



# COLORADO

## Colorado Water Conservation Board

Department of Natural Resources

1313 Sherman Street, Room 718  
Denver, CO 80203

February 11, 2026

Mattea Freel  
Rio Grande Conservation District  
0048 W County Road 10 N  
Center, CO 81125  
[riograndecd@gmail.com](mailto:riograndecd@gmail.com)

Re: Student-Led San Luis Valley Drought Resiliency Crop Trials  
CWCB Purchase Order No. POGG1 2024-3269

### NOTICE OF GRANT AGREEMENT CLOSEOUT

Dear Mattea:

This letter is to confirm that your grant agreement with the Colorado Water Conservation Board (CWCB) is complete and has been closed. The CWCB has received your final project report and has disbursed all eligible reimbursements for the project referenced above, totaling \$13,405.99.

As mutually agreed, all work under this grant concluded at Task 3, and no additional tasks were authorized or performed beyond that point. CWCB received 1 complete and 2 partial deliverables of the 9 listed for Tasks 1-3.

The grant is now officially closed. Accordingly, there will be no further work performed, and no additional reimbursements or payments will be requested in connection with this grant.

We appreciate the grantee's coordination and transparency as the project took a different direction.

Sincerely,

Laura Spann  
Regional Water Plan Grant Manager  
Colorado Water Conservation Board

Grant Contract Amount = \$52,606.80  
Expended Amount = \$13,405.99





## Rio Grande Conservation District

0048 W County Road 10 N  
Center, CO 81125  
(719) 754-3400 ext. 3022  
riograndecd@gmail.com

1/10/2026

Water Plan Grant Committee  
Colorado Water Conservation Board  
1313 Sherman St.  
Denver, CO 80203

Re: Final Pay Request and Grant Closeout

Dear Grant Committee of the CWCB,

This letter serves to formally acknowledge and confirm the following regarding the Student-Led San Luis Valley Drought Resiliency Crop Trials project and associated work:

1. The Rio Grande Conservation District acknowledges that the current submission constitutes the final pay request under this grant.
2. As mutually agreed, all work under this grant concluded at Task 3, and no additional tasks were authorized or performed beyond that point.
3. The grant is now officially closed. Accordingly, there will be no further work performed, and no additional reimbursements or payments will be requested in connection with this grant.

We appreciate the collaboration throughout the course of this project. Please consider this letter confirmation of grant closeout and final financial reconciliation.

If you have any questions or require additional information, please do not hesitate to contact us.

Sincerely,

Mattea Freel  
District Manager  
Rio Grande Conservation District

## WATER PLAN GRANT FINAL REPORT

### Project Information

Grantee:	Rio Grande Conservation District
Grant Agreement Number:	POGG1 2024-3269
Project Title:	Student-Led SLV Drought Resiliency Crop Trials
Date:	12/12/2025

### Budget Information

Total CWCB Grant Amount:	\$52,606.80
CWCB Grant Funds Spent:	\$13,405.99
Total Actual Project Cost:	\$30,397.20
Match Spent:	Cash Match: \$16,991.21
	In-Kind:
	Total Match: \$16,991.21

### Please provide a general project summary.

This multi-year project began in 2024, when a partnership between Adams State University (ASU) students and the Rio Grande Conservation District (RGCD) was started. Students met with RGCD board members, RGCD staff, and local experts to develop a project that would research a possible solution to the San Luis Valley's (SLV, Valley) extreme, prolonged drought and its effects on local producers without requiring these producers to enter into permanent well dry-up.

For the 2024 growing season, the students decided to trial a cover crop on the RGCD's shared ~6-acre mini-pivot, as the field had been in fallow for multiple years and would need revitalization before continuing studies. This cover crop was a mix of 70% oats and 30% peas and was planted in the late spring. Due to weed interference, the cover crop eventually was outcompeted and did not perform as well as the students had hoped.

Going into the 2025 growing season, the students had met with staff from the Colorado State University (CSU) Research Farm to discuss relevant practices that are currently affecting SLV producers. This led to the idea of trialing revegetation, which encourages producers to establish a conservation cover with little water rather than allowing their field to temporarily or even permanently fallow.

After many planning meetings, the students, CSU staff, and RGCD staff developed an effective revegetation plan that would require 3 years of establishment, then an additional 2-5 years of monitoring. In mid-July, a revegetation cover consisting of native and non-native, annual and perennial species was planted in buffer strips, using triticale as a carrier for the smaller grass seeds. This cover established effectively at 85-90% and is currently undergoing a stage of winter dormancy. If the field survives the 2025-2026 winter season, it will be drilled again as it is slowly phased into total revegetation. Year 2 plans for revegetation are already underway!

Please describe any major issues that have occurred relating to the project's tasks, including any information on cost overruns.

There are 3 primary issues that this project faced:

1. **Weed Management.** In Year 1 of the project, the cover crop faced overcrowding due to weed populations. While the field was mechanically prepped before planting, no chemicals were applied to reduce weed populations. This made it difficult to accurately assess the cover crop's effects on the field.
2. **Project Redirection.** At the start of Year 2, the students decided to go a different route with the project than originally planned. While this opened a new door for research the students were interested in, it made meeting our grant requirements more difficult.
3. **Student Turnover.** Due to the nature of working with college students, some of the students who headed this project in Year 1 did not help with Year 2 since they had graduated after the first season. This made it difficult to maintain consistency and student motivation. Also, many students were not local to the Valley and went home during the summer break and missed most of the growing season.

Please describe corrective actions taken to address the issues described above.

1. To avoid overcrowding weed populations in Year 2, mechanical and chemical treatments were performed before planting. This provided the desired outcome as there are very few weeds currently in the field.
2. While we were able to continue with the Colorado Water Conservation Board Water Plan Grant in Year 2, the RGCD had to find alternative grant funding sources for the remainder of the project due to the redirection to revegetation practices.
3. To maintain a sense of consistency, one of the students who assisted in Year 1 came back to the SLV to assist current students with Year 2 after they had graduated. This student also assisted during the growing season when other students were out of the Valley for their break. This was greatly appreciated and allowed the project to continue in a mostly seamless manner. The addition of CSU staff assistance also helped bridge the gap between project years and when the students were not in school.

Please provide any additional comments or reflections on the project. Did this project achieve the desired outcomes? Would you have done anything differently?

While the project underwent redirection, I do believe it is still achieving the desired outcome that the RGCD had in place. The RGCD has been interested in studying alternative cropping methods that are drought-tolerant in nature due to the drought conditions in the region. Combined with agricultural irrigation withdrawals and depleting aquifer levels, the RGCD has wanted to assist in finding a solution (one of many) that would allow producers to maintain production and avoid permanent well dry-up. Since the RGCD could not accomplish this project alone, they also have wanted to work with local youth and partners to develop a more comprehensive research project, and by partnering with ASU and CSU, that has been accomplished.

The primary thing we would have done differently was have a stronger partnership with CSU and a more concrete plan before starting the project, as Year 1 did not go as planned, and the redirection was unexpected. Now, the project is on track to reach RGCD's desired outcomes.



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Colorado Water  
Conservation Board

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## Project Pictures:



*An ASU student assisting with field prep before planting the cover crop in Year 1. The student was being supervised by RGCD board member, Bryton Burkhart.*



*CSU Research Farm intern, Jackson Baldwin, testing the RGCD's new mobile soil moisture sensor probes on the vegetated mini-pivot in October.*



*The mini-pivot as of 12/11/2025. The vegetation has already entered dormancy for the winter. Cover is estimated at 85-90%.*



*A closer look at the vegetation on 12/11/2025. The recent snow cover has encouraged some greening around the triticale.*

# Western Laboratories, Inc.

211 Highway 95 • Parma, ID 83660  
208-649-4360 • FAX 208-402-5303

<http://www.westernlaboratories.com>

Methods: [www.westernlaboratories.com/soil.htm](http://www.westernlaboratories.com/soil.htm)



Dealer: 8-59 John

Reported: 6-17-2025

Test #: 1

Grower: USDA *Free!*

Field ID: 10 NW

Lab #:

28976

## AGRICULTURAL SOIL REPORT

ELEMENT	YOUR RESULTS	INTERP	SHOULD BE		NO3 ppm	NH4 ppm	CATION BASES	IDEAL	YOUR % BASES
pH-Your Soil	7.7	Slightly Basic		1 Ft	6	3	CALCIUM % of CEC	65-80	200
pH-Buffer*				2 Ft			MAGNESIUM % of CEC	10-20	37
Soluble Salts Ec-mmhos/cm	0.18	Optimum	< 1.5	3 Ft			POTASSIUM % of CEC	2-6	23
% Lime Ca CO3	0.2	No crusting expected		Total PPM		9	SODIUM % of CEC	< 5	2
% Organic Matter-LOI	1.63	Low		Lbs N / Acre*		27	HYDROGEN % of CEC	< 15	
Nitrates-ppm NO3-N	6	Very Low	10 - 35	Your Texture			CEC	6	
Ammonium-ppm NH4-N	3	Low	5 +	Loamy Sand					
Phosphorus-ppm Olsen-P	14	Low	25 - 40	% Base Saturation		262			
Phos-ppm Bray-P*			50 - 100	<b>FERTILIZER SUGGESTIONS IN POUNDS/ACRE BASED ON YOUR CROP &amp; YIELD GOAL</b>					
Potassium-ppm K	534	High	300 +	Crop	Peas-Oats		Your Notes		
Sulfates-ppm SO4-S	12	Low	20 +	Yield Goal	4 Tons				
Calcium-ppm Ca	2402	Optimum	1,800 +	Past Crop					
Magnesium-ppm Mg	264	Optimum	250 +	Acres	5				
Sodium-ppm Na	27	Optimum	< 225	Nitrogen	33				
Zinc-ppm Zn	2.4	Optimum	1.0 - 3.0	Phosphate					
Copper-ppm Cu	0.7	Low	0.8 - 2.5	Potash					
Manganese-ppm Mn	5	Low	6 - 15	Sulfate					
Iron-ppm Fe	5	Very Low	7 +	Elem-S	80				
Boron-ppm B	0.8	Optimum	0.7 - 1.5	Gypsum					
Ratio	Yours	Ideal	Watch	Lime					
Ca:P pH >7	172:1	100:1	Watch P	Dolomite					
Ca:Mg	9:1	6-20:1		Magnesium					
Ca:P pH <7	:1	40:1		Zinc					
P:Zn	6:1	15:1		Manganese					
				Copper					
				Boron					

-LOI: Loss of Ignition

\*CEC-Cation Exchange Capacity

\*For acid soils pH <6.5

\*Phosphate-P205 / Potash-K2O

-Split apply Nitrogen fertilizer

\*Add 15 pounds N/Ton Stubble

-Nitrogen (N) Sulfates and Boron (B) recs are for this crop year at your yield

-Other nutrient recs can be split over 2- years. Work with your crop advisor

Elemental Sulfur = Reclamation Sulfur P.F. Sulfur = Plant Food Sulfur

PPM K / 390 = Meq PPM Mg / 120 = Meq

PPM Ca / 200 = Meq PPM Na / 230 = Meq

*"Always practice the laws of Agronomy. Obey the rules of biology, chemistry and physics." - John P. Taberna, Soil Scientist*

# Data for Mini-Pivot Project - Year 1

**Total Water Used** 2,692 gallons

**Total Cover** 35% crop  
50% weeds  
15% bare ground

**Total Precipitation** 6.75 inches

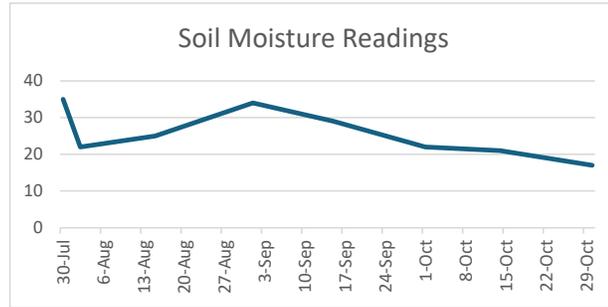
May 1 - Nov 1

\*still in severe drought

## Data for Mini-Pivot Project - Year 2

### Soil Moisture Readings

Date	Percent Volumetric Water Content
30-Jul	35
2-Aug	22
15-Aug	25
1-Sep	34
15-Sep	29
1-Oct	22
14-Oct	21
30-Oct	17



**Total Water Used** 770 gallons

**Total Cover**  
90% crop  
2% weeds  
8% bare ground

**Total Precipitation** 3.25 inches

July 15 - Nov 1

\*still in severe drought

# Student-Led Drought Resiliency Trials Meeting

April 11, 2024

SLV Conservancy District Meeting Room

Attendees: Mattea Freel, Heather Dutton, Sherry Haugen, Bryton Burkhart, Zach Czarnecki, Madeline Wilson, Justin Henderson, Katie Dalsaso, Kelsey Weeks, Jace Martinez, and Sheldon Rocky.

Students came into the meeting with an idea of starting the project with an idea to start with a cover crop of 70% oats and 30% peas to restore the soil before trying a drought alternative or cash crop.

Sherry wondered if trying wool pellets on the mini-pivot would be helpful and would help test soil moisture retention.

Heather offered to partner this project with the Rye Resurgence project in year 2 for the drought-resilient crop. The students were interested in further exploring this idea.

Zach mentioned that the field would need to be planted in May-July. Bryton and Jace plan on assisting with this.

Madeline mentioned that this project might be a good fit with her revegetation project that she's starting. The students were also interested in this idea for upcoming years of the project.

Mattea stated she would plan on meeting with students again before planting to finalize plans.