

**Water Supply Reserve Fund
Water Activity Summary Sheet
March 10-11, 2021
Consent Agenda Item 2(n)**

Applicant & Grantee: Mountain Studies Institute

Water Activity Name: 416-Fire Aquatic Monitoring Year 3

Water Activity Purpose: Agricultural, Education & Outreach, Municipal/Industrial Needs Assessment, Nonconsumptive (Environmental & Recreational) - Study

County: La Plata

Drainage Basin: San Juan River Basin

Water Source: Animas River

Amount Requested: \$1,720 Southwest Basin Account
\$17,180 Statewide Account
\$18,900 Total Request

Matching Funds: **Basin Account Match = \$1,720**

- 10% of statewide request (meets 10% min)

Applicant & 3rd Party Match = \$11,500 (cash)

- 67% of the statewide request (meets 10% min)

Total Match (Basin request & Applicant Match) = \$13,220

- 77% of the statewide request (meets 50% min)

Staff Recommendation:
Staff recommends approval of up to \$1,720 from the Southwest Basin Account and \$17,180 from the Statewide Account to help fund the project: 416-Fire Aquatic Monitoring Year 3

Water Activity Summary: Following the 416-Fire, the applicant formed a research team made up of scientists from the Mountain Studies Institute (MSI), Colorado School of Mines, and US Forest Service Rocky Mountain Research Station to investigate impacts and recovery of water quality and aquatic life. Even though there are signs of recovery in the two years after the fire (e.g., recovering benthic communities, less elevated water quality contaminants), it is unknown how these impacts may persist into 2021 and when full recovery will occur.

Southwest Colorado experienced a weak monsoon season in 2019 and 2020. With the possibility of a stronger monsoon season in 2021, there is a need to continue monitoring downstream of the 416-burn area to characterize further impacts to water quality and aquatic life.

The applicant is requesting WSRF funding to continue Year 3 research efforts to: Evaluate water quality impacts from the 416-Fire in context of the use of these waters for irrigation, water supply, recreation, and aquatic life; and document the recovery of water quality and aquatic life following the 416-Fire to share with concerned public members and more broadly understand the recovery of river health after a wildfire.

Discussion: This project falls under IPP 1-MB of the Southwest Basin Implementation Plan. It also meets the measurable goals or outcomes of the BIP by supporting specific and unique IPPs important to maintaining the quality of life in this region; promotes dialogue, foster cooperation and resolve conflict among water interests; maintains watershed health; provide safe drinking water; maintain, protect and enhance recreational and economic values; encourage and support restoration, recovery and sustainability of threatened and imperiled aquatic and dependent species; protect, maintain, monitor and improve the condition and natural function of streams, lakes, wetlands, and riparian areas; and monitor, protect and improve water for all classified users.

Issues/Additional Needs: No issues or additional needs have been identified.

Eligibility Requirements: The application meets requirements of all eligibility components.

Evaluation Criteria: Staff has determined this activity satisfies the Evaluation Criteria.

Funding Sources/Match	Cash	In-Kind	Total	Status
City of Durango	\$10,000	\$0	\$10,000	Secured
Animas Water Company	\$500	\$0	\$500	Secured
Community Emergency Relief Fund	\$1,000	\$0	\$1,000	Secured
Sub Total Matching Funds	\$11,500	\$0	\$11,500	
WSRF Southwest Basin Account	\$1,720	\$0	\$1,720	Secured
WSRF Statewide Account	\$17,180	\$0	\$17,180	
Sub Total WSRF Funds	\$18,900	\$0	\$18,900	
Total Project Costs	\$30,400	\$0	\$30,400	

CWCB Project Manager: Ben Wade



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Colorado Water Conservation Board
Water Supply Reserve Fund Grant Application

Instructions

All WSRF grant applications shall conform to the current [2020 WSRF Criteria and Guidelines](#).

To receive funding from the WSRF, a proposed water activity must be recommended for approval by a Roundtable(s) **AND** the approved by the Colorado Water Conservation Board (CWCB). The process for roundtable consideration and recommendation is outlined in the 2020 WSRF Criteria and Guidelines. The CWCB meets bimonthly.

If you have questions, please contact the WSRF Grant Program Manager (for all Roundtables) or your Roundtable Liaison:

Ben Wade
ben.wade@state.co.us
303-866-3441 x3238 (office)

Sam Stein
Sam.stein@state.co.us
303-866-3441 (office)

WSRF Submittal Checklist (Required)

YES ☒ NO ☐ This request was recommended for CWCB approval by the sponsoring roundtable.

YES ☒ NO ☐ I have read and understand the [2020 WSRF Criteria and Guidelines](#).

YES ☒ NO ☐ Grantee will be able to contract with CWCB using the [Standard Contract](#).¹

Application Documents included:

YES ☒ NO ☐ Exhibit A: Statement of Work² (*Word – see Template*)

YES ☒ NO ☐ Exhibit B: Budget & Schedule² (*Excel Spreadsheet – see Template*)

YES ☐ NO ☐ Letters of Matching and/or Pending 3rd Party Commitments²

YES ☒ NO ☐ Map²

YES ☒ NO ☐ Photos/Drawings/Reports

YES ☒ NO ☐ Letters of Support

Contracting Documents³

YES ☐ NO ☐ Detailed/Itemized Budget³ (*Excel Spreadsheet – see Template*)

YES ☐ NO ☐ Certificate of Insurance⁴ (*General, Auto, & Workers' Comp.*) (will share during contracting)

YES ☐ NO ☐ Certificate of Good Standing⁽⁴⁾ (will share during contracting)

YES ☐ NO ☐ W-9 Form⁴ (will share during contracting)

YES ☐ NO ☐ Independent Contractor Form⁴ (*If applicant is individual, not company/organization*)

YES ☐ NO ☐ Electronic Funds Transfer (ETF) Form⁴ (will share during contracting)

¹Click "Grant Agreements". For reference only/do not fill out or submit/required for contracting

² Required with application if applicable.

³ Additional documentation providing a Detailed/Itemized Budget maybe required for contracting. Applicants are encouraged to coordinate with the CWCB Project Manager to determine specifics.

⁴ Required for contracting. While optional at the time of this application, submission can expedite contracting upon CWCB Board approval.



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Schedule		
CWCB Meeting	Application Submittal Dates	Type of Request
January	October 1	Basin Account
March	December 1	Basin/Statewide Account/Water Plan Grant Match ¹
May	February 1	Basin Account
July	April 1	Basin Account
September	June 1	Basin/Statewide Account
November	August 1	Basin Account

¹ If either the basin or statewide match includes matching funds from a pending Water Plant Grant, both must be submitted by December 1st deadline for March Board meeting review.

Water Activity Summary		
Name of Applicant	Mountain Studies Institute on behalf of 416-Fire Aquatic Monitoring Research Group	
Name of Water Activity	416-Fire Aquatic Monitoring Year 3	
Approving Roundtable(s)		Basin Account Request(s) ¹
Southwest Basin Roundtable		\$1,720
Basin Account Request Subtotal		\$1,720
Basin Account Request Subtotal Approved by Roundtable		
Statewide Account Request ⁽¹⁾		\$17,180
Total WSRF Funds Requested (Basin & Statewide)		\$18,900
Total Project Costs		\$30,400

¹ Please indicate the amount recommended for approval by the Roundtable(s)

Grantee and Applicant Information	
Name of Grantee(s)	Mountain Studies Institute
Mailing Address	679 E 2 nd Ave, Suite 8, Durango, CO



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Grantee and Applicant Information	
FEIN	73-1644103
Grantee's Organization Contact¹	Marcie Bidwell
Position/Title	Executive Director
Email	Marcie@mountainstudies.org
Phone	970-387-5161
Grant Management Contact²	Jeff Connors
Position/Title	Finance Director
Email	Jeff@mountainstudies.org
Phone	970-387-5161
Name of Applicant (if different than grantee)	Scott W Roberts
Mailing Address	679 E 2nd Ave, Suite 8, Durango, CO
Position/Title	Director of Water Programs
Email	Scott@mountainstudies.org
Phone	970-387-5161

¹ Person with signatory authority

² Person responsible for creating reimbursement invoices (Invoice for Services) and corresponding with CWCB staff.

Description of Grantee
Provide a brief description of the grantee's organization (100 words or less).
<p>Mountain Studies Institute (MSI) is respectfully submitting this application on behalf of the 416-Fire Aquatic Monitoring Research Group, which formed to investigate impacts on water quality and aquatic life from the 2018 416-Fire in southwest Colorado. The research group consists of scientists from MSI, Colorado School of Mines, and the US Forest Service Rocky Mountain Research Station. MSI is an independent not-for-profit mountain research and education center established in 2002 with offices and lab space in Durango and Silverton, CO. MSI develops "science that people can use" to address local and regional environmental issues.</p>

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
	Private Individuals, Partnerships, and Sole Proprietors: are eligible for funding from the Basin Accounts but not for funding from the Statewide Account.
X	Non-governmental organizations: broadly, any organization that is not part of the government
	Covered Entity: as defined in Section 37-60-126 Colorado Revised Statutes



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Type of Water Activity (check one)	
<input checked="" type="checkbox"/>	Study
<input type="checkbox"/>	Implementation

Category of Water Activity (check all that apply)		
<input checked="" type="checkbox"/>	Nonconsumptive (Environmental)	
<input checked="" type="checkbox"/>	Nonconsumptive (Recreational)	
<input checked="" type="checkbox"/>	Agricultural	
<input checked="" type="checkbox"/>	Municipal/Industrial	
<input checked="" type="checkbox"/>	Needs Assessment	
<input checked="" type="checkbox"/>	Education & Outreach	
<input type="checkbox"/>	Other	Explain:

Location of Water Activity	
Please provide the general county and coordinates of the proposed activity below in decimal degrees . The Applicant shall also provide, in Exhibit C, a site map if applicable.	
County/Counties	La Plata County
Latitude	37.4158
Longitude	-107.837

Water Activity Overview
<p>Please provide a summary of the proposed water activity (200 words or less). Include a description of the activity and what the WSRF funding will be used for specifically (e.g. studies, permitting, construction). Provide a description of the water supply source to be utilized or the water body affected by the activity. 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, area of habitat improvements. If this project addresses multiple purposes or spans multiple basins, please explain.</p> <p>The Applicant shall also provide, in Exhibit A, a detailed Statement of Work, Budget, and Schedule.</p>



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Water Activity Overview

To investigate impacts and recovery of water quality and aquatic life following the 416-Fire, we formed a research team made up of scientists from the Mountain Studies Institute (MSI), Colorado School of Mines, and US Forest Service Rocky Mountain Research Station. While we have begun to see signs of recovery in the two years after the fire (e.g., recovering benthic communities, less elevated water quality contaminants), it is unknown how these impacts may persist into 2021 and when full recovery will occur. It is notable that southwest Colorado experienced a weak monsoon season in 2019 and 2020. With the possibility of a stronger monsoon season in 2021, there is a need to continue monitoring downstream of the 416-burn area to characterize further impacts to water quality and aquatic life. We are respectively requesting funding to continue our research efforts to:

- Evaluate water quality impacts from the 416-Fire in context of the use of these waters for irrigation, water supply, recreation, and aquatic life.
- Document the recovery of water quality and aquatic life following the 416-Fire to share with concerned public members and more broadly understand the recovery of river health after a wildfire.

Measurable Results

To catalog measurable results achieved with WSRF funds please provide any of the following values.

	New Storage Created (acre-feet)	
	New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive	
	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)	
	Length of Pipe/Canal Built or Improved (linear feet)	
X	Other	Explain:

Water Activity Justification

Provide a description of how this water activity supports the goals of [Colorado's Water Plan](#), the most recent [Statewide Water Supply Initiative](#), and the respective [roundtable Basin Implementation Plan and Education Action Plan](#) ⁽¹⁾. 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).

For applications that include a request for funds from the Statewide Account, the proposed water activity shall be evaluated based upon how well the proposal conforms to Colorado's Water Plan criteria for state support (CWP, Section 9.4, pp. 9-43 to 9-44;) (Also listed pp. 4-5 in [2020 WSRF Criteria and Guidelines](#)).



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Water Activity Justification

The alignment with BIP goals & the Colorado Water Plan are identified in Tables 1.1 and 1.2 below, respectively.

Table 1.1: Alignment with SW Basin Implementation Plan

GOAL	MEASURABLE OUTCOME	PROJECT-RELATED MEASURABLE OUTCOME
A2: Support specific and unique new IPPs important to maintaining the quality of life in this region, and to address multiple purposes including municipal, industrial, environmental, recreational, agricultural, risk management, and compact compliance needs.	Supports, or assists, in achievement of outcomes 3,5, and 6	The proposed project will provide valuable information on how wildfire in southwest Colorado impacts water quality for users such as irrigators, livestock owners, recreationalists, and domestic water suppliers. This research will further our understanding of the recovery of river health after wildfire and will serve as information to guide future decision makers.
A4: Promote dialogue, foster cooperation and resolve conflict among water interests in every basin and between basins for the purpose of implementing solutions to Southwest Colorado's and Colorado's water supply challenge (<i>SWSI 2010</i>).	Supports, or assists, in achievement of outcome 3	Cooperation and conflict resolution is greatly bolstered by the availability of up-to-date, relevant information to all water interests. Our work will provide an independent source of information regarding the impacts to, and recovery of, water quality and aquatic life following wildfire.
A5: Maintain watershed health by protecting and/or restoring watersheds that could affect critical infrastructure and/or environmental and recreational values.	Supports, or assists, in achievement of outcomes 5 & 6	Our research will provide decision-makers with relevant information needed to justify whether treatment or mitigation strategies may be necessary to address water quality concerns following wildfire.
C2: Provide safe drinking water to Southwest Colorado's citizens and visitors		Our research will provide up-to-date, relevant, water quality information that is crucial to water suppliers evaluating changing water quality conditions following wildfire.
D1: Maintain, protect and enhance recreational values and economic	Supports, or assists, in	We will document the recovery of Animas River aquatic life and



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Water Activity Justification		
values to local and statewide economies derived from recreational water uses, such as fishing, boating, hunting, wildlife watching, camping and hiking.	achievement of outcome 3	associated water quality, which will be a valuable message to convey to resident and visiting recreationists that our local economies depend on.
E1: Encourage and support restoration, recovery, and sustainability of endangered, threatened, and imperiled aquatic and riparian dependent species and plant communities.	Supports, or assists, in achievement of outcomes 1-5	Our research will provide information about the impacts and recovery of river health following wildfire, which will be relevant for the management of endangered, threatened, and imperiled species.
E2: Protect, maintain, monitor and improve the condition and natural function of streams, lakes, wetlands, and riparian areas to promote self-sustaining fisheries, and to support native species and functional habitat in the long term, and adapt to changing conditions.	Supports, or assists, in achievement of outcomes 1-5.	We will directly monitor streams to address how river health is affected by wildfire and how recovery occurs. Our monitoring will document how aquatic life may or may not adapt to changing conditions such as wildfire.
F1: Monitor, protect and improve water quality for all classified users	Supports, or assists, in achievement of outcome 1 & 2	Following the 416-Fire, we detected water quality conditions that surpassed water quality standards in 2018-20. It is unknown how long these water quality impacts from the 416-Fire may persist. For regulatory purposes, the state of Colorado generally considers rivers to recover from wildfire impacts after five years. This study will provide additional evidence as to whether the five-year recovery time period is a reasonable assumption.



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Water Activity Justification

Table 1.2: Project Alignment with Colorado Water Plan

GOAL	PROJECT-RELATED MEASURABLE OUTCOME
H1: Education, Outreach, and Innovation: Colorado's Water Plan sets a measurable objective to significantly improve the level of public awareness and engagement regarding water issues statewide by 2020, as determined by water awareness surveys. Colorado's Water Plan also sets a measurable objective to engage Coloradans statewide on at least five key water challenges (identified by CWCB) that should be addressed by 2030.	One of the goals of the proposed project is to increase the level of public awareness regarding the impacts of wildfire on water quality and the health of aquatic life. Our work will provide valuable information to the public about how wildfire in southwest Colorado impacts water quality for users such as irrigators, livestock owners, recreationalists, and domestic water suppliers. More broadly, this research will further our understanding of the recovery of river health after wildfire. We will convey findings to the public through reports, public meetings, direct information to ditch users, Animas Valley Grange, and social media.

¹ Access Basin Implementation Plans or Education Action Plans from Basin drop down menu.

Matching Requirements: Basin Account Requests

Basin (only) Account grant requests require a 25% match (cash and/or in-kind) from the Applicant or 3rd party and shall be accompanied by a **letter of commitment** as described in the [2020 WSRF Criteria and Guidelines](#) (submitted on the contributing entity's letterhead). Attach additional sheet if necessary.

Contributing Entity	Amount and Form of Match (note cash or in-kind)
City of Durango	\$1,000 (cash, secured)
Animas Water Company	\$500 (cash, secured)
Community Emergency Relief Fund	\$1,000 (cash, secured)
Total Match	\$2,500
If you requested a Waiver to the Basin Account matching requirements, indicate the percentage you wish waived.	



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Matching Requirements: Statewide Account Requests	
Statewide Account grant requests require a 50% match as described in the 2020 WSRF Criteria and Guidelines . At least of 10% of the required Statewide Account Grant request match shall be cash from Basin Account funds whether that is from one or multiple basins; and the remaining 40% of the required match may be provided from any source, including other grants, cash from the Basin Account, or any combination of cash, in-kind services, or in-kind materials.and shall be accompanied by a letter of commitment . Attach additional sheet if necessary.	
Contributing Entity	Amount and Form of Match (note cash or in-kind):
Southwest Basin Roundtable – Basin Funds	\$1,720 (pending this request)
City of Durango	\$9,000 (cash, secured)
Total Match	\$10,720
If you requested a Waiver to the Statewide Account matching, indicate % you wish waived. (Max 50% reduction of requirement).	

Related Studies
<p>Please provide a list of any related studies, including if the water activity is complimentary to or assists in the implementation of other CWCB programs.</p> <p>We have leveraged our initial efforts to evaluate impacts and recovery of water quality and aquatic life following the 416 Fire (as will be detailed in a forthcoming technical report in spring of 2021) to:</p> <p>Create an online, interactive Story Map to share post-416 Fire monitoring results from forest and aquatic monitoring to provide comprehensive information on research happening across the landscape. This 416 Fire Story Map can be found at http://www.mountainstudies.org/animasriver.</p> <p>Expand our 416 Fire Aquatic Monitoring Group research through:</p> <ul style="list-style-type: none"> -examination of whether metals are bioaccumulating in benthic tissue and algae downstream of the 416 burn area. -assessment of benthic community composition and physical habitat across a gradient of burn severity within the 416 burn area . <p>Collaborate with partners who have launched studies related to the 416 Fire:</p> <ul style="list-style-type: none"> -Partnering with Colorado School of Mines to assess potential aluminum toxicity in two different watershed scenarios: post-fire and watersheds impacted by mining legacy. -Partnering with Colorado School of Mines to examine if indicators of forest recovery in multiple burn areas, including the 416 Fire, can be used as surrogate signals for aquatic ecosystem recovery. -Partnering with numerous Fort Lewis College student research projects examining recovery of vegetation, soils, and water quality following the 416 Fire.



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Previous CWCB Grants
<p>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</p>
<p>CWCP IPCP 2016: 1) Applicant: Mountain Studies Institute (MSI); 2) Water Activity Name: Invasive Phreatophyte Control Program: Animas River Invasive Species Removal Program Phase I; 3) Approving RT: Southwest Basin Roundtable; 4) SWBRT date: November 13, 2015; CWCB date: April 2016; 5) Contract number: CTGG1 PDAA 2016-1860; 6) Other CWCB funds: 0%; 7) Completion date: April 2018</p>
<p>WSRF 2016: 1) Applicant: Mountain Studies Institute (MSI); 2) Project Name: Animas River Community Forum, Phase I; 3) Approving RT: Southwest Basin Round Table; 4) CWCB Date: April 2016; 5) Contract number: POGG1 2016-794, POGG1 PDAA 20160000000000000794, 6) Other CWCB Funds: 0%; 7) Completion Date: September 2017</p>
<p>WSRF 2017: 1) Applicant: Mountain Studies Institute (MSI); 2) Project Name: Animas River Community Forum in the Southwest Basin, Phase II; 3) Approving RT: Southwest Basin Round Table; 4) CWCB Date: July 2017; 5) Contract number: CTGG1 2018-201, POGG1 PDAA 201800000201, 6) Other CWCB Funds: 0%; 7) Completion Date: April 2018</p>
<p>Colorado Water Plan 2018: 1) Applicant: Mountain Studies Institute (MSI); 2) Project Name:, Animas River Removal and Replacement of Invasive Phreatophytes, Phase II; 3) Approving RT: Southwest Basin Round Table; 4) CWCB Date: May 2018; 5) Contract number: POGG1, PDAA, 201900002100, 6) Other CWCB funds: 0% 7) Completion Date: August 2023</p>
<p>Colorado Water Plan- Innovation Fund 2018: 1) Applicant: Mountain Studies Institute (MSI); 2) Project Name: Silverton Science & Innovation Center (SSINC); 3) Approving RT: Southwest Basin Round Table; 4) CWCB Date: Nov 2018; 5) Contract number: POGG1, PDAA, 201900002743, 6) Other CWCB funds: 0% 7) Completion Date: 2020</p>
<p>CWRP and WSRF 2018: 1) Applicant: Mountain Studies Institute (MSI); 2) Project Name: Watershed Grant Upper San Juan Stream Management Planning, Phase I; 3) Approving RT: Southwest Basin Round Table; 4) CWCB Date: 4/27/18; 5) Contract number: POGG1, PDAA, 201800000886; 6) Other CWCB funds: 20.7% 7) Completion Date: 1/31/20</p>
<p>Colorado Watershed Restoration Program Grant 2019: 1) Applicant: Mountain Studies Institute (MSI); 2) Project Name: Animas River Removal and Replacement of Invasive Phreatophytes, Phase II; 3) Approving RT: Southwest Basin Round Table; 4) CWCB Date: 6/1/2020; 5) Contract number: POGG1,PDAA,202000003096, 6) Other CWCB funds: 0% 7) Completion Date: 12/1/2022</p>
<p>WSRF 2019: 1) Applicant: Mountain Studies Institute (MSI); 2) Project Name: Forests to Faucets (F2F): My Water Comes from the San Juan Mountains Teacher Training Workshop Series; 3) Approving RT: Southwest Basin Round Table; 4) CWCB Date: 4/4/19; 5) Contract number: POGG1,PDAA,201900002804, 6) Other CWCB funds: 0% 7) Completion Date: 01/31/22</p>
<p>WSRF 2019: 1) Applicant: Mountain Studies Institute (MSI) on behalf of 416-Fire Aquatic Monitoring Research Group; 2) Project Name: 416-Fire Aquatic Monitoring; 3) Approving RT: Southwest Basin</p>



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Previous CWCB Grants

Round Table; **4) CWCB Date:** 4/4/19; **5) Contract number:** POGG1, PDAA, 201900002894; **6) Other CWCB funds:** 0% **7) Completion Date:** 5/1/22

WSRF 2019: 1) Applicant: Mountain Studies Institute (MSI); **2) Project Name:** Upper San Juan Watershed Enhancement Partnership (WEP) Multiple Use Project; **3) Approving RT:** Southwest Basin Round Table; **4) CWCB Date:** 10/10/19; **5) Contract number:** POGG1, PDAA 202000002332; **6) Other CWCB funds:** 25% **7) Completion Date:** 6/30/22

CWRP and WSRF 2020: 1) Applicant: Mountain Studies Institute (MSI); **2) Project Name:** Upper San Juan Basin Integrated Water Management Plan, Phase II; **3) Approving RT:** Southwest Basin Round Table; **4) CWCB Date:** March 2020; **5) Contract number:** POGG1, PDAA, 202000003065; **6) Other CWCB funds:** 20.7% **7) Completion Date:** 5/31/22

WSRF 2020: 1) Applicant: Mountain Studies Institute (MSI) on behalf of 416-Fire Aquatic Monitoring Research Group; **2) Project Name:** 416-Fire Aquatic Monitoring, Year 2; **3) Approving RT:** Southwest Basin Round Table; **4) CWCB Date:** March 2020; **5) Contract number:** POGG1, PDAA, 202000003020; **6) Other CWCB funds:** 0% **7) Completion Date:** 11/30/2021

Colorado Water Plan 2018: 1) Applicant: Mountain Studies Institute (MSI); **2) Project Name:** WPG GF, Animas River Community Forum; **3) Approving RT:** Southwest Basin Round Table; **4) CWCB Date:** July 2020; **5) Contract number:** POGG1, PDAA, 202100002293; **6) Completion Date:** 6/30/2022

Colorado Water Plan 2020: 1) Applicant: Mountain Studies Institute; **2) Project Name:** Animas River Removal and Replacement of Invasive Phreatophytes, Phase II Continuation and Strategic Mapping; **3) Approving RT:** Southwest Basin Round Table; **4) CWCB Date:** 7/30/2020; **5) Contract number:** POGG1, PDAA, 202100002090; **6) Other CWCB funds:** 30.6% **7) Completion Date:** 9/30/2022

Tax Payer Bill of Rights

The Tax Payer Bill of Rights (TABOR) may limit the amount of grant money an entity can receive. Please describe any relevant TABOR issues that may affect the applicant.

N/A

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SOUTHWEST BASIN ROUNDTABLE'S EVALUATION QUESTIONNAIRE

To assist the Roundtable in determining whether and to what extent a proposed project and/or process meets the values set forth in the By-Laws and goals of the Basin Implementation Plan, the following questions should be addressed separately as can reasonably be answered by the applicant. *Note: this is not an exhaustive list and additional questions may be asked of the applicant.*

1. What benefit(s) does the project provide? Are there multiple purposes? *Note: this does not mean that a single purpose project would be rejected, but for major funding requests, addressing multiple use needs would be an advantage.*

The proposed project will benefit multiple uses (including both consumptive and non-consumptive) by empowering local decision-making (for example, ditch companies, domestic water suppliers, emergency management, recreationalists, and fishery management) that is informed by the most up-to-date information and research. Our work will document the recovery of water quality and aquatic life following the 416 Fire to share with concerned public members and more broadly to further our understanding of the recovery of river health after wildfire. For regulatory purposes, the state of Colorado generally considers rivers to recover from wildfire impacts after five years. This study will provide additional evidence as to whether the five-year recovery time period is a reasonable assumption.

Hermosa Creek has long been a valued tributary in the Animas River Basin and years of focus by community partners lead to the designation of the Hermosa Creek Wilderness and the State of Colorado's Outstanding Waters recognition. Our research will build on the work of the Hermosa Creek Workgroup, who in 2010 prioritized ensuring "water quality stays at current level" and the "trout fishery stays strong."

The analytical toolset we develop for this work can be translatable to other watersheds, where an assessment of the impacts to water resources from forest fire or forest treatment would be beneficial. This work will enable us to provide updates on the condition of the Animas River to stakeholders and community members, including information and data that can be incorporated into future editions of the Animas River Community Forum's Our Animas publication.

2. Outline the steps needed for completion of the project. What permit issues must be overcome? How will funds acquired in this process be used to accomplish the final goal?

Steps/Objectives:
a) Conduct water quality sampling from April through November 2021
b) Collect benthic macroinvertebrate sampling in September 2021
c) Process and identify benthic macroinvertebrate samples in the winter of 2021-22
d) Analyze data, deliver presentations and report in the winter of 2021-22

There are no permits required for this project.

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The funding we respectfully request would be used to cover labor, travel expenses, and field supplies, putting us in a position to most effectively utilize the generous matching contributions from our partners.

3. For prioritization of different proposals and assessment of the merits of the plan, can this project be physically built with this funding? Are further studies needed before actual construction is commenced (if the project anticipates construction)? Will these studies or additional steps delay the completion of the project substantially?

This study does not propose project construction. However, the information derived from the Research Group's monitoring results has informed other project planning and prioritization for the La Plata County and SGM's Watershed Restoration Project for 416 Fire recovery efforts in 2020.

4. Does the proposal envision and anticipate financial or in-kind support from its beneficiaries or from other sources in addition to the funding requested here? Would a loan reasonably address the needs of the applicant or, with a grant, should a recommendation be added to assess the future project status for ability to repay a portion of the grant?

Yes, both cash and in-kind contributions are being offered. This grant would cover ~20% of the total project cost. The applicant derives no direct or exclusive benefit from the project. Rather, the project furthers the water planning goals of the state and the SWBRT and will benefit water users, recreation, and the general community in Southwest Colorado.

5. What is the ability of the sponsor to pay for the project? What actions have been taken to secure local funding? Are there supporting factors which overcome the sponsor's inability to pay? Please provide a summary of the sponsor's financial health such as customer fee structure, mill levy rate, or other applicable information that demonstrates the sponsor's ability to pay for the project. (These could be related to basin water needs and compact considerations).

The proposed project is the initiative of the 416-Fire Aquatic Monitoring Research Group and local community members. Collectively, we have worked together to secure matching funds to be able to successfully execute this project. We will continue to seek additional matching funds and in-kind donations. The sponsor of this proposal is Mountain Studies Institute, an independent not-for-profit mountain research and education center. By forming partnerships with Colorado School of Mines and Rocky Mountain Research Station, we are able to conduct this work in a much more cost effective manner as opposed to working solely through commercial for-profit analytical laboratories.

6. What alternative sources of water or alternative management ideas have you considered? Are there water rights conflicts involving the source of water for the project? If yes, please explain.



Last Update: September 18, 2020
n/a

7. Has there been public input solicited and is there local support for the project? Have the beneficiaries solicited funding, letters or other documentation to demonstrate support?

Many stakeholders affected by the health and function of Hermosa Creek and the Animas River have expressed interest in continued monitoring of water quality, water quantity, and aquatic life following the 416-Fire. Stakeholders include Trout Unlimited, Colorado Department of Public

Health and the Environment, City of Durango, Colorado Parks and Wildlife, U.S. Forest Service, San Juan Citizens Alliance, Rio Grande Watershed Emergency Action Coordination Team, outdoor recreation industries and groups, and interested members of the public. Letters of support from various stakeholders are included in Exhibit C.

8. Is there opposition to the project? If there is opposition, how have those concerns been addressed? Identify any conflicts that may exist and how they will be addressed.

To the best of our knowledge, no opposition exists to the proposed project.

9. Does this project affect the protection and conservation of the natural environment, including the protection of open space? If yes, please explain.

The proposed project will provide information directly applicable to decision makers working to protect and preserve the natural environment, especially in post-fire landscapes.

10. Are there impacts of the proposed action on other non-decreed values of the stream or river? Non-decreed values may include things such as non-decreed water rights or uses, recreational uses and soil/land conservation practices.

No, this project will have no effect on water rights.

11. Does this project relate to local land use plans? If yes, please explain.

The proposed project will provide up-to-date relevant information that could be used by local land use planners and water users.

12. Does the project depend on a conversion of an agricultural water right? If yes, please explain.

No. This project does not depend on the conversion of an agricultural water right.

13. Does the project support agricultural development or protect the existing agricultural economy? If yes, please explain.



Last Update: September 18, 2020

The proposed project will provide relevant water quality information to irrigators and other agriculturalists.

14. Does the project optimize existing water rights and/or existing infrastructure? If yes, please explain.

n/a

15. Does the applicant anticipate future funding requests to complete the additional components of this project? Does the applicant have a long term operation, maintenance and replacement plan? When was the last update of the plan?

The proposed work would characterize the aquatic impacts and potential recovery in the years following the 416-Fire. The interpretation of this information will guide whether further monitoring would be beneficial to the community.

16. Does this project have an education component? If yes, please explain how it is consistent with the Roundtable's Education Action Plan.

We plan to convey research findings to the public through reports, public meetings, direct information to ditch users, Animas Valley Grange, and social media.



Last Update: March 17, 2020

<https://cwcb.colorado.gov/>

<u>Colorado Water Conservation Board</u>	
Water Supply Reserve Fund	
<u>Exhibit A - Statement of Work</u>	
Date:	11/11/2020
Water Activity Name:	416-Fire Aquatic Monitoring Group – Year 3
Grant Recipient:	Mountain Studies Institute on behalf of 416-Fire Aquatic Monitoring Research Group
Funding Source:	Water Supply Reserve Fund
Water Activity Overview: (Please provide brief description of the proposed water activity (no more than 200 words). Include a description of the overall water activity and specifically what the WSRF funding will be used for. (PLEASE DEFINE ALL ACRONYMS).)	
<p>During the summer of 2018, the 416 Fire burned 54,000 acres, primarily in the Hermosa Creek drainage north of Durango, CO. The fire and smoke negatively impacted livelihoods, homeowners, irrigators, and tourism. Subsequent runoff events and debris flows created community concern about the resulting impacts on water quality and aquatic life.</p> <p>To investigate these impacts, we formed a research team made up of scientists from the Mountain Studies Institute, Colorado School of Mines, and USFS Rocky Mountain Research Station. While we have begun to see signs of recovery in the first two years after the fire (e.g., recovering benthic communities, less elevated water quality contaminants), it is unknown how impacts may persist into 2021. Notably, southwest Colorado experienced a weak monsoon season in 2019 and 2020. With the possibility of a stronger monsoon season in 2021, there is a need to continue monitoring downstream of the 416-burn area to characterize further impacts to water quality and aquatic life. Continued data collection in 2021 will allow MSI to readily convey updates of post-fire water quality and aquatic life and inform decision-makers including La Plata County Emergency Management, Animas Consolidated Ditch, Colorado Parks and Wildlife, San Juan National Forest, and drinking water suppliers.</p>	



Last Update: March 17, 2020

<https://cwcb.colorado.gov/>

Objectives: (List the objectives of the project. (PLEASE DEFINE ACRONYMS)).

We are respectfully requesting funding to accomplish the following objectives:

- Evaluate water quality impacts to Hermosa Creek and the Animas River from the 416-Fire in context of the use of these waters for irrigation, water supply, recreation, and aquatic life.
- Document the recovery of water quality and aquatic life following the 416-Fire to share with concerned public members and more broadly to further our understanding of the recovery of river health after wildfire. We are fortunate to have an abundance of pre-fire water quality and benthic macroinvertebrate data that will provide a strong foundation for assessing impacts and recovery from the fire. For regulatory purposes, the state of Colorado generally considers rivers to recover from wildfire impacts after five years. This study will provide additional evidence as to whether the five-year recovery time period is a reasonable assumption.
- Establish monitoring sites on Hermosa Creek and Junction Creek to serve as watershed comparisons of differing forest health, fire history, and forest health treatments.

Specifically, we propose to:

- Task 1: Collect regular and opportunistic storm event water quality samples and evaluate for metals (*see attached table 1 and map 1 for sampling locations*).
- Task 2: Collect and enumerate benthic macroinvertebrate samples (*see attached table 1 and map 1 for sampling locations*).
- Task 3: Analyze data and convey findings to the public through reports, public meetings, direct information to ditch users, and social media.

Water quality samples will be collected from three locations and benthic macroinvertebrate samples will be collected from eighteen locations (Exhibit D).

Tasks

Provide a detailed description of each task using the following format: (PLEASE DEFINE ACRONYMS)

Task 1 – Water Quality Sampling

Description of Task:

Evaluate water quality impacts on Hermosa Creek and the Animas River from the 416-Fire in context of the use of these waters for irrigation, water supply, recreation, and aquatic life.

Method/Procedure:



Last Update: March 17, 2020

<https://cwcb.colorado.gov/>

Tasks
We will collect regular monthly samples at three locations from April through October across hydrologic regimes, including baseflow, peak spring runoff, and the rising and falling limbs of spring runoff. We will also collect opportunistic water quality samples to characterize conditions during storm events and debris flows. For metals and sediment analysis, we will utilize Colorado School of Mines lab.
Grantee Deliverable: (Describe the deliverable the grantee expects from this task)
Water quality results in context of historical observations and water quality standards.
CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)
This information will provide a comprehensive understanding of the post-fire water quality conditions during stable flows, debris flows, and flood events. Data will be made available to Colorado state and local agencies.

Tasks
Provide a detailed description of each task using the following format: (PLEASE DEFINE ACRONYMS)
<u>Task 2 – Benthic Macroinvertebrate Assessment</u>
Description of Task:
Collect and enumerate benthic macroinvertebrate samples to compare to pre-fire observations.
Method/Procedure:
<p>We will collect benthic macroinvertebrates community samples from eighteen locations. Sites will be distributed upstream of the burn area, within the burn area, and downstream of the burn area. At six locations, we will also collect benthic macroinvertebrate tissue samples for analysis of metals in tissue.</p> <p>We will process and identify benthic community samples in Mountain Studies Institute aquatics lab. ACZ Lab will analyze tissue samples. Our methodology for collecting and enumerating benthic macroinvertebrates will closely follow pre-fire methodologies employed by Mountain Studies Institute so that post-fire observations are directly comparable to post-fire observations.</p>
Grantee Deliverable: (Describe the deliverable the grantee expects from this task)
Up-to-date information to share with the public regarding the impacts to and recovery of benthic macroinvertebrate communities, as an indication of overall river health, following the 416-Fire.
CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)
A better understanding of the recovery of river health after wildfire. For regulatory purposes, the state of Colorado generally considers rivers to recover from wildfire impacts after five years. This study will provide additional evidence as to whether the five-year recovery time period is a reasonable assumption. Data will be made available to Colorado state and local agencies.



Last Update: March 17, 2020

<https://cwcb.colorado.gov/>

Tasks
Provide a detailed description of each task using the following format: (PLEASE DEFINE ACRONYMS)
<u>Task 3 – Analysis, Reporting, and Outreach</u>
Description of Task:
Analyze data and convey findings to the public through reports, public meetings, direct information to ditch users, community networks (e.g., Animas Valley Grange), and social media platforms.
Method/Procedure:
We will compare post-fire water quality and aquatic life data to pre-fire observations visually in graphs as well as with statistical analysis.
Grantee Deliverable: (Describe the deliverable the grantee expects from this task)
We will produce a technical report and an executive summary in easily digestible language intended for the public. We will convey results to the public through public meetings, social media, and direct communication to organizations such as ditch operators.
CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)
Technical report, executive summary, press release of information, and public presentation.

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

Budget and Schedule
Exhibit B - 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 <u>excel format</u> . A separate <u>excel formatted</u> Budget is required for engineering costs to include rate and unit costs.

Reporting Requirements
Progress Reports: The grantee 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. The CWCB may withhold reimbursement until satisfactory progress reports have been submitted.
Final Report: At completion of the project, the grantee shall provide the CWCB a Final Report on the grantee's letterhead that: <ul style="list-style-type: none">• 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.
Payments



Last Update: March 17, 2020

<https://cwcb.colorado.gov/>

Reporting Requirements

Payment will be made based on actual expenditures, must include invoices for all work completed and must be on grantee's letterhead. 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.

The CWCB will pay the last 10% of the entire water activity 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 water activity and purchase order or contract will be closed without any further payment. Any entity that fails to complete a satisfactory Final Report and submit to CWCB within 90 days of the expiration of a purchase order or contract may be denied consideration for future funding of any type from CWCB.

Performance Requirements

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

(b) Accountability: Per the 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 the 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.

Last Update: December 17, 2019



COLORADO
Colorado Water
Conservation Board
Department of Natural Resources

Colorado Water Conservation Board

Water Supply Reserve Fund

EXHIBIT B - BUDGET AND SCHEDULE - Direct & Indirect (Administrative) Costs

Date: 11/11/2020

Water Activity Name: 416-Fire Aquatic Monitoring Group – Year 3

Grantee Name: Mountain Studies Institute

<u>Task No.</u> ⁽¹⁾	<u>Description</u>	<u>Start Date</u> ⁽²⁾	<u>End Date</u>	<u>Matching Funds</u> (cash & in-kind) ⁽³⁾	<u>WSRF Funds</u> (Basin & Statewide combined) ⁽³⁾	<u>Total</u>
1	Water Quality Sampling	5/1/2021	12/31/2021	\$5,800	\$2,000	\$7,800
2	Benthic Macroinvertebrate Assessment	5/1/2021	4/30/2022	\$0	\$12,400	\$12,400
3	Analysis, Reporting, and Outreach	5/1/2021	4/30/2022	\$5,700	\$4,500	\$10,200
Total				\$11,500	\$18,900	\$30,400

(1) The single task that include costs for Grant Administration must provide a labor breakdown (see Indirect Costs tab below) where the total WSRF Grant contribution towards that task does not exceed 15% of the total WSRF Grant amount.

(2) Round values up to the nearest hundred dollars.

• Additional documentation providing a Detailed/Itemized Budget may be required for contracting. Applicants are encouraged to coordinate with the CWCB Project Manager to determine specifics.

The CWCB will pay the last 10% of the entire water activity budget when the Final Report is completed to the satisfaction of the CWCB staff project manager. Once the Final Report has been accepted, the final payment has been issued, the water activity and purchase order (PO) or contract will be closed without any further payment. Any entity that fails to complete a satisfactory Final Report and submit to the CWCB with 90 days of the expiration of the PO or contract may be denied consideration for future funding of any type from the CWCB.

• Additionally, the applicant shall provide a progress report every 6 months, beginning from the date of contract execution

Post 416 Fire Aquatic Monitoring

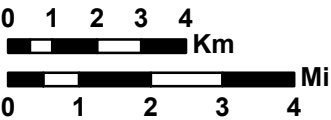
Monitoring Sites



Type

- Water Quality (WQ)
- Habitat
- Tissue
- Benthic Macro-invertebrates (BMI)

416 Burn Area



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNEA/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

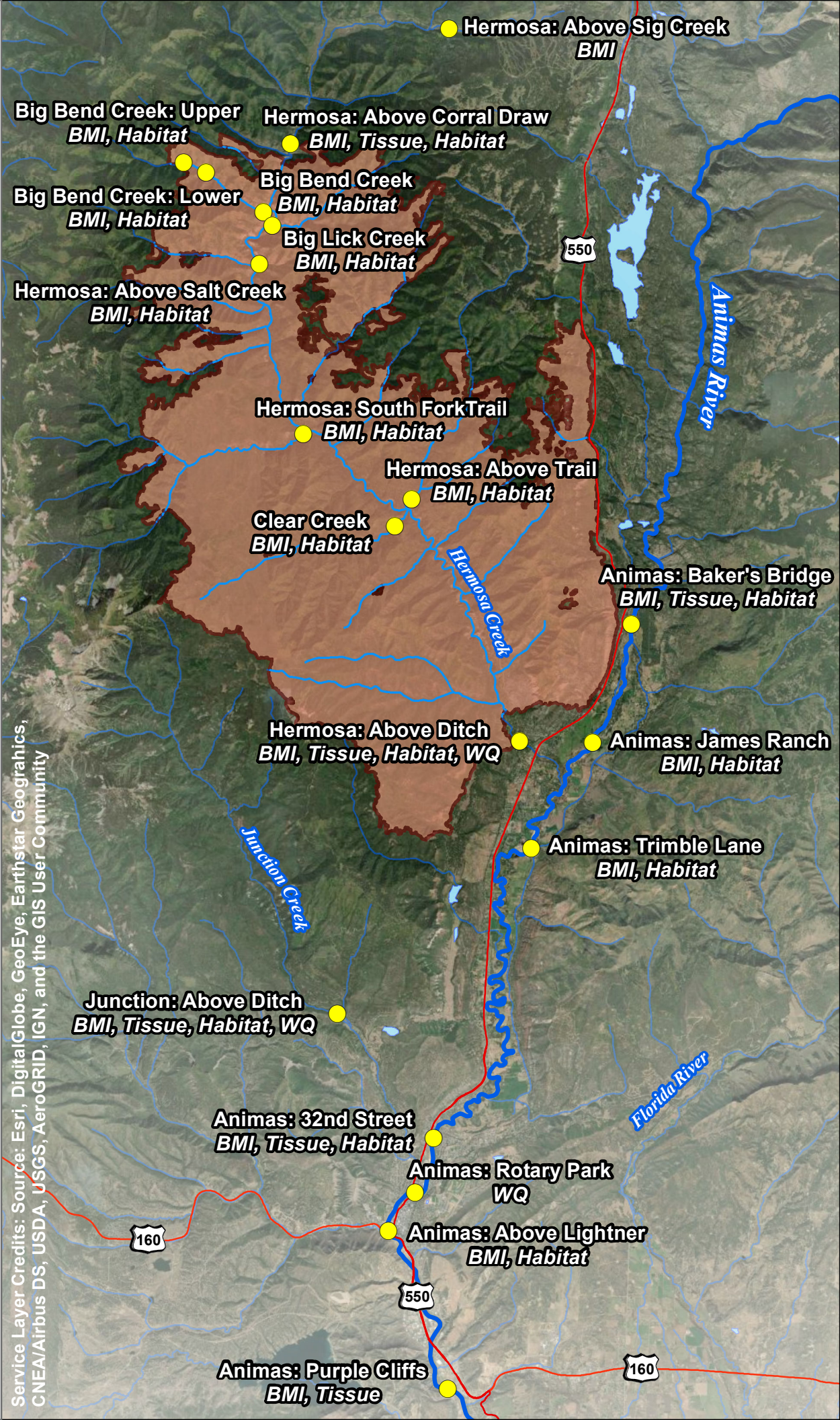


EXHIBIT E: PHOTOS

The below photos visually illustrate elements of post-fire recovery including the stabilization and revegetation of stream banks within the 416 burn area. We present analytical evidence of post-fire impacts and recovery through an online, interactive Story Map at <http://www.mountainstudies.org/animasriver>. This education tool allows MSI and its partners to present post-fire research efforts as well as the interactions between forest health, wildfires, and water supplies to help enhance understanding of these complex issues, track watershed recovery, assist communities in developing mitigation strategies to protect natural resources, and help prepare for future disturbances.

Big Bend Creek, tributary to Hermosa Creek – within 416 Fire burn area



July 16, 2019 – 1-year after fire



July 21, 2020 – 2-years after fire



July 16, 2019 – 1-year after fire



July 21, 2020 – 2-years after fire

SOUTHWEST BASINS ROUNDTABLE

C/O La Plata Archuleta Water District
PO Box 1377
Ignacio, Colorado 81137

November 20, 2020

Colorado Water Conservation Board
Water Supply Planning Section
WSRF Application
1313 Sherman Street, Room 718
Denver, Colorado 80203

RE: 416 Fire Aquatic Monitoring Research Group
WSRF Grant Request

The Southwest Basins Roundtable approved funding of \$1,720 from the Southwest Basins Roundtable account for the 416 Fire Aquatic Monitoring Research Group. In addition, we are recommending that the Colorado Water Conservation Board approve their request for \$17,180 from the Statewide account. This application was considered fully and approved by the Southwest Basins Roundtable at the November 19, 2020 meeting. There was a quorum of members present at the meeting.

The proposed project falls under IPP 1-MB of the Southwest Basins Implementation Plan. It also meets Measurable Goals or Outcomes of the Southwest Basins BIP A2) support specific and unique new IPPS important to maintaining the quality of life in this region; A4) Promote dialogue, foster cooperation and resolve conflict among water interests; A5) maintain watershed health; C2) provide safe drinking water; D1) maintain, protect and enhance recreational and economic values; E1) encourage and support restoration, recovery and sustainability of endangered, threatened and imperiled aquatic and riparian dependent species; E2) Protect, maintain, monitor and improve the condition and natural function of streams, lakes, wetlands, and riparian areas; and F1) monitor, protect and improve water for all classified users.

The completed Grant Application will be forwarded directly to you by the applicant. Please contact the applicant directly or me at 970-563-0320, etolen@laplawd.org, if you have questions or wish to discuss this application in more detail.

Sincerely,



Edward Tolen
Southwest Basins Roundtable Chair

EXHIBIT C: LETTERS OF COMMITMENT AND SUPPORT

In the development of this proposal, MSI consulted and collaborated with many partners.

Please find attached letters of commitment from partners that have committed matching funds (cash and/or in-kind) to this project:

- 1) Animas Water Company
- 2) City of Durango
- 3) Community Foundation - Community Emergency Response Fund

Please also find attached letters of support:

- 4) Colorado Parks and Wildlife
- 5) Colorado School of Mines
- 6) Trout Unlimited Fire Rivers Chapter

Animas Water Company

P.O. Box 1012
Durango, CO 81302

970-259-4788

November 11, 2020

Subject: Commitment to the 416 Fire Aquatic Monitoring Research Team

To whom it may concern,

On behalf of the Animas Water Company (AWC), I am pleased to provide this letter of support for Mountain Studies Institute (MSI) and the 416 Fire Aquatic Monitoring Research Team. Scientists from Mountain Studies Institute, Colorado School of Mines, and USFS Rocky Mountain Research Station formed the Research Team to investigate impacts to water quality and aquatic life from the 2018 416-Fire in southwestern Colorado.

MSI's water quality and benthic macroinvertebrate monitoring in 2018 through 2020 captured the immediate impacts of the 416 Fire to help track the recovery of the watershed. There is a critical need to continue monitoring downstream of the burn area in order to characterize persistent impacts to water quality and aquatic life.

Animas Water Company relies on these monitoring results to predict water quality in our source water area. We support continued funding of MSI's and the Research Team's aquatic monitoring, which would provide regular updates of post-fire water quality and aquatic life as well as expand outreach opportunities for our community in 2020 and 2021.

Animas Water Company has committed **\$500 in matching cash funds** to support this work. Thank you for your time and consideration of this important work that will help our community better understand how to recover and become resilient to wildfires.

Sincerely,



John Ott
General Manager
Animas Water Company
970/259-4788



November 10, 2020

Subject: Commitment to the 416 Fire Aquatic Monitoring Research Team

To Whom It May Concern:

On behalf of the City of Durango, I am pleased to provide this letter of support for Mountain Studies Institute (MSI) and the 416 Fire Aquatic Monitoring Research Team. Scientists from Mountain Studies

Institute, Colorado School of Mines, and USFS Rocky Mountain Research Station formed the Research Team to investigate impacts to water quality and aquatic life from the 2018 416-Fire in southwestern Colorado.

MSI's water quality and benthic macroinvertebrate monitoring were able to capture the impacts of the 416 Fire and have tracked the recovery of the Animas watershed. With each year's potential of monsoon impacts to our region, understanding not only the snowpack, but also other runoff events remains important. These efforts can provide us with timely and detailed monitoring downstream of the burn area. MSI's efforts in the previous three years and hopefully in the coming year will allow for the characterization impacts to and recovery of water quality and aquatic life in the Animas River, which is the lifeblood of our City.

The City of Durango, and particularly the Utilities Department use these monitoring results in our efforts to provide clean drinking water to the citizens and visitors in our community. The Animas is one of our sources of supply, and the data we receive allows us to make educated operational decisions to advance our efforts. We support continued funding of MSI's and the Research Team's aquatic monitoring, which would provide regular updates of post-fire water quality and aquatic life as well as expand outreach opportunities for our community in 2021.

The City of Durango has committed \$10,000 in matching cash funds to support this work. Thank you for your time and consideration of this important work that will help our community better understand how to become resilient to wildfires and their lasting impacts in our watershed

Sincerely,

A handwritten signature in black ink, appearing to read "Jarrod Biggs". The signature is fluid and cursive, with a large initial "J" and "B".

Jarrod Biggs
Assistant Utilities Director
City of Durango



November 10, 2020

Subject: Commitment to the 416 Fire Aquatic Monitoring Research Team

To whom it may concern,

On behalf of the Community Foundation serving SW Colorado, I am pleased to provide this letter of support for Mountain Studies Institute (MSI) and the 416 Fire Aquatic Monitoring Research Team. Scientists from Mountain Studies Institute, Colorado School of Mines, and USFS Rocky Mountain Research Station formed the Research Team to investigate impacts to water quality and aquatic life from the 2018 416-Fire in southwestern Colorado.

MSI's water quality and benthic macroinvertebrate monitoring captured the impacts of the first two years following the 416 Fire to help track the recovery of the watershed. With the possibility of a stronger monsoon season in 2021, there is a critical need to continue monitoring downstream of the burn area in order to characterize persistent impacts to water quality and aquatic life.

The community relies on these monitoring results to keep stakeholders up to date on the health of the river and aware of what emergency response or restoration actions may be necessary for water users. We support continued funding of MSI's and the Research Team's aquatic monitoring, which would provide regular updates of post-fire water quality and aquatic life as well as expand outreach opportunities for our community in 2021.

The Community Foundation has committed **\$1,000 in matching cash funds** to support this work. Thank you for your time and consideration of this important work that will help our community better understand how to recover and become resilient to wildfires.

Sincerely,

A handwritten signature in black ink that reads 'Briggan Wrinkle'. The signature is written in a cursive, flowing style.

Briggan Wrinkle
Executive Director
Community Foundation serving SW Colorado
director@swcommunityfoundation.org



COLORADO Parks and Wildlife

Department of Natural Resources
Durango Area Office
151 E. 16th Street
Durango, CO 81301
P 970.259.0855

November 23, 2020

SOUTHWEST BASIN ROUNDTABLE

Edward Tolen
P.O. Box 1377
Ignacio, Colorado 81137

Subject: Mountain Studies Institute's 416 Fire Aquatic Monitoring

Dear Mr. Tolen and Southwest Basin Roundtable,

On behalf of Colorado Parks and Wildlife (CPW) Area 15 Aquatic Biology Program, I am pleased to provide this letter of support for Mountain Studies Institute (MSI) and the 416 Fire Aquatic Monitoring Research Team. Scientists from Mountain Studies Institute, Colorado School of Mines, and USFS Rocky Mountain Research Station formed the Research Team to investigate impacts to water quality and aquatic life from the 2018 416-Fire in southwestern Colorado.

MSI's water quality and benthic macroinvertebrate monitoring captured impacts of the 416 Fire and helped track the recovery of the watershed. With the possibility of a stronger monsoon season in 2021, there is a critical need to continue monitoring downstream of the burn area in order to characterize persistent impacts to water quality and aquatic life.

Colorado Parks and Wildlife does not monitor aquatic macroinvertebrates in the Animas River. CPW does not have the capacity for this specialized monitoring and relies on outside groups to gather these data. Monitoring results are used to assess water quality and inform our observations regarding fish populations and the overall fitness and health of these fish in the Animas River as it recovers from a devastating fish kill caused by debris flows emanating from the 416 Fire burn scar. We support continued funding of MSI's and the Research Team's aquatic monitoring, which would provide regular updates of post-fire water quality and aquatic life as well as expand outreach opportunities for our community in 2021.

We strongly encourage the Southwest Basin Roundtable to fund this proposal. Thank you for your time and consideration of this important work that will help our community better understand how to recover and become resilient to wildfires.

Sincerely,

Jim N. White
Aquatic Biologist, Area 15 Durango
Colorado Parks and Wildlife
970.375.6712 | j.white@state.co.us





November 9, 2020

SOUTHWEST BASIN ROUNDTABLE

Edward Tolen, First Vice Chair
c/o La Plata Archuleta Water District
P.O. Box 1377
Ignacio, Colorado 81137
970-563-0320

Subject: Mountain Studies Institute's 416 Fire Aquatic Monitoring

Dear Southwest Basin Roundtable,

On behalf of the Colorado School of Mines (Mines), I am pleased to provide this letter of support for Mountain Studies Institute (MSI) and the 416 Fire Aquatic Monitoring Research Team. Scientists from Mountain Studies Institute, Colorado School of Mines, and USFS Rocky Mountain Research Station formed the Research Team to investigate impacts to water quality and aquatic life from the 2018 416 Fire in southwestern Colorado.

Mines and MSI have conducted the water quality and benthic macroinvertebrate monitoring in 2018, 2019 and 2020 observing the immediate impacts of the 416 Fire we are tracking the recovery of the watershed. Every year of additional monitoring will allow us to follow how quickly a fire-impacted watershed and the aquatic community recover from fire. Every additional year provides more knowledge to be shared with the community.

Mines has partnered with MSI to advance knowledge in the fire community and the greater scientific community. We are currently developing tools to identify changepoints, or inflection points in the water quality and bug data that are correlated with forest recovery. Additionally, the data we collect are novel in that we are monitoring how an area already impacted by mining can recover from a landscape scale disturbance; evaluating how heavy metals are mobilized after fire and impact ecosystems. This is a unique study in Colorado and in the fire community. It provides vital monitoring in a region where more fires are expected. We support continued funding of MSI's and the Research Team's aquatic monitoring, which would provide regular updates of post-fire water quality and aquatic life as well as expand outreach opportunities for our community in 2021.

We strongly encourage Colorado Healthy Rivers Fund to fund this proposal. Thank you for your time and consideration of this important work that will help our community better understand how to recover and become resilient to wildfires.

Sincerely,
Ashley Rust, PhD
Research Associate
Colorado School of Mines
arust@mymail.mines.edu



Five Rivers Chapter

November 9, 2020

SOUTHWEST BASIN ROUNDTABLE

Edward Tolen, Chair
c/o La Plata Archuleta Water District
P.O. Box 1377
Ignacio, Colorado 81137
970-563-0320

Subject: Mountain Studies Institute's 416 Fire Aquatic Monitoring

Dear Southwest Basin Roundtable,

On behalf of the Five Rivers Chapter of Trout Unlimited, I am pleased to provide this letter of support for Mountain Studies Institute (MSI) and the 416 Fire Aquatic Monitoring Research Team. Scientists from Mountain Studies Institute, Colorado School of Mines, and USFS Rocky Mountain Research Station formed the Research Team to investigate impacts to water quality and aquatic life from the 2018 416 Fire in southwestern Colorado.

MSI's water quality and benthic macroinvertebrate monitoring in 2018 through 2020 captured the immediate and subsequent impacts of the 416 Fire to help track the recovery of the watershed. There is a critical need to continue monitoring downstream of the burn area in order to characterize persistent impacts to water quality and aquatic life.

Five Rivers TU relies on these monitoring results to inform on the state of the fishery as well as to keep stakeholders up-to-date on the health of the river and aware of what emergency response or restoration actions may be necessary. We support continued funding of MSI's and the Research Team's aquatic monitoring, which would provide regular updates of post-fire water quality and aquatic life as well as expand outreach opportunities for our community in 2021.

We strongly encourage Southwest Basin Roundtable to fund this proposal. Thank you for your time and consideration of this important work that will help our community better understand how to recover and become resilient to wildfires.

Sincerely,

Buck Skillen, Interim President – Five Rivers Trout Unlimited
Durango, CO 81301
Bskillen759@gmail.com