\$123.00
Tim DeMasters - Senior Ecologist/Principal	4	\$145.00	\$580.00
	7		\$863.00

7 - Tree Assessment / Mapping (T&M)

Staff	Hours	Rate	Value
Jimmy Turowsky - Biological Technician	12	\$88.00	\$1,056.00
Korby Mintken - Lead Biologist / Project Manager	14	\$123.00	\$1,722.00
Tim DeMasters - Senior Ecologist/Principal	8	\$145.00	\$1,160.00
	34		\$3,938.00

8 - Seed and Planting Tables (T&M)

Staff	Hours	Rate	Value
Carla DeMasters - Sr. Ecologist/Project Manager	2	\$123.00	\$246.00
Korby Mintken - Lead Biologist / Project Manager	4	\$123.00	\$492.00
Tim DeMasters - Senior Ecologist/Principal	16	\$145.00	\$2,320.00
	22		\$3,058.00

Direct Expenses Details

Direct Expense	Quantity	Price	Total
Sub-meter GPS Unit	2	\$150.00	\$300.00

Estimate



Direct Expense	Quantity	Price	Total
Mileage	160	\$0.62	\$100.00
Subtotal			\$400.00

Labor Total	\$7,859.00
Direct Expenses Total	\$400.00
Total Estimate	\$8,259.00
Previous Contract Amount	\$8,985.00
Grand Total Budget	\$17,244.00



CANTERBURY CMS, INC
260 E GEDDES AVE
CENTENNIAL, CO 80122
303-396-9930
BILL@CANTERBURYCMS.COM

March 21, 2023

Jessie,

Thank you for the opportunity to propose on your project.

The following is our proposal for the Cherry Creek East Shade Structures & Tower Loop Shoreline Stabilization Opinion of Probable Cost (OPC):

AACEi Class 3 Opinion of Probable Cost (30% design definition)- \$7,600

1. OPC- \$7,600.00
 - a. OPC (Canterbury CMS, Inc)- \$4,400 (hourly)
 - b. Earthwork Subconsultant (T.B.L. Excavating, Inc)- \$3,200 (hourly)

Total Cost= \$7,600

We would be able to deliver this project at the end of April.

Thank you and please do not hesitate to call if you have any additional questions,

A handwritten signature in blue ink, appearing to read 'Bill Canterbury', is written over a light blue horizontal line.

Bill Canterbury
President

Memorandum

To: CCBWQA Technical Advisory Committee
From: Jessica DiToro, PE, LRE Water
Reviewed by: Jane Clary, Wright Water Engineers
Date: May 4, 2023
Subject: Lake Nutrients Criteria Rulemaking Hearing

Issue Update: At the beginning of the Lakes Nutrients Rulemaking Hearing (RMH) process in the summer of 2022, CCBWQA requested a delayed effective date of December 31, 2025 to allow time to develop site specific standards. Although the Water Quality Control Division (Division) originally opposed this request, in its [Consolidated Proposal](#) released on April 3, 2023, the Division proposed a major change in direction for standards adoption that would result in TP and TN standards only being adopted in high priority lakes located upstream of qualified dischargers (i.e., domestic wastewater treatment facilities). The Consolidated Proposal specifically stated that the Division was no longer proposing for TN or TP standards adoption in Cherry Creek Reservoir at the April 2023 RMH. This change has effectively addressed CCBWQA’s request.¹ The Division’s redlines to Regulation 38 regarding Cherry Creek Reservoir are presented below:

“a. Control Regulations

The commission may also consider revised site-specific nutrients standards for the following lake and reservoir segments that have existing nutrient control regulations in future rulemaking hearings if information to support appropriate and protective revisions is developed:

Upper South Platte River: 6b (COSBUS06b; Chatfield Reservoir)

Cherry Creek: 2 (COSPC02; Cherry Creek Reservoir)

The commission did not adopt total nitrogen or total phosphorus table value standards for either waterbody in this rulemaking hearing. (Pages 607-608/731 of the Division’s Consolidated Proposal)

¹ While there is no specifically stated delayed effective date included in the stream segment table for Cherry Creek Reservoir, the Division has added language to the statement of basis and purpose which states that the TP and TN standards will be adopted in all applicable lakes and reservoirs at a RMH in 2027.

2. Cherry Creek Reservoir.		Physical and Biological		Metals (ug/L)	
COSPCOH2	Classifications	DM	MWAT	acute	chronic
Designation	Agriculture	WL	WL	Arsenic	340
Reviewable	Aq Life Warm 1	acute	chronic	Arsenic(T)	---
	Recreation E	---	5.0	Cadmium	TVS
	Water Supply	pH	6.5 - 9.0	Cadmium(T)	5.0
Qualifiers:	Public Swim Beach*	chlorophyll a (ug/L)	7/1 - 9/30	Chromium III	---
Other:		E. coli (per 100 mL)	---	Chromium III(T)	50
Temporary Modification(s):		Inorganic (mg/L)		Chromium VI	TVS
Arsenic(chronic) = hybrid		Ammonia	TVS	Copper	TVS
Expiration Date of 12/31/2024		Boron	---	Iron	---
*chlorophyll a (ug/L)(chronic) = Season mean concentration measured in the upper three meters of the water column for the months of July through September with an exceedance frequency of once in five years.		Chloride	---	Iron(T)	---
*Public Swim Beach applies to Cherry Creek Reservoir.		Chlorine	0.019	Lead	TVS
*Uranium(acute) = See 38.5(3) for details.		Cyanide	0.005	Lead(T)	50
*Uranium(chronic) = See 38.5(3) for details.		Nitrate	10	Manganese	TVS
		Nitrite	---	Mercury(T)	---
		Nitrogen	---	Molybdenum(T)	---
		Phosphorus	---	Nickel	TVS
		Sulfate	---	Nickel(T)	---
		Sulfide	---	Selenium	TVS
				Silver	TVS
				Uranium	varies*
				Zinc	TVS

Table 1. Cherry Creek Reservoir Stream Segment Table in Regulation 38 (Page 633 of 731 of Division’s Consolidated Proposal)

The Lakes Nutrients RMH was held on April 10-12, 2023 in a hybrid format. Jane Clary testified in person on the CCBWQA’s behalf on the morning of April 11, 2023 with support from Erin Stewart and Andrea Bronson virtually. After more than two days of oral testimony, the Water Quality Control Commission moved to adopt the Division’s Consolidated Proposal, meaning TP and TN standards were not adopted for Cherry Creek Reservoir.

Next Steps: Work with Hydros to develop site-specific nutrient standards for Cherry Creek Reservoir so that a proposal will be ripe for the 2027 RMH. Additional discussions with Hydros and the TAC may be warranted regarding timing of the reservoir model update relative to development of a site-specific standards proposal, given that additional time is available (2027 rulemaking instead of 2025).



ACTION ITEM MEMORANDUM

To: CCBWQA Technical Advisory Committee, Jane Clary, CCBWQA Technical Manager
From: Erin Stewart, LRE Water
Date: March 6, 2023
Subject: CCBWQA Monitoring Report Schedule and Updates

Background: The CCBWQA water quality monitoring consultant, LRE Water, generates a water quality monitoring report annually which provides a summary of the water quality monitoring results from each water year based on the purpose and objectives set forth in the [CCBWQA Routine Sampling and Analysis Plan/ Quality Assurance Project Plan \(SAP/ QAPP\)](#). The monitoring report addresses the monitoring and reporting requirements in Reg. 72.

Discussion: In order to provide scheduled opportunities for interested members of the CCBWQA TAC to participate in the monitoring report review process, amendments to the schedule to accommodate additional discussion have been suggested.

Timeline

December: The Monitoring Report for the prior year is due to the CCBWQA on December 31st of each calendar year. A “Provisional” version of the report will be available to the TAC at this time. This version of the report may include provisional USGS data and may require updates to the water balance, flow-weighted nutrient concentrations, and mass balance of the Reservoir. In addition, a complete internal editorial review may not have been completed. The primary purpose of this provisional draft is to allow TAC members time to peruse the report to become familiar with major themes and findings prior to the January presentation. Please note that the provisional report will be provided as soon as it is available, but this may only be a few days prior to the scheduled TAC January TAC meeting.

January: Monitoring Report Presentation to CCBWQA TAC and Board. A “draft” version of the report will be provided to the TAC for a full review, questions, and comments following the meeting. At that time, staff will set up a meeting to allow interested members to attend and provide feedback, ask questions, etc., before the next TAC Meeting.

February: Time will be set aside during the TAC meeting for group discussion of the report and any questions and feedback that has been provided. All questions and feedback will be addressed, and a final report will be provided to the TAC for final review. The online CCBWQA Annual Report on activities will be linked to the most current version of the report available.

March: TAC will recommend acceptance of the monitoring report to the Board. The monitoring report links in the online CCBWQA Annual Report on activities will be finalized. The Board will vote on acceptance of the final Monitoring Report.

CHERRY CREEK BASIN WATER QUALITY AUTHORITY
2023 Capital Project Status Report
April 28, 2023

RESERVOIR PROJECTS

1. East Shade Shelters Phase III and Tower Loop Phase II Shoreline Stabilization (CCB-17.5 and CCB-17.7)
 - a. Description: These projects were identified in 2014 through the annual inspection. The Tower Loop Phase II connects to the Phase I project and extends shoreline protection 570 feet to the southeast towards Dixon Grove. The East Shade Shelters Phase III starts on the north end of the Shade Structure and goes 400-feet to the south.
 - b. Status: Consultant selection is scheduled for the 1st quarter. A consultant selection committee will be set in February (1/29/21). At the February TAC meeting Jason Trujillo, Jon Erickson, Lanae Raymond, Bill Ruzzo were interested in serving on the consultant selection committee (2/11/21). This selection committee was discussed at the 3/18/21 Board Meeting, and no further members were added. The Request for Proposals (RFP) has been posted on BidNet and Proposals are due 04/21/21 (3/25/21). The pre-proposal meeting was held on 4/7/21. 5 proposals were received on 4/28/21; the selection committee is reviewing them. Interviews were held and a selection is being brought to the May Board meeting (5/14/21). Board authorized negotiations with RESPEC (5/27/21). Agreement has been executed with RESPEC (10/15/21). Field Survey of project areas and topographic mapping is underway (12/30/21). A design kickoff meeting was held on 4/22/22. A design sprint workshop was held on 7/12/22 which included a site visit and evaluation of alternatives. RESPEC is developing a recommended alternative (9/8/22). RESPEC provided updated project costs for budgeting (10/13/22). The 30% submittal was received on 11/16/22 and is under review. CCBWQA provided comments on 30% review on 1/17/23; a value engineering effort is recommended as the project costs exceed the budget. The value engineering meeting was held on 2/24/23. *RESPEC's request for additional services is being taken to TAC and Board in May (4/28/23).*

STREAM RECLAMATION PROJECTS

1. Cherry Creek Stream Reclamation at Arapahoe Road aka Reaches 3 and 4 (CCB-5.14C)
 - a. Description: This project continues the work on Cherry Creek by CCBWQA, MHFD, and local partners. It ties into the previous stream reclamation projects of Cherry Creek Eco Park to Soccer Fields (CCB-5.14A) and Cherry Creek at Valley Country Club (CCB-5.14B). The 5,167 Linear Feet of stream reclamation reduces bed and bank erosion immobilizing approximately 88 pounds of phosphorus annually. The project is anticipated to be funded over several years and likely be broken into phases.
 - b. Status: In 2021, an IGA was executed between CCBWQA, MHFD, City of Aurora, and SEMSWA to begin this work. IGA Amendment that brings in 2022 funding is under review (5/13/22). Board authorized IGA Amendment for 2022 funding on 7/21/22 (8/12/22). IGA Amendment has been revised to show Aurora's lower participation; CCBWQA's participation was lowered accordingly to meet 25% partner project level; revised IGA Amendment received TAC recommendation and is being taken to Board for their consideration in October (10/13/22). Board authorized the IGA Amendment for 2022 funding at their 10/22/22 meeting. It appears that CCBWQA's 2023 participation will be reduced as a result of less partner funding available for this project (2/24/23).
2. Cherry Creek Stream Reclamation – Upstream of Scott Road (CCB-5.17)
 - a. Description: Design and construction of stream reclamation is in partnership with Douglas County and MHFD. It improves 4,100 feet of Cherry Creek and is located upstream of Scott Road.
 - b. Status: IGA was approved by the Board at their April 2020 meeting. Muller had been

selected as consultant, and design scope of work is being prepared. Kickoff meeting was held on 12/11/20; a follow-up field visit will be scheduled for early 2021. Site visit was held on 1/29/21. Conceptual design is complete, negotiations are underway to contract for 60% design (4/8/21). Muller is working on alternatives (4/30/21). Muller is working on preliminary design and an IGA Amendment to bring in additional 2021 funding from Douglas County is being brought to the Board in October (10/15/21); IGA Amendment has been executed (11/11/21). Muller is preparing 60% Design Submittal (1/28/22). Muller submitted 60% Design on 2/2/22; comments have been provided on 60% Design Submittal (3/10/22). IGA Amendment bringing in 2022 funding is scheduled for TAC and Board consideration in June (5/27/22). IGA Amendment was authorized at the June 16th Board Meeting (6/30/22). *Muller is working on Final Design and held a progress meeting on 4/14/23, a site visit is being scheduled to support the 90% design submittal.*

3. Cherry Creek Stream Reclamation at Dransfeldt (CCB-5.17.1B)

- a. Description: Design and construction of stream reclamation is in partnership with Town of Parker and MHFD. It improves 2,400 feet of Cherry Creek near the future location of Dransfeldt bridge which is just downstream of the Cherry Creek at KOA project.
- b. Status: Initial scoping has begun, and a partners meeting was held on 1/30/21. IGA is scheduled for CCBWQA's May TAC and Board meetings (4/30/21). IGA was approved by all parties and has been executed (6/25/21). Muller Engineering has submitted their Draft Scope of Work for Design Services, and the project sponsors have reviewed it (7/8/21). Design kickoff meeting was held on 10/14/21. Alternatives are being evaluated (12/9/21). Pre-submittal meeting for the 404 permit is being scheduled (12/30/21). CLOMR is being prepared for project (3/10/22) and was submitted to FEMA on 3/31/22. CEI was selected for as project partner to provide contractor input during the design (5/27/22). CLOMR is under review by FEMA (8/12/22). Muller has received comments on CLOMR and is preparing responses; 90% Submittal is scheduled for early February (1/27/23). Comments on 90% Submittal were provided on 2/22/23; project is experiencing substantive cost increases due to current market conditions (2/24/23). TAC at their 3/2/23 meeting recommended that the Board authorized the IGA Amendment to bring in 2023 funding along with an increase in CCBWQA's 2023 funding from \$170,000 to \$570,000. The Board authorized the IGA Amendment with the increased 2023 funding of \$570,000 at their 3/16/23 meeting.

4. McMurdo Gulch Priority 3 Stream Reclamation (CCB-7.2)

- a. Description: The design and construction of stream reclamation is in partnership with Castle Rock. Castle Rock is the lead agency. This phase continues the work from the previous phase. Muller Engineering is the design consultant.
- b. Status: Board authorized IGA for Priority 3 at their May 19, 2022 meeting. Muller submitted their 30% deliverable on 10/31/22, review comments were returned on 11/8/22. Easements needed for projects have been identified (1/23/22). The 60% Submittal was received on 1/30/23 and comments have been provided on 2/7/23. Muller is working on updating their construction cost estimate (2/8/23). On 2/23/23, Castle Rock requested that CCBWQA's 2023 funding be deferred to 2024 to match their schedule.

5. Lone Tree Creek in Cherry Creek State Park (CCB-21.1)

- a. Description: This project includes a trail connection to Cherry Creek State Park and includes 570 linear feet of stream reclamation on Lone Tree Creek from the State Park Boundary to the Windmill Creek Loop Trail. The City of Centennial is the project lead. CCBWQA participation is for stream reclamation only.
- b. Status: 95% submittal is under review (5/13/22); review comments have been returned (5/27/22). Project funding was brought to TAC at their 7/7/22 meeting, during drafting of IGA it was discovered that future maintenance of stream reclamation should be considered, project will be brought back to TAC at an upcoming meeting for maintenance discussion and recommendation (8/12/22). A stakeholder meeting was held on 9/29/22 to discuss maintenance. A stakeholder meeting was held on 11/2/22 to discuss findings from CCBWQA's site visit and findings included in Wright Water Engineers report. The Board

supports CCBWQA's partnering with Centennial at their 11/17/22 meeting. A Memo of Understanding is under review by Colorado Parks and Wildlife (CPW) affirming maintenance responsibilities for the stream reclamation fit under the current agreement between CCBWQA and CPW (3/30/23).

6. Happy Canyon Creek – County Line to Confluence with Cherry Creek (aka Jordan Road, CCB-22.1)

- a. Description:** The design and construction are in partnership with Southeast Metro Stormwater Authority and MHFD and includes 2,500 feet of stream reclamation. The Authority's water quality component share for design and construction is estimated to be \$325,000. The total project cost is estimated at \$1,300,000.
- b. Status:** IGA is scheduled for June TAC and Board meetings (5/27/21). IGA has been approved and executed by all parties (7/29/21). Jacobs has been selected as design consultant and project scoping is underway; limits have been extended upstream to the County Line and sediment capture area and transport will be included with the project (10/15/21). Jacobs has submitted their scope of work and fee for design which is under review by project sponsors (11/11/21). Project sponsors have completed a review of Jacobs' fee and scope of work and the agreement is being routed for signatures (1/28/22). IGA Amendment to bring in 2022 funding is in process (3/10/22). A project kickoff meeting was held on 3/28/2022. A site visit was performed on 4/12/22 to document existing conditions and identify sediment source/transport/deposition areas. Project Team is preparing a sampling plan for bank and bed materials to determine phosphorous content (5/13/22). The project team met on 5/24/22 to discuss project goals and Jacobs is progressing through the study. Jacobs and ERC are working on sediment transport analysis and model (6/30/22). The results from the sediment transport model were presented at the 8/23/22 progress meeting and an upstream sediment capture area just south of the JWPP was included in the alternatives analysis (8/26/22). The alternative analysis report is expected to be completed before the end of 2022 (10/13/22). Lab results from stream soil samples were sent to Jacobs so that they include phosphorus reduction in the alternatives analysis report; a groundwater investigation is needed to inform sediment capture facility and stream reclamation alternatives, scoping and negotiations are in progress (11/11/22). Groundwater scope of work has been reviewed and approved by project sponsors (1/13/23). The IGA Amendment bringing in the 2023 funding is scheduled for the TAC and Board for April (3/30/23).

7. Happy Canyon Creek - Upstream of I-25 (CCB-22.2)

- a. Description:** The design and construction are in partnership with Douglas County, City of Lone Tree, and MHFD and includes 2,500 feet of stream reclamation. The Authority's water quality component share for design and construction is estimated to be \$500,000. The total project cost is estimated at \$2,000,000.
- b. Status:** Douglas County, City of Lone Tree, and MHFD have initially funded and selected Muller Engineering as the design engineer. Design has started and a progress meeting was held on 1/27/21. Design is progressing (2/11/21). Muller has submitted 60% Design Deliverables (5/27/21). IGA for 2021 Funding is being brought to Board in September (9/9/21). 2021 IGA Amendment has been executed (11/11/21). Coordination with CDOT and easement acquisitions are on-going (1/13/22). Board authorized 2022 funding and IGA Amendment at their June 16th meeting (6/30/22). The project received environmental clearance from CDOT (8/12/22). The 90% design submittal is scheduled for delivery by end of September (8/26/22). The 90% design submittal is being reviewed (10/13/22). Comments were provided on 90% submittal (11/11/22). Muller completed the 100% design submittal on 11/22/22. CDOT permit was issued, and pre-construction meeting was held on 1/10/23; construction start is scheduled for 1/30/23 pending execution of easement documents from Surrey Ridge which has agreed to terms and easement language. Notice to Proceed on construction is pending execution of easement documents (1/27/23). Easements have been signed by property owners and Notice to Proceed has been issued to Naranjo Civil Constructors (2/8/23). Construction is underway with initial construction BMPs/stormwater controls in place; water diversion and control is being set up for the downstream section of the project (3/10/23). Water control is in place and construction of stream reclamation is

underway for downstream sections of the project (3/30/23). Riffle and Boulder Cascade drop structures on downstream third of project are nearing completion (4/13/23).

8. Dove Creek - Otero to Chambers Rd. (CCB-23.1)

- a. Description: The design and construction are in partnership with Southeast Metro Stormwater Authority (SEMSWA) and with Mile High Flood District (MHFD) being a key stakeholder; it includes 1,300 feet of stream reclamation. The Authority's water quality component share for design and construction is estimated to be \$175,000. The total project cost is estimated at \$700,000.
- b. Status: SEMSWA is drafting the Intergovernmental Agreement to bring in the 2021 funding for the project (3/12/21). RESPEC is the design consultant; two conceptual design alternatives have been prepared and reviewed during meeting on 3/15/21. IGA is scheduled for CCBWQA's May TAC and Board meetings (4/30/21). IGA has been approved and executed by all parties (7/29/21). 30% Design Review Meeting was held on 8/23/21. A Progress meeting is scheduled for 2/26/22 with 60% Plan submittal expected to follow (1/28/22). The 60% Design was submitted on 2/16/2022, comments were provided, and a design review meeting was held on 2/23/2022. IGA Amendment to bring in 2022 funding is in process (3/10/22). Construction costs were prepared by CEI based on 60% submittal (5/13/22). A design progress meeting was held 6/14/22 and 90% design submittal is being prepared (6/30/22). 90% design submittal is expected by the end of July (7/15/22). The 90% design submittal was reviewed, and comments were submitted on 8/22/22. *Construction is anticipated in 2023 (10/13/22)*. A progress meeting was held on 11/8/22, project will likely be done in 2 phases, IGA Amendment will be needed early in 2023 so that construction can start ahead of storm season. Dove Creek IGA for construction of Phase 1 is scheduled for TAC and Board in January 2023, construction is expected to start shortly afterwards (12/30/22). Construction is scheduled to start mid-February; construction agreement and engineering construction services amendment are currently being reviewed (1/27/23). Construction and engineering construction services have been finalized and a preconstruction meeting was held on 2/2/23. Notice to Proceed has been issued to Concrete Express; construction is underway with initial construction BMPs/stormwater controls in place (3/10/23). Water control is in place and construction of stream reclamation is on-going (3/30/23). Step pool drop structures have been constructed and work on soil wraps is underway (4/13/23).

9. Piney Creek from Fraser Street to Confluence with Cherry Creek aka Reaches 1 and 2 (CCB-21.1)

- a. Description: This project includes 2900 liner feet of stream reclamation on Piney Creek. The project partners are SEMSWA and CCBWQA.
- b. Status: Project coordination meeting was held with SEMSWA on 6/29/22. IGA drafted and is being reviewed by SEMSWA (8/12/22). IGA was approved by CCBWQA at the 9/15/22 Board meeting. *IGA Amendment to bring in 2023 funding is being taken to TAC and Board in May (4/28/23)*.

10. Mountain and Lake Loop Shoreline Stabilization Phase II (OM 4.6)

- a. Description: This project was identified in through the 2020 annual inspection and design and permitting started in 2021. It adds about 40 feet of shoreline protection where it has eroded leaving a 1-2 foot tall vertical bank.
- b. Status: Construction Plans have been prepared and the GESC was submitted to Arapahoe County for review (1/13/22). Plans are being reviewed by US Army Corps of Engineers for 408 clearance (5/13/22).

11. Cherry Creek from Reservoir to Lake View Drive (OM 4.6)

- a. Description: This project is in follow up to CCBWQA's study of Cherry and Piney Creeks in Cherry Creek State Park (CCSP). Muller completed two reports on Cherry Creek from Reservoir to State Park Boundary, Stream and Water Quality Assessment and Baseline Channel Monitoring Report, in 2022. These reports highlight the need for this project.
- b. Status: A workshop is scheduled for the 3/16/23, to seek CCBWQA Board and TAC input on this project and Cherry and Piney Creeks in CCSP (3/10/23). *The follow up from workshop is*

underway – project overview and funding flyer has been created, Muller is scoping the next step of design for Reach 1 and providing a fee, and multi-pronged approach is in development for workshop priority reaches that prioritizes Reach 1 and reduces risk from upstream reaches; these items will be brought to TAC and Board for discussion, direction, and/or action at upcoming meetings (3/30/23). Site visit is being scheduled for partner outreach and funding (4/28/23).



RDS Maintenance Report

To: CCBWQA TAC
From: Rick Gonçalves, RDS Maintenance Manager
Date: April 24, 2023
Subject: RDS Testing and Season Startup

April 7-

- Rich Borchardt, Erin Stewart and I met at the compressor building to begin season startup procedures.
- Found the compressor building open, doors ajar, and the lower pressure regulator and its piping disassembled.
- With no entries on the Maintenance log explaining what had happened, we decided to cancel the test until we could find out what the situation was.
- After contacting Ingersoll Rand, I found out, from Jeff Handley of IR that the maintenance personnel who were working at the facility had been let go for doing poor work, at our compressor as well as elsewhere and he said he would go out to check out and start the compressor.
- I related to CPW that vandalism was not the problem with the doors.
- Later in the day, Jeff called to say that the compressor was “good to go” and that the aerators were pumping air into the reservoir.
- He also said that he would arrange to get the piping and pressure regulator reinstalled, and leave the compressor shut off. He also said that the problem with the piping and lower regulator was caused by poor piping design that allowed water that is naturally produced by compressing air to accumulate at the low spots in the pipe then freeze and break the pipe and regulator.

April 14-

- Started the compressor at 12:30pm then proceeded with Erin Stewart to inspect the aerator plumes by boat.
- Found two aerators out of order, and established their locations by GPS to forward to B&RW for repair.
- Blair Wacha of B&RW was contacted and related to me that he would be out early morning on April 17 to repair the faulty aerators.
- Finished our inspection of the system and shut the compressor off at 1:45pm.

April 17-

- B&RW finished its repair of the two identified aerators and a third that he had found.
- Blair called me to give details of the repairs, all of which were situations where the plastic flow regulators had been blown out of place by backpressure, probably caused during shutdown.
- We will be revising our shutdown procedures for the end of the operating season.
- With notice that the system was operating in good condition, I directed Blair to leave the compressor on at 40 psi.
- I then notified CCBWQA staff, Parks personnel and managers that the RDS was on and operating for the season.

April 19-

- Went out to the reservoir twice to perform the final two pressure step increases to 50 psi and 55 psi which were performed at least 4 hours apart, as per Authority Operations Policy.

April 20-

- Received a quote from Ingersoll Rand for \$2,992.45 to repair the compressor piping to and from the lower pressure regulator that was damaged by water that is normal in air compression that accumulated, froze, and broke the pipe and regulator, replace the broken pressure regulator, and revise the piping to provide drop-legs with purge valves to prevent accumulated water from freezing and breaking the pipes again.
- This repair is not covered under warranty, as the warranty only covers the compressor itself.
- The entire system was designed to meet Authority directed operating parameters of “between April and November” and the building heater was designed to produce enough heat within those parameters to allow the compressor to work with at a minimum of 38 degrees. No one anticipated needing the building to be heated during the off season, as there would have been no need to. Except for accumulated water in the pipes? No one anticipated that either. Heating the building to prevent accumulated water from freezing would not have been the prudent solution. Providing drop legs and purging the water at the end of the operating season is.

April 24-

- The repair cost has been approved by the Executive Committee and a work order prepared.
- The repair work should be done in the next couple of weeks and won't affect the operation of the system in the meantime.