



COLORADO

**Colorado Water
Conservation Board**

Department of Natural Resources

1313 Sherman Street, Room 718
Denver, CO 80203

August 24, 2017

Colorado Trout Unlimited
Attn: Denver Trout Unlimited
Mr. Scott Schreiber, President
1526 Wynkoop St, Suite 320
Denver, CO 80202

**RE: Notice to Proceed – WSRF Grant – POGG1 2018-229 Biological and Ecological Benefits from Chatfield Reallocation
Environmental Pool Increased Releases in the Metro Basin**

Dear Scott,

This letter is to inform you that the grant request to assist in the above WSRF grant project has been approved. The attachments serve as your original contracting documents.

With the executed agreement, you are now able to proceed with the project and invoice the State of Colorado for costs incurred through January 31, 2019. Please provide the project name, POGG1 number, and basin when corresponding with or invoicing for your project along with back-up documentation of cost incurred for the WSRF portion of the grant according to the original scope of work. Upon receipt of your invoice(s), the State of Colorado will provide payment no later than 30 days after review and signed approval of the project manager.

Please refer to the current WSRF Criteria & Guidelines on our website for the six month progress report and final deliverable requirements in order to avoid a delay in payment. A 60-day advance notice is required in the event you are seeking an additional amendment to the term of this agreement. An official letter of request to the CWCB project manager briefly describing the need for the extension, updated insurance certificates (if applicable) and an updated schedule reflecting the specific tasks that require additional time to complete is required.

If you have any questions or concerns regarding the project, please contact Chris Sturm, Project Manager at 303-866-3441 3236 or at Chris.Sturm@state.co.us. Please send all project correspondence directly to Chris.

You can contact me at 303-866-3441 ext. 3250 for additional invoicing and payment disbursement questions.

Thank you.

Sincerely,

//s//

Doriann Vigil

Program Assistant II

O 303-866-3441 ext. 3250

1313 Sherman Street, Rm. 719, Denver, CO 80203

Dori.vigil@state.co.us / cwcw.state.co.com

Attachments





STATE OF COLORADO
Department of Natural Resources

ORDER		** IMPORTANT **				
Number: POGG1 PDAA 201800000229		The order number and line number must appear on all invoices, packing slips, cartons and correspondence				
Date: 08/23/17						
Description: PDAA WSRF & WS GRANT-Biological/Ecological Benefits Chatfiel		BILL TO				
Effective Date: 09/01/17 Expiration Date: 01/31/19		COLORADO WATER BOARD CONSERVATION 1313 SHERMAN STREET, ROOM 718 DENVER, CO 80203				
BUYER		SHIP TO				
Buyer:		COLORADO WATER BOARD CONSERVATION				
Email:		1313 SHERMAN STREET, ROOM 718 DENVER, CO 80203				
VENDOR		SHIPPING INSTRUCTIONS				
DENVER TROUT UNLIMITED CHAPTER OF TROUT UNLIMITED CTU ATTN: DTU 1536 WYNKOOP ST SUITE 320 DENVER, CO 80202		Delivery/Install Date: F.O.B: FOB Dest, Freight Allowed VENDOR INSTRUCTIONS:				
Contact: .						
Phone: .						
Line Item	Commodity/Item Code	UOM	QTY	Unit Cost	Total Cost	MSDS Req.
1	G1000		0	0.00	\$10,000.00	<input type="checkbox"/>
Description: PDAA WSRF GRANT-Biological/Ecological Benefits Chatfiel						
Service From: 09/01/17 Service To: 01/31/19						
Line Item	Commodity/Item Code	UOM	QTY	Unit Cost	Total Cost	MSDS Req.
2	G1000		0	0.00	\$20,500.00	<input type="checkbox"/>
Description: PDAA WSRF & WS GRANT-Biological/Ecological Benefits Chatfiel						
Service From: 09/01/17 Service To: 01/31/19						
TERMS AND CONDITIONS						
https://www.colorado.gov/osc/purchase-order-terms-conditions						
DOCUMENT TOTAL = \$30,500.00						



Colorado Watershed Restoration Program: Stream Management Plan Grant Application

Scope of Work

Grantee or Fiscal Agent: Denver Trout Unlimited

Primary Contact: Scott Schreiber

Address: 3455 York Street, Denver, Colorado, 80205

Phone: 423-943-7500

Project Name: Biological and Ecological Benefits from Chatfield Reallocation Environmental Pool Increased Releases

Colorado Watershed Grant Amount: \$20,500

Water Supply Reserve Account: \$10,000

Cash Matching Fund: \$11,000

In-Kind Matching: \$5,000

Total Project Cost \$46,500

Introduction and Background:

Denver Trout Unlimited proposes to develop the Biological and Ecological Benefits from Chatfield Reallocation Environmental Pool Increased Releases Study (Study) as a stream management plan for the South Platte River. Our Study will ultimately establish recommendations to maintain, protect and enhance the biological and ecological functions of the South Platte River from increased flow releases with water available through the Chatfield Reallocation Environmental Pool. To arrive at these recommendations, our Study will evaluate the environmental and recreational benefits for multiple users from these releases.

The ultimate goal of this multi-phased plan is to develop a decision-support system to determine specific timing and what volume water should be released from the Environmental Pool during low flow days. This Study will help to understand augmented flow releases possible and how to manage flows in the South Platte River for future generations. The analysis would include a determination of change in wetted area by stream flow as a metric for biological productivity.

Analysis of water depths as a function of flow would be used as a metric to determine the amount of refuge habitat for fish by season. An analysis of peak flows for each year would provide a metric for evaluation of bankfull and overbank flow for riparian benefits. The final deliverable will include the interim technical memorandums that document each task as well as the draft Stream Management report that incorporates the analysis into a management framework for operational release of the environmental flows.

The project will include stakeholder engagement to ensure various users of the South Platte are included in the study. Stakeholders will include the project sponsors, but more generally recreationalist, environmentalist, municipal water users, downstream water users, aquatic and terrestrial species, along with a number of agencies including: American Society of Civil Engineers, Colorado Trout Unlimited, Colorado Water Conservation Board, South Platte Coalition for Urban River Evaluation, Central Colorado Water Conservancy District, Colorado Parks and Wildlife, Chatfield Reservoir Mitigation Company. An initial kickoff meeting will be conducted prior to the start of any work to allow project sponsors and



Colorado Watershed Restoration Program: Stream Management Plan Grant Application

stakeholders to comment on the proposed scope of work. These stakeholders will be engaged throughout the project through meetings and workshops.

Objectives:

The objectives of the project include:

- Determine the biological and ecological benefit of additional flows by season in the South Platte River downstream from Chatfield Dam.
- Develop a stream management plan that provides guidance on operational release of flows for biological and ecological benefits. Multiple secondary benefits will be possible with these flows.

Tasks:

Tasks for this project include:

1. Hydrologic analysis of stream flow downstream from Chatfield Reservoir.
2. Characterization of biological and ecological conditions as a function of stream flow specific to the study reach.
3. Development of the stream management plan to guide future releases of environmental flows.

Task 1 – Hydrologic analysis of stream flow downstream from Chatfield Dam

Description of Task

This task will identify stream flow characteristics at gauged locations downstream from Chatfield Reservoir for existing conditions and potential conditions that could result from environmental pool releases. The applicable gages will need to be determined once evaluated based upon years of record and reliability of measurements, but will coordinated with existing and on-going studies.

Method Procedure

Standard hydrologic techniques will be used to identify seasonal stream flow characteristics at each gage location. These characteristics include but may not be limited to: average daily flow, median daily flow, minimum daily flow, maximum daily flow and days of zero flow. The analysis will use both spreadsheet analysis and available software such as TS Tool from Open Water Foundation. The characteristics will be summarized by location for use in Task 2. HEC-SSP analysis will be conducted to develop recurrence interval based flows also, including bankfull hydrology.

Deliverable

Deliverables for this task include:

- Spreadsheets with the data sets used for analysis
- Brief technical memorandum, which includes the results in tabular format.



Colorado Watershed Restoration Program: Stream Management Plan Grant Application

Task 2 – Characterization of biological and ecological conditions as a function of stream flow.

Description of Task

This task will use existing physical habitat data to determine the biological and ecological conditions as a function of stream flow. The conditions will be developed for existing conditions and for potential benefits from the release from the environmental pool.

Method Procedure

This task will use existing physical habitat data for the South Platte River downstream from Chatfield Reservoir. These data include stream cross sections, wetted perimeter and water surface elevations at a range of flows. A preliminary analysis of the change in physical habitat with flow was completed in 2008 and again in 2016. These previous analyses will be reviewed and new analysis completed as needed to demonstrate how various release amounts would benefit the biological and ecological conditions downstream from Chatfield Dam. The analysis would include a determination of change in wetted area by stream flow as a metric for biological productivity of the species being evaluated, brown trout, channel catfish, and sand shiners. In addition, the amount of wetted channel width is an indicator of potential biological productivity for benthic macroinvertebrates and other lower trophic level species. Analysis of water depths as a function of flow would be used as a metric to determine the amount of refuge habitat for fish by season. An analysis of peak flows for each year would provide a metric for evaluation of bankfull and overbank flow for riparian benefits. Our team will work with stakeholders to identify riparian species through the project and amount of overbank and riparian flow required to be sustainable.

Below is a list of the potential sites to be evaluated from the existing Chatfield EIS:

- City of Littleton South Platte Park – 6 cross sections (downstream of C470)
- Denver Water Data sets upstream of Union Street, Upstream of Evans, and Upstream of Franklin Street – 11 cross sections
- Metro Wastewater – Burlington Ditch downstream 5 cross sections

This task would also include a summary of the biological and other physical data, where available. This could include a summary of fish population or presence as summarized by CPW monitoring. Water temperature monitoring would provide data on the benefit of the release in late summer and may be available from USGS gages, municipal water treatment plants, or collected by the River Watch network.

Deliverable

Deliverables for this task include:

- Spreadsheets with the data used for analysis



Colorado Watershed Restoration Program: Stream Management Plan Grant Application

- Tabular and graphical presentation of the analysis showing the changes to biological and ecological conditions. Graphs will show correlation between wetted perimeter, average depth, and average velocity.
- Brief technical memorandum, which includes methods, data analysis and results.

Task 3 – Draft Stream Management Plan to Guide Future Releases of the Environmental Pool.

Description of Task

This task will develop a draft stream management plan to guide future releases from the environmental pool. The basis for the plan will come from the results of Task 1 and Task 2. The purpose of the Stream Management Plan is to provide guidelines for release of the environmental pool that is most beneficial to downstream biological and ecological conditions.

Method Procedure

Tasks 1 and 2 will provide the basic data for developing the stream management plan. The best use of the additional volume may vary from year to year. To optimize the use of the water, there may be the need to make annual decisions on the operational release of the water, if possible. This could take place in late winter or early spring to evaluate the predicted snowpack/runoff and expected storage. The release could be set based on expected volumes and past year's releases. A desired release regime will be designed prior to the initial release and then used as a reference for deciding how to release the water each year. The desired release regime will be a simple matrix of expected water year conditions and expected meteorological conditions. The evaluation will also include a comparison and prioritization of benefits to the ecosystems varying for summer and winter flows.

For example, in years with warmer summer conditions, additional releases in late summer would likely help moderate water temperature in the upper section of the river in South Platte Park and increase wetted area for additional instream productivity through Denver. An increase from 10 cubic feet per second (CFS) to 30 CFS would nearly triple the wetted area in riffles in South Platte Park and substantially increase riffle area in downstream reaches. Releases higher than 30 CFS provide even more wetted area at the cost of fewer days of release. The overall cost to the ecosystem may be the inability to make a winter release to raise the extreme low flows that occur.

Balancing the amount to release (CFS), the number of days to release, and seasonal timing of release (summer vs. winter, or both seasons) will need to be an ongoing process. An adaptive approach to the operation would be best, which would allow the operation to be refined as the year's progress. The plan will provide information on refining and comparing flows from different seasons and provide guidance how to act on these evaluations. The draft plan will also include a recommendation for monitoring and guidelines for use in refinement to the recommended releases.



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Deliverable

The deliverable for this task is the draft Stream management report.

Task 4 – Final Stream Management Plan to Guide Future Releases of the Environmental Pool.

Description of Task

This task will develop a final Stream Management Plan based upon comments from the draft plan. These comments will be developed from use of public outreach and stakeholder meetings.

Method Procedure

Once the draft Stream Management Plan has been developed, it will be circulated for feedback from our stakeholders. The draft plan will be presented at one of the stakeholder meetings to provide information on the plan and direction how to provide feedback. This feedback will then be incorporated into the final Stream Management Plan.

Deliverable

The deliverable for this task is the final Stream Management Plan.

Task 5 to 8 – Public Education and Outreach along with Stakeholder Meetings

Description of Task

Tasks 4 through 7 cover public education and outreach along with three stakeholder meetings that will be held. Public Education and Outreach will take place through Denver Trout Unlimited. This will be conducted at monthly meetings for the chapter along with at our annual fundraiser in 2017 and 2018, since the project will span our event. At meetings and events, the project will be discussed and findings highlighted. This will include a small presentation at our annual event, Carp Slam 2018, this year to inform people of the study along with the following year to present the results. A poster with information on the event has been attached.

Along with the education and outreach, three stakeholder meetings are planned to allow comments and feedback from the numerous interested parties. These stakeholder meetings will be open to everyone. Bill Miller and Scott Schreiber will both donate their time and travel expenses to facilitate these meetings.

REPORTING AND FINAL DELIVERABLE

Reporting

DTU and Miller Ecological will provide a progress report to CWCB every 6 months for the project, beginning from the date of the executed contract. The progress report shall describe



Colorado Watershed Restoration Program: Stream Management Plan Grant Application

the completion or partial completion 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.

Final Deliverable:

At completion of the project, DTU and Miller Ecological shall provide the CWCB a final report that summarizes the project and documents how the project was completed. This report may contain photographs, summaries of meetings and engineering reports/designs. DTU and Miller Ecological will also make themselves available for presentations the CWCB or Roundtable might request.

BUDGET AND SCHEDULE

Task	Description	Target Start Date	Target Completion Date	CWCB Watershed Restoration Funds	CWCB Water Supply Reserve Funds	Cash Matching Funds	In-Kind Matching Funds	Total
1	Hydrologic Summary and Analysis	9/1/2017	11/1/2017	\$5,000	\$2,000	\$2,000	\$500	\$9,500
2	Characterization of Biological and Ecological	11/1/2017	1/15/2018	\$5,000	\$4,000	\$4,000	\$500	\$13,500
3	Draft Stream Management Plan	1/15/2018	5/1/2018	\$5,000	\$2,000	\$2,500	\$500	\$10,000
4	Final Stream Management Plan	5/1/2018	1/31/2019	\$5,000	\$2,000	\$2,500	\$500	\$10,000
5	Public Education and Outreach	9/1/2017	5/1/2018	\$500				\$500
6	Stakeholder Meeting 1	9/15/2017	9/15/2017				\$1,000	\$1,000
7	Stakeholder Meeting 2	1/15/2018	1/15/2018				\$1,000	\$1,000
8	Stakeholder Meeting 3	5/1/2018	5/1/2018				\$1,000	\$1,000
Totals				\$20,500	\$10,000	\$11,000	\$5,000	\$46,500