Water Supply Reserve Fund
Water Activity Summary Sheet
September 16-17, 2020
Agenda Item 19(a)

Applicant & Grantee:	Neirbo Hydrogeology
Water Activity Name:	South Platte Basin Salinity Study – Phase 2
Water Activity Purpose:	Ag/M&I/Env - Study
County:	Sedgwick, Phillips, Yuma, Logan, Washington, Morgan, Weld, Larimer, Adams and Arapahoe
Drainage Basin:	South Platte
Water Source:	South Platte River
Amount Requested:	$45,000 South Platte Basin Account $45,000 Metro Account $90,000 Statewide Account $180,000 Total Request
Matching Funds:	Basin Account Match = $90,000 • 100% of statewide request (meets 10% min) Applicant & 3rd Party Match (cash & in-kind) = $60,000 • 67% of the statewide request (meets 10% min) Total Match (Basin request & Applicant Match) = $150,000 • 167% of the statewide request (meets 50% min)

Staff Recommendation:
Staff recommends approval of up to $45,000 from the South Platte Basin Account, $45,000 from the Metro Account, and up to $90,000 from the Statewide Account to help fund the project: South Platte Basin Salinity Study – Phase 2.

Water Activity Summary: WSRF Funds, if approved will assist Neirbo Hydrogeology convene a stakeholder group, engage a technical team, and begin investigation into natural, geologic salinity sources along the South Platte River. The stakeholder group will be tasked with prioritizing salinity related issues that the study will address. The stakeholders will assist with grant applications, obtaining project funding, and multi-organizational coordination. A technical team will be convened to design, coordinate, and oversee technical studies. This team may consist of subject matter experts from water management organizations, academia, state agencies, and the private sector. Studies will inform stakeholders about salinity sources, processes, and management alternatives. The study will investigate the importance of salinity contributions from geologic formations and groundwater return flows. Natural salinity inputs may control the background salinity levels in the basin. Anthropogenic salinity sources are added to this background levels.

Discussion: This effort will assist the South Platte Basin and Metro Roundtables achieve several goals as called for in the South Platte Basin Implementation Plan, such as: Maintain or improve the delivery of safe water supplies throughout the basin; Monitor, protect and improve watershed water

quality and identify and document progress and improvements; Improve areas where water quality may be limiting the suitability of focus areas identified by BRTs through environmental and recreational mapping efforts; while also assisting Colorado achieve a Critical Action highlighted in Chapter 10 of Colorado's Water plan, such as: Maintain Colorado's agricultural productivity, support of rural economies, and food security (through meaningful incentives and grassroots efforts).

Issues/Additional Needs: The applicant shall provide all outstanding letters of matching commitment prior to entering into a grant contract with the state, otherwise these are no issues or additional needs.

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**
Colorado Corn Administration	$5,000	$0	$5,000	Pending
Colorado Geologic Service	$17,500	$17,500	$35,000	Secured
Northern Water	$15,000	$0	$15,000	Secured
Central Colorado Water Conservancy District	$2,500	$0	$2,500	Secured
South Metro Water Supply Authority	$2,500	$0	$2,500	Secured
Sub-total	$42,500	$17,500	$60,000	
WSRF South Platte Basin Account	$45,000	$0	$45,000	Secured
Metro Account	$45,000	$0	$45,000	Secured
Sub-total	$132,500	$17,500	$150,000	
WSRF Statewide Account	$90,000	$0	$90,000	
Total Project Costs	**$225,500**	**$17,500**	**$240,000**	

CWCB Project Manager: Alex Funk

Metro Roundtable
Barbara Biggs, Chair

July 15, 2020

Craig Godbout
Water Supply Planning Section
Colorado Water Conservation Board
1313 Sherman Street Suite 718
Denver, CO 80203

Subject: Approval Recommendation for WSRF Grant Application "South Platte River Salinity"

Dear Mr. Godbout:

The Metro Roundtable unanimously approved funding of $45,000 from the basin fund and $90,000 from the statewide fund for the Grant Application "South Platte River Salinity" project. The project was reviewed by the Roundtable on July 9 at our monthly meeting. There was a quorum of members present at the meeting.

Note that the South Platte Basin Roundtable has also approved $45,000 from the South Platte Basin fund to support the project. Study costs will be provided by the South Platte Basin Roundtable account, the previously approved grant of $45,000 from the Metro Roundtable account, $90,000 from the statewide WSRF account, and third-party matching funds.

Please contact the applicant directly or me at (303) 979-7286, Barbara@roxwater.org, if you have any comments or questions.

Sincerely,

Barbara Biggs
Metro Roundtable Chair

cc: Sam Stein, CWCB Staff

South Platte Basin Roundtable

Garrett Varra, Chair

July 15, 2020

Craig Godbout
Water Supply Planning Section
Colorado Water Conservation Board
1313 Sherman Street, Room 718
Denver, CO 80203

VIA EMAIL to craig.godbout@state.co.us

RE: Approval Recommendation for "South Platte River Salinity" Application

Dear Craig,

At the July 14 meeting of the South Platte Basin Roundtable the membership voted to recommend that the Colorado Water Conservation Board (CWCB) approve funds for the Water Supply Reserve Fund (WSRF} grant application titled "South Platte River Salinity". A quorum was present at the meeting. The Colorado Corn Administrative Committee (CCAC} is the applicant and they have provided $5,000 in matching funds. The total amount recommended to be approved with this application is $45,000 from the South Platte Basin account and $90,000 from the statewide account.

This grant application develops a stakeholder group and a technical team that will guide how the basin's salinity is addressed. These processes will prioritize and design comprehensive technical studies. These results will inform stakeholders of the salinity conditions and actions that can be employed to mitigate negative effects.

Natural, geologically based salinity sources and related groundwater base flow will be evaluated by water-quality sampling and analyses. This task will begin to define the background salinity conditions upon which anthropogenic salinity sources are added.

The Colorado Water Plan (2015) and the South Platte Basin Implementation Plan (SP-BIP) address water-shortage concerns by encouraging water reuse, storage, conveyance, and conservation. Salinity can impact most water uses and projects that are underway or planned in the basin. This study addresses the suitability of water for the SP-BIP high priority projects, irrigated agriculture sustainability, and the environment. The results of this study will guide future water management actions that improve the sustainability of water resources in the South Platte Basin and other state-wide basins.

The South Platte Basin Roundtable, therefore, recommends that the CWCB approve the funds for this WSRF grant application. Understanding water-quality conditions and sources along the South Platte River is an important step in managing the basin's water resources.

Sincerely,

Garrett Varra
Chair
South Platte Basin Roundtable

Last Update: July 31, 2018

Colorado Water Conservation Board

Water Supply Reserve Fund
Grant Application

Instructions

All WSRF grant applications shall conform to the current 2016 WSRF Criteria and Guidelines.

To receive funding from the WSRF, a proposed water activity must be approved by a Roundtable(s) **AND** the Colorado Water Conservation Board (CWCB). The process for Roundtable consideration and recommendation is outlined in the 2016 WSRF Criteria and Guidelines. The CWCB meets bimonthly according to the schedule on page 2 of this application.

If you have questions, please contact the current CWCB staff Roundtable liaison:

Arkansas	**Gunnison | North Platte | South Platte | Yampa/White**	**Colorado | Metro | Rio Grande | Southwest**
Ben Wade	Craig Godbout	Megan Holcomb
ben.wade@state.co.us	craig.godbout@state.co.us	megan.holcomb@state.co.us
303-866-3441 x3238	303-866-3441 x3210	303-866-3441 x3222

WSRF Submittal Checklist (Required)	
✓	I acknowledge this request was recommended for CWCB approval by the sponsoring roundtable.
✓	I acknowledge I have read and understand the 2016 WSRF Criteria and Guidelines.
✓	I acknowledge the Grantee will be able to contract with CWCB using the Standard Contract.(1)
Application Documents	
✓	Exhibit A: Statement of Work(2) *(Word – see Template)*
✓	Exhibit B: Budget & Schedule(2) *(Excel Spreadsheet – see Template)*
✓	Letters of Matching and/or Pending 3rd Party Commitments(2)
✓	Map(2)
	Photos/Drawings/Reports
✓	Letters of Support
Contracting Documents(3)	
	Detailed/Itemized Budget(3) *(Excel Spreadsheet – see Template)*
	Certificate of Insurance(4) *(General, Auto, & Workers' Comp.)*
	Certificate of Good Standing(4)
	W-9 Form(4)
	Independent Contractor Form(4) *(If applicant is individual, not company/organization)*
	Electronic Funds Transfer (ETF) Form(4)

(1) Click "Grant Agreements". For reference only/do not fill out or submit/required for contracting
(2) Required with application if applicable.

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(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.

Schedule		
CWCB Meeting	**Application Submittal Dates**	**Type of Request**
January	December 1	Basin Account; BIP
March	February 1	Basin/Statewide Account; BIP
May	April 1	Basin Account; BIP
July	June 1	Basin Account; BIP
September	August 1	Basin/Statewide Account; BIP
November	October 1	Basin Account/BIP

Desired Timeline	
Desired CWCB Hearing Month:	September 2020
Desired Notice to Proceed Date:	September 2020

Water Activity Summary	
Name of Applicant	NEIRBO Hydrogeology
Name of Water Activity	South Platte Basin Salinity Study - Phase 2

Approving Roundtable(s)	Basin Account Request(s)(1)
South Platte Basin	$45,000
Metro Basin	$45,000
Basin Account Request Subtotal	$90,000
Statewide Account Request(1)	$90,000
Total WSRF Funds Requested (Basin & Statewide)	$180,000
Total Project Costs	$240,000

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

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Grantee and Applicant Information	
Name of Grantee(s)	NEIRBO Hydrogeology
Mailing Address	231 S Howes St, Fort Collins, CO 80521
FEIN	80-0858373
Grantee's Organization Contact(1)	Grady O'Brien
Position/Title	Managing Member / President
Email	grady@neirbo.com
Phone	(970) 81-0630
Grant Management Contact(2)	same
Position/Title	
Email	
Phone	
Name of Applicant (if different than grantee)	
Mailing Address	
Position/Title	
Email	
Phone	

(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).
Neirbo is a private, hydrologic consulting practice in Fort Collins, Colorado. Principal Hydrologist Grady O'Brien founded Neirbo ("near-bo") in 2010 to specialize in the interactions between water, the environment, and engineered infrastructure. This expertise is applied in the agriculture, environmental, mining, construction, and water management fields. Mr. O'Brien has over 30 years of hydrology experience and has demonstrated expertise in hydrologic investigations, water-quality studies, environmental permitting, water-resources management, and the design of engineered infrastructure.

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Type of Eligible Entity (check one)	
	Public (Government): municipalities, enterprises, counties, and State of Colorado agencies. Federal agencies are encouraged to work with local entities. Federal agencies are eligible, but only if they can make a compelling case for why a local partner cannot be the grant recipient.
	Public (Districts): authorities, Title 32/special districts (conservancy, conservation, and irrigation districts), and water activity enterprises
✓	**Private Incorporated:** mutual ditch companies, homeowners associations, corporations
	Private Individuals, Partnerships, and Sole Proprietors: are eligible for funding from the Basin Accounts but not for funding from the Statewide Account.
	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

Type of Water Activity (check one)	
✓	Study
	Implementation

Category of Water Activity (check all that apply)		
✓	Nonconsumptive (Environmental)	
	Nonconsumptive (Recreational)	
✓	Agricultural	
✓	Municipal/Industrial	
	Needs Assessment	
	Education & Outreach	
	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	South Platte Basin, Northeastern Colorado
Latitude	
Longitude	

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Water Activity Overview
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. The Applicant shall also provide, in Exhibit A, a detailed Statement of Work, Budget, and Schedule.
The 2019 CWCB study "South Platte River Salinity, Source, Trends, and Concerns- 1995-2018" showed that upper basin salinity is steadily increasing and is dominated by municipal wastewater effluent. Average annual salinity is at levels that can decrease crop yields and requires treatment for municipal use. Perhaps more importantly, low-flow salinity can exceed 1,400 mg/l and impact municipal supplies, water storage, and recharge projects. The large scale, broad reach, and complexity of South Platte Basin salinity necessitates a coordinated and comprehensive approach. This project will develop a stakeholder group, engage a technical team, and begin investigation into natural, geologic salinity sources. The stakeholder group will be tasked with prioritizing salinity related issues that the project will address. The stakeholders will assist with grant applications, obtaining project funding, and multi-organizational coordination. A technical team will be convened to design, coordinate, and oversee technical studies. This team may consist of subject matter experts from water management organizations, academia, state agencies, and the private sector. Studies will inform stakeholders about salinity sources, processes, and management alternatives. The study will investigate the importance of salinity contributions from geologic formations and groundwater return flows. Natural salinity inputs may control the background salinity levels in the basin. Anthropogenic salinity sources are added to this background level.

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
Yes	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

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Measurable Results		
✓	Other	- Creates a corridinated stakeholder group and structure for addressing salinity related issues in the basin. - Provides information on salinity contributions from geologic sources to guide salinity management efforts.

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 2016 WSRF Criteria and Guidelines).

The 2019 CWCB study "South Platte River Salinity, Source, Trends, and Concerns- 1995-2018" showed that upper basin salinity has been steadily increasing and is dominated by municipal wastewater effluent. Salinity continues to increase through the lower basin with average annual salinity that can decrease crop yields and requires treatment for municipal use (Figure 1). Perhaps more importantly, low-flow salinity can exceed 1,400 mg/l and make the water unsuitable for most uses (Figure 2). These salinity levels can also impact water storage and recharge projects, which heightens the need to understand the sources and reverse the increasing trends.

The water-supply gap requires us to get the most benefit possible from every drop of water. Maintaining good water quality through the many forms of reuse as the South Platte River flows through the basin is fundamentally critical. When water quality is degraded, subsequent water users can be forced to pay for expensive treatment, storage, and conveyance.

This project proposes to start a stakeholder process to guide implementation of salinity projects within the South Platte Basin. This process will coordinate water management and policy stakeholders with technical subject matter experts. This type of stakeholder process is a common theme in the state and basin implementation plans. For example, the South Platte Basin Implementation Plan (BIP) Strategic Overview (section S.4.2) discusses and recommends a coordinated approach within the basin and across the state. This project supports the on-going outreach program that solicits input from all water-use sectors and areas throughout the South Platte River Basin (BIP, section 1.3)

There are many potential salinity sources in the basin and many questions on how to address the salinity problem. This study aims to identify the importance of salinity contributions from natural geologic formations and groundwater. This understanding will aid and direct efforts for managing salinity. Should we focus on new irrigation and farming practices? Are natural geologic sources significant contributors and is there anything that can be done to reduce this source? Is this predominately a point source problem from municipal and industrial wastewater or a non-point source problem?

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Measurable Results

This application requests funds from the WSRF statewide account, which requires the study to have statewide benefits. The Colorado Water Plan (CWP, 2016) explicitly states the importance of addressing the water-supply and water-quality issues included in this study.

> "As Colorado plans for its water future, it will be critical to better integrate water quality and quantity planning and management activities. To ensure that Coloradans continue to have access to safe and clean water, the State must prioritize opportunities to address existing water quality effects and minimize future effects. Creating a balance between increasing quantity demands and water quality protection and restoration requires on-going dialogue with all Coloradans and collaboration at all levels of government." (CWP, Ch 7.3)

Salinity is a threat to Colorado's municipal, agricultural, environmental, and recreational water needs. The outcomes from this study will support reducing salinity, which will protect and restore watershed health, benefit development of multipurpose storage, and assist the state with interstate compact compliance (CWP, Ch 6). Each of these addressed CWP goals are applicable throughout the state.

CWP Chapter 6 states that the Gunnison, South Platte, Metro, and Yampa/White/Green basins need to better determine how agriculture supports environmental and recreational values. Additionally, many roundtables link watershed health to environmental needs or the protection of important infrastructure for municipal and agricultural needs (CWP, Ch 6). Watershed geology and the interactions between humans, land, and water influence watershed health (CWP, Ch 7.1). When salinity increases, a watershed's capacity to support ecosystem services that benefit ecological processes, local and state economies are diminished (CWP, Ch 7.1).

The CWP understands the connections between Water Quality and Quantity. "Managing water quantity may cause a change in water quality. When entities divert water to farms or cities, store it for future use, or manage it as return-flows to address downstream water rights, water quality can change (CWP, Ch 7.3). The role of salinity in the relationship between agriculture and municipal water supply needs was explicitly stated. The 2019 Salinity study clearly illustrated and supports the CWP statements:

> "The capacity of a stream to accept wastewater pollutants without a negative effect on quality depends on the amount of water flowing in the stream. Water diversions upstream can result in fluctuating stream levels, and therefore affect water quality. Changes in treatment processes that are necessary to meet new, more stringent discharge limits, or upgrades to aging infrastructure, can increase operational costs for wastewater treatment facilities (CWP, 7.3)." This follow-up study may lead to salinity reduction methods that are more cost effective than these large infrastructure projects.

The proposed project supports understanding – "Cause-and-effect connections related to water quality and quantity are integral to the State's ability to make sound water management decisions. The State considers these connections during decision-making processes that are dependent on statutory, regulatory and management relationships related to water quality and quantity (CWP, Ch 7.3)".

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Measurable Results

This project also addresses specific goals set forth in the South Platte Basin Implementation Plan (SP-BIP). For example, Water Quality goals (Page 1-27. Section 1.9.5):

Goal: Maintain, enhance and proactively manage water quality for all use classifications.

MO#1 – Maintain or improve the delivery of safe water supplies throughout the basin.
E&R MO#1 – Monitor, protect and improve watershed water quality and identify and document progress and improvements.
E&R MO#2 – Improve areas where water quality may be limiting the suitability of focus areas identified by BRTs through environmental and recreational mapping efforts.

There are Water Quality Management (Page 3-7. 3.1.11) issues and water quality concerns (Page 4-12. 4.2.3) that are addressed including:

- Wastewater treatment and reuse are important facets of the Basin's water supplies. Innovative systems are being developed in the Basin to increase water availability for various beneficial uses.
- There are salinity concerns related to wastewater treatment plant discharges and salted roads. These salinity issues can impact both surface water and groundwater supplies.

This project addresses themes in the Colorado Water Plan. Water Quality and Quantity Connections (Page 7-18) states: "Managing water quantity may cause a change in water quality. When entities divert water to farms or cities, store it for future use or flood control, or manage it as return-flows to address downstream water rights, water quality can change." Page 7-19: "One option for addressing future municipal water supply needs is the use of alternative agricultural transfers, such as rotational fallowing and interruptible supply options. High concentration of salts and other pollutants from this source water, however, may require advanced water-treatment technologies, such as reverse osmosis, to make the water usable for communities." Page 7-20: "Cause-and-effect connections related to water quality and quantity are integral to the State's ability to make sound water management decisions. The State considers these connections during decision-making processes that are dependent on statutory, regulatory and management relationships related to water quality and quantity."

State Water Supply Initiative, Executive Summary, page ES-7 and Section 11.2 Major findings of SWSI, page 11-1. Salinity and the role of irrigated agriculture directly impact the following findings:

"2) Projects and water management planning processes that local M&I providers are implementing or planning to implement have the ability to meet about 80 percent of Colorado's M&I water needs through 2030." Salinity impacts water usability and availability to meet needs.

"5) Increased reliance on nonrenewable, nontributary groundwater for permanent water supply brings serious reliability and sustainability concerns in some areas, particularly along the Front Range." Salinity increases due to irrigated agriculture negatively impacts the usability and sustainability of groundwater.

"7) Water conservation (beyond Level 1) will be relied upon as a major tool for meeting future M&I demands, but conservation alone cannot meet all of Colorado's future M&I needs.

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Measurable Results
Significant water conservation has already occurred in many areas." Water conservation efforts can exacerbate salinity issues by reducing or eliminating flushing flows that remove soil salts.

(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 2016 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)
See following Statewide account requests	
Total Match	
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 2016 WSRF Criteria and Guidelines. A minimum of 10% match shall be from Basin Account funds (cash only). A minimum of 10% match shall be provided by the applicant or 3rd party (cash, in-kind, or combination). The remaining 30% of the required match may be provided from any other source (Basin, applicant, or 3rd party) 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):
Colorado Corn Administrative Committee	$5,000 (cash)
Colorado Geological Survey (CGS)	$17,500 (in-kind)
Colorado Geological Survey (CGS)	$17,500 (cash)
Northern Water	$15,000 (cash)
Central Colorado Water Conservation District	$2,500 (cash)
South Metro Water Supply Authority	$2,500 (cash)
WSRF - South Platte Basin account	$45,000 (cash)
WSRF - Metro Basin account	$45,000 (cash)
Total Match	$150,000
If you requested a Waiver to the Statewide Account matching, indicate % you wish waived. (Max 50% reduction of requirement).	

Related Studies
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.
WSRF Grant contract PO 2019-2856 funded the study and report titled "South Platte River Salinity - Sources, Trends, and Concerns 1995-2018". The proposed work builds on and addresses issues identified in this study.

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Previous CWCB Grants
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
1) Colorado Corn Administrative Committee 2) Historical Analysis of South Platte River Salinity to Identify Severity, Trends, and Potential Sources 3) South Platte Basin and Metro Basin 4) March 21, 2019 5) PO 2019-2856 6) No funds from other CWCB programs

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.
None

Last Update: January 9, 2018

Colorado Water Conservation Board	
Water Supply Reserve Fund	
Exhibit A - Statement of Work	
Date:	**July 7, 2020**
Water Activity Name:	**South Platte Basin Salinity**
Grant Recipient:	**NEIRBO Hydrogeology**
Funding Source:	**WSRF**

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.

The 2019 CWCB study "South Platte River Salinity, Source, Trends, and Concerns- 1995-2018" showed that upper basin salinity is steadily increasing and is dominated by municipal wastewater effluent. Average annual salinity is at levels that can decrease crop yields and requires treatment for municipal use. Perhaps more importantly, low-flow salinity can exceed 1,400 mg/l and impact municipal supplies, water storage, and recharge projects.

The large scale, broad reach, and complexity of South Platte Basin salinity necessitates a coordinated and comprehensive approach. This project will develop a stakeholder group, engage a technical team, and begin investigation into natural, geologic salinity sources. The stakeholder group will be tasked with prioritizing salinity related issues that the project will address. The stakeholders will assist with grant applications, obtaining project funding, and multi-organizational coordination.

A technical team will be convened to design, coordinate, and oversee technical studies. This team may consist of subject matter experts from water management organizations, academia, state agencies, and the private sector. Studies will inform stakeholders about salinity sources, processes, and management alternatives.

The study will investigate the importance of salinity contributions from geologic formations and groundwater return flows. Natural salinity inputs control the background salinity levels in the basin. Anthropogenic salinity sources are added to this background level.

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Objectives: (List the objectives of the project)

The project objectives are:

1. Create and implement a stakeholder process for managing and coordinating salinity related projects in the basin;
2. Create and engage a technical team to design, coordinate, and oversee technical studies;
3. Investigate natural, geologic salinity sources.

Tasks

Provide a detailed description of each task using the following format:

Task 1 – Stakeholder Process Development

Description of Task:

The complexity and broad impacts of salinity necessitate a stakeholder driven process for managing the issue. This task takes the initial steps to identify, form, and coordinate organizations involved in water delivery and management. Stakeholder participation will be solicited from water providers, water managers, and water policy entities. These stakeholders, and the people they represent, are potentially affected by salinity and related water-quality issues. Staff from stakeholder organizations will actively participate to voice their concerns, assist in identifying project priorities, obtain project funding, and facilitate inter-organizational cooperation.

The stakeholder group will routinely interact with the Technical Team (Task 2). Stakeholders will receive technical information on the nature and severity of salinity sources and potential options for managing salinity. The stakeholder group will prioritize the on-going technical work and provide guidance to the Technical Team.

The stakeholder group will assist in obtaining funding for the overall project and technical studies. This may include development of grant applications and other funding mechanisms as appropriate. It is assumed that member organization staff participation will be on a volunteer basis that can be considered an in-kind contribution for future grant applications. The group membership and meeting frequency will be determined by the group during the initial meetings.

An initial task is to develop schedule and budget estimates for future activities. This would include identifying grant programs and funding cycles for submitting grant applications for technical studies and other activities.

Last Update: January 9, 2018

Tasks
Method/Procedure:
• Stakeholder participation will be solicited using established organizations that are actively involved in South Platte Basin water issues; • Meetings will be held to identify initial concerns, project scope, potential constraints, resources that member organizations can contribute, and potential challenges; • Interactions with the Technical Team will be used to facilitate information transfer between the groups. • Develop schedule and budget estimates for grant programs and funding cycles; • Develop grant applications for technical studies and other activities.
Grantee Deliverable: (Describe the deliverable the grantee expects from this task)
The stakeholder group will develop an operating structure, project objectives, project scope, budgets, schedules, funding sources, and members roles. A memorandum or report documenting the process and progress will be prepared. Meeting minutes documenting discussions, decisions, action items, and results will be prepared.
CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)
A memorandum or report documenting the Stakeholder process and progress will be prepared and delivered to the CWCB. Grant applications for future project funding.

Tasks
Provide a detailed description of each task using the following format:
Task 2 – Technical Team Development
Description of Task:
This task will identify and engage subject matter experts to form a Technical Team. This team will interact with the Stakeholder group, hold meetings, develop technical project workplans, schedules, budgets, and grant applications. Coordination with other technical studies and monitoring, e.g. water-quality monitoring networks, in the basin will encouraged. This team will ensure that the technical studies and results are sound, peer reviewed, and relevant for managing salinity sources. Technical team members may come from water-management organizations, state agencies, academia, or the private sector. It is assumed that Technical team members will participate on a volunteer basis that can be considered an in-kind contribution for future grant applications. The team will consist of 3 to 5 routine members with periodic participation by additional subject matter experts as specific needs arise.

Last Update: January 9, 2018

Tasks
Method/Procedure:
• Technical team member participation will be solicited within established organizations that are actively involved in South Platte Basin water issues; • Meetings will be held to identify salinity sources, develop technical project workplans, budgets, schedules, and deliverables; • Technical studies will be evaluated and guided by the team as the studies are designed and implemented; • Technical reports will be reviewed by the team; • Interactions with the Stakeholder group will be used to facilitate information transfer between the groups; • The team and individual members will develop memorandums and reports documenting methods, results, conclusions, and recommendations.
Grantee Deliverable: (Describe the deliverable the grantee expects from this task)
• Technical study workplans, budgets, schedules, and deliverables developed by the team; • Technical data, analysis, and report reviews; • Grant applications for future technical studies.
CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)
• Status reports documenting progress of the Technical Team formation and results; • Grant applications for technical studies.

Last Update: January 9, 2018

Tasks
Provide a detailed description of each task using the following format:
Task 3 – Geologic and Groundwater Baseflow Salinity
Description of Task:

Salinity increases as the South Platte River flows through the lower basin. It is unclear whether these increases are due to municipal wastewater, geologic sources, irrigated agriculture return flows, or a combination of all sources. This task samples surface water and groundwater to characterize the influence of these salinity sources. The Saint Vrain, Big Thompson, and the Cache la Poudre River tributaries have been shown to influence lower basin salinity. The water quality in these tributaries and their groundwater baseflow contributions will be sampled. Sampling will occur at geologic formations, including the Pierre Shale, sodic soil areas, and as the rivers flow through the watersheds. Additionally, groundwater baseflow to the mainstem of the South Platte River will be sampled from the Denver metro area to Julesburg. Samples will be obtained from each geologic formation that the South Platte River encounters in the basin.

Water sampling is planned where each tributary crosses the Pierre Shale (Figure 5). A groundwater sample and two river samples, up and downstream of the Pierre will be obtained. Water samples will be obtained near sodic soil deposits, ponds, and existing wells (Figure 6). The tributaries will also be sampled near major wastewater treatment facilities (Figure 7). Water sampling is planned for up to 15 sites along the South Platte River (Figure 8). At each site a river sample and a groundwater sample from the hyporheic zone will be collected. Each site will be sampled twice, once each during the irrigation and non-irrigation seasons.

Field measurements of pH, temperature, conductivity, dissolved oxygen, and redox (ORP) will be obtained via a flow-through cell. Water samples will be submitted to a certified laboratory for analysis of TDS, Alkalinity, Carbonate, Bicarbonate, Total Hardness, Boron, Selenium, Uranium, Manganese, Calcium, Iron, Magnesium, Potassium, Sodium, Chloride, and Sulfate.

This task includes on-going technical review and advising by senior staff from the Colorado Geological Survey and the Colorado Water Institute. This is a smaller, 2 person review team focused on this specific geologic salinity source task, rather than the larger, broader scope Technical team described in Task 2.

Method/Procedure:

Last Update: January 9, 2018

Tasks
• Present project design to technical review staff for comment and modification; • Obtain and compile existing water-quality and flow data for tributaries, ditches, and wells; • Compile geologic formations along tributaries and the South Platte River; • Identify water-quality sampling locations (wells, along rivers, sodic soil areas) that may show influence of geology, ag return flows, and water treatment facilities; • Build and install mini-piezometers to sample groundwater baseflow to rivers; • Collect water-quality samples from mini-piezometers, wells, tributaries, and the South Platte River; • Use streamflow changes to estimate groundwater baseflow contributions at sampled river reaches; • Analyze water-quality data to identify water type, salinity, salt types, SAR, and salt loading to the South Platte River; • Data collection, analyses, and reports will be reviewed by the technical review staff.
Grantee Deliverable: (Describe the deliverable the grantee expects from this task)
• Constructed mini-piezometers; • Compiled groundwater and surface water quality in tributary watersheds and along South Platte River; • Map with geologic formations in tributary watersheds and along South Platte River from Denver metro area to Julesburg; • Map with land ownership, access, and water-quality sampling locations; • Water-quality analyses from rivers, ponds, wells, and mini-piezometers; • Figures and tables illustrating differences between groundwater and surface water quality during irrigation and non-irrigation seasons; • Maps and figures illustrating water-quality changes in tributaries, at geologic formations, wastewater treatment facilities, and along the South Platte River; • Technical reviews of project design, data collection, analyses, and reports.
CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)
A report will be prepared to document methods, data, and results.

Last Update: January 9, 2018

Tasks
Provide a detailed description of each task using the following format:
Task 4 – Grant Administration
Description of Task:
This task manages the CWCB contracting process and on-going administration of the grant. Project partners, vendors, and service providers will invoice the project as appropriate. These invoices will be processed and sent to the CWCB project manager for payment. Upon receipt of payment the grant administrator will pay project partners, vendors, and service providers. Progress reports, as required by the CWCB, will be prepared and delivered to the CWCB project manager.
Method/Procedure:
• Prepare an accounting of time and expenses to generate invoices; • Receive and process invoices from project partners, vendors, and service providers; • Submit invoices to the CWCB; • Distribute reimbursements as appropriate.
Grantee Deliverable: (Describe the deliverable the grantee expects from this task)
• Invoices from technical investigators, project partners, vendors, and service providers.
CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)
• Progress reports will be prepared to document activities for each project task; • Invoices from project partners, vendors, and service providers;

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 excel format. A separate excel formatted Budget is required for engineering costs to include rate and unit costs.

Last Update: January 9, 2018

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:

- 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

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: July 7, 2020

Water Activity Name: South Platte Basin Salinity

Grantee Name: NEIRBO Hydrogeology

Task No.[1]	Description	Start Date[2]	End Date	Matching Funds (cash & in-kind)[3]	WSRF Funds (Basin & Statewide combined)[3]	Total
1	Stakeholder Process Development	10/1/2020	3/31/2021	$7,500	$22,500	$30,000
2	Technical Team Development	10/1/2020	3/31/2021	$7,500	$22,500	$30,000
3	Geologic and Groundwater Baseflow Salinity	10/1/2020	6/30/2022	$42,500	$127,500	$170,000
4	Grant Administration	10/1/2020	6/30/2022	$2,500	$7,500	$10,000
			Total	$60,000	$180,000	$240,000

(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 futher 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.

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

COLORADO GEOLOGICAL SURVEY AT THE COLORADO SCHOOL OF MINES

303.384.2640
kaberry@mines.edu

1801 19th Street
Golden, CO
80401

August 21, 2020

Colorado Water Conservation Board

RE: South Platte Salinity Study

Dear Grant Review Panel,

I am writing in support of the grant application referred above. More than 3/4 of Colorado's population depends on municipal water from the South Platte Basin. Others rely solely or partially on South Platte River water for agricultural or industrial use. As you are likely aware, salts dissolved in surface or ground water can cause significant economic damages each year.

To control the amount of salts in the river, and its associated impacts in the basin, it's essential for users and managers to understand salt sources and transport vertically, laterally, and on the soil surface. The proposed project will provide the needed information to evaluate and better manage salinity.

If the grant application is approved, the Colorado Geological Survey will assist with evaluating the natural contribution of salts from geologic formations and salts dissolved in ground water. To help facilitate this important project, the Colorado Geological Survey will contribute a minimum in-kind match of $17,500 and a cash contribution of $17,500, for a total contribution of $35,000.

Regards,

Karen A. Berry, AICP, PG

State Geologist and Director

Colorado Geological Survey

Administrative Committee
127 22nd Street
Greeley, CO 80631
Phone: (970) 351-8201
FAX: (970) 351-8203
www.coloradocorn.com

August 21, 2020

Grady O'Brien, Principal
NEIRBO Hydrogeology
231 S. Howes St
Fort Collins, CO 80521

Subject: South Platte Basin Salinity Project Funding

Dear Mr. O'Brien

The Colorado Corn Administrative Committee Research Action Team authorized funding in the amount of $5,000 for NEIRBO to continue investigating salinity in the South Platte River in conjunction with irrigated agriculture.

Your technical contact for this project is Nicholas Colglazier, Executive Officer of Colorado Corn.

Sincerely,

Nicholas J. Colglazier
Colorado Corn
127 22nd Street
Greeley, CO 80631
(970) 351-8201 office
(970) 580-0922 mobile
ncolglazier@coloradocorn.com

CENTRAL COLORADO WATER CONSERVANCY DISTRICT
3209 W 28 STREET | GREELEY, CO 80634 | WWW.CCWCD.ORG
LOCAL: 970-330-4540 | METRO: 303-825-0474 | FAX: 970-330-4546

Mr. Grady O'Brien, P.G.
Principal Hydrolgeologist
Neirbo Hydrogeology
231 S. Howes Street
Fort Collins, CO 80521

August 14, 2020

Dear Mr. O'Brien,

On April 21, 2020, the Central Colorado Water Conservancy District's Board of Directors approved a cash donation of $2,500 to the matching funds for the requested WSRF grant. As a project partner, Central eagerly awaits your reports and believes the findings of these additional salinity investigations will greatly benefit Central's membership and the agricultural community in the South Platte Basin. As stated in our prior letter of support, reuse and changing river conditions in the South Platte can greatly influence the quality of water that is applied to irrigated agriculture and can have a direct impact upon crop success and crop yields. Farmers in Colorado and around the globe will use these additional studies to influence decisions on irrigation methodologies and cropping to respond to changes in water quality. If needed, Central is willing to assist with additional data collection and water quality sampling in addition to the monetary dedication.

Sincerely,

William Mihelich, P.E.
District Engineer

Northern Water
Northern Colorado Water Conservancy District
220 Water Avenue • Berthoud, Colorado 80513
800-369-7246 • www.northernwater.org

August 24, 2020

Colorado Water Conservation Board
Water Supply Planning Section
1313 Sherman Street, Suite 718
Denver CO 80203

RE: South Platte Basin Salinity Study Grant Application Letter of Support

Members of the Water Supply Reserve Fund Committee:

Northern Water is pleased to support the South Platte Basin Salinity Study Grant application developed by NEIRBO Hydrogeology. Northern Water supports this investigative study and its objective to better qualify sources of salinity in the South Platte basin. As a regional water supplier who has completed numerous water quality studies in the area, Northern Water has a deep understanding of the water quality issues in the South Platte Basin and remains committed to working with our partners to improve the basin's water quality.

Northern Water appreciates the efforts of Mr. O'Brien and other partners to create an application that serves the needs of the basin through a collaborative approach to study design and information generation. Northern Water commits $15,000 in cash as well as participation to the stakeholder and technical level workgroups highlighted in the application Scope of Work.

Please contact me with any questions.

Sincerely,

DocuSigned by:
58ACE068ACEE4F7...

Esther Vincent
Environmental Services Division Head
Northern Water

SMWSA

SOUTH METRO WATER SUPPLY AUTHORITY

8400 East Prentice
Avenue Suite 315
Greenwood Village, CO 80111

Phone 720 216 5158
Fax 720 216 5154

August 17, 2020

Mr. Grady O'Brien, P.G.
NEIRBO Hydrogeology
231 S. Howes Street
Fort Collins, CO 80521

RE: Letter of Support for 2020 South Platte River Salinity Study

Dear Mr. O'Brien,

I am pleased to provide this letter of support for the next phase of the South Platte River Salinity Study. The previous NIERBO study and this future phase of work will provide the South Metro Water Supply Authority (SMWSA) and its members with important information on the sources of total dissolved solids (TDS) in the South Platte River.

Most of the SMWSA members receive renewable water from Aurora's Prairie Waters Project (PWP) as part of the Water Infrastructure Supply Efficiency (WISE) project. The source water in the South Platte River that supplies the PWP can contain TDS levels that are higher than the secondary EPA standard.

Currently, the water from the PWP is blended with low TDS mountain water. The supply of blend water will eventually become unavailable to SMWSA members. Therefore, SMWSA will eventually need to find additional blend water, desalinate the WISE supply, or find ways to manage the levels of salinity in the river at the source. Other SMWSA members also utilize South Platte River supplies. The ability to manage salinity in the South Platte River would benefit us and many other entities in the basin.

SMWSA will gladly contribute $2,500 in cash funding to support this project. In addition, SMWSA is able to provide in-kind support in the form of staff resources, technical oversight, and peer review, if desired. Please feel free to contact Erik Jorgensen at (720)216-5158 ext. 104 should you have any questions regarding SMWSA's support for this project.

Sincerely,

Lisa Darling
Executive Director

Administrative Committee
127 22nd Street
Greeley, CO 80631
Phone: (970) 351-8201
FAX: (970) 351-8203
www.coloradocorn.com

January 31, 2020

Colorado Water Conservation Board
Water Supply Planning Section
1313 Sherman Street, Suite 718
Denver CO 80203

Re: Colorado Water Plan Grant Proposal – Irrigated Agriculture and Salinity in the South Platte Basin

I work on behalf of several thousand farmers who grow corn along with a variety of other crops in this state and have had the opportunity to see the issues impacting their operations over the last many years. This experience has informed me on the issue of salinity buildup which causes me to be particularly concerned about the seriousness of this issue, and therefore, supportive of this project.

The Colorado Corn Administrative Committee funded the initial study recently completed by Mr. O'Brien that serves as the basis for the application to the Colorado Water Conservation Board, because we recognize how incredibly detrimental the buildup of salts can be to crop production, to Colorado's agricultural productivity overall, and therefore our state's citizenry as a whole. Corn is more tolerant than many crops to salinity accumulation in the root zone, but nearly all crops become impaired at various levels of soil degradation due to this problem.

The initial study indicates serious levels already in the South Platte, particularly the lower reaches of the river.

On behalf of the Colorado Corn Administrative Committee and the Colorado Corn Growers Association, we urge your thoughtful consideration and funding of this worthwhile project.

Sincerely,

Nicholas Colglazier
Colorado Corn
127 22nd Street
Greeley, CO 80631
(970) 351-8201 office
(970) 580-0922 mobile

Colorado Ag Water Alliance

"Commited to the preservation of agriculture through the wise use of Colorado's water resources"

April 29, 2020

To: Colorado Water Conservation
Board Department of Natural
Resources 1313 Sherman Street,
Room 721
Denver, CO 80203

From: Greg Peterson, Executive Director
Colorado Ag Water Alliance

The Colorado Ag Water Alliance (CAWA) supports the grant application "Irrigated Agriculture's Role in South Platte Basin Salinity" submitted by Grady O'Brien NEIRBO Hydrogeology to acquire funding for this research based on the following:

- Based on the previous CWCB study "South Platte River Salinity, Source, Trends, and Concerns," there has been a steady increase in basin salinity due to municipal wastewater effluent, irrigated agriculture, and geologic sources. This new study will better clarify what are the sources relative to municipal wastewater contributions and how salinity overall impacts crop yields and reservoir salinity.
- Understanding baseflow salinity and the salinity contributions of different sources is paramount to undertaking any salinity management or mitigation measures.
- Salinity can negatively impact crops and may be a potential problem for South Platte farmers and ranchers in the future. We feel that work like this study will better allow the agricultural community better address salinity problems before they become acute.

The Colorado Ag Water Alliance will support NEIRGO Hydrogeology by:

- Including the results of this study in our education and outreach to farmers and ranchers in the South Platte River Basin

We appreciate your consideration of this grant application and encourage your approval.

Sincerely,

Greg Peterson
Executive Director