Water Supply Reserve Fund
Water Activity Summary Sheet
March 11-12, 2020
Agenda Item 23(x)

Applicant & Grantee:	Colorado State University – Colorado Climate Center
Water Activity Name:	Continuation of Weather Stations for North Park Lysimeters to determine high altitude, hay meadow crop coefficients.
Water Activity Purpose:	Agricultural
County:	Jackson
Drainage Basin:	North Platte
Water Source:	n/a
Amount Requested:	$17,844 North Platte Basin Account
Matching Funds:	Applicant Match (cash) = $4,471 • 25% of the Basin Account request (meets 25% min)

Staff Recommendation:

Staff recommends approval of up to $17,844 from the North Platte Basin Account to help fund the project: Continuation of Weather Stations for North Park Lysimeters to determine high altitude, hay meadow crop coefficients.

Water Activity Summary: WSRF Funds, if approved will assist Colorado State University operate weather stations in North Park to compliment the efforts of the North Platte Basin Roundtable and Colorado River Engineering's lysmeters operations and data collection and reporting (agenda item 23(y)) to better understanding the crop water use requirements from irrigated hay meadows.

Discussion: This effort will assist the North Platte Basin Roundtable meet the Goal #1: Maintain and maximize the consumptive use of water permitted in the Equitable Apportionment Decree and the baseline depletion allowance of the Three State Agreement as described in their Basin Implementation Plan.

Issues/Additional Needs: None

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 State University	$4,471	$0	$4,471	Secured
WSRF North Platte Basin Account	$17,844	$0	$17,844	Secured
Total Project Costs	$22,315	$0	$22,315	

CWCB Project Manager: Craig Godbout

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)

X	I acknowledge this request was recommended for CWCB approval by the sponsoring roundtable.
X	I acknowledge I have read and understand the 2016 WSRF Criteria and Guidelines.
X	I acknowledge the Grantee will be able to contract with CWCB using the Standard Contract.(1)
Application Documents	
X	Exhibit A: Statement of Work(2) *(Word – see Template)*
X	Exhibit B: Budget & Schedule(2) *(Excel Spreadsheet – see Template)*
	Letters of Matching and/or Pending 3rd Party Commitments(2)
X	Map(2)
	Photos/Drawings/Reports
X	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.
(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.

Last Update: July 31, 2018

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:	March 2020
Desired Notice to Proceed Date:	ASAP

Water Activity Summary	
Name of Applicant	Colorado State University (CSU) / Colorado Climate Center (CCC)
Name of Water Activity	Continuation of Weather Stations for North Park lysimeters to determine high altitude, hay meadow crop coefficients.

Approving Roundtable(s)	Basin Account Request(s)(1)
North Platte	$17,884
Basin Account Request Subtotal	$17,884
Statewide Account Request(1)	$
Total WSRF Funds Requested (Basin & Statewide)	$17,884
Total Project Costs	$22,355

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

Last Update: July 31, 2018

Grantee and Applicant Information	
Name of Grantee(s)	Colorado State University
Mailing Address	Sponsored Programs 601 S. Howes St. 2002 Campus Delivery Fort Collins, CO 80523-2002
FEIN	84-6000545
Grantee's Organization Contact(1)	Lisa Anaya
Position/Title	Senior Research Administrator
Email	lisa.anaya@colostate.edu
Phone	970-491-0537
Grant Management Contact(2)	Russ Schumacher & Zach Schwalbe
Position/Title	Colorado State Climatologist/CoAgMET Manager
Email	russ.schumacher@colostate.edu / zach.schwalbe@colostate.edu
Phone	970-491-8140
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).
The Colorado Climate Center was established by the state in 1974 through the Colorado State University Agricultural Experiment Station to provide information and expertise on Colorado's complex climate. Through its program of Climate Monitoring, Climate Research and Climate Services, the center is responding to many climate related questions and problems affecting the state today. One way the Center monitors the climate is through the CoAgMet Network. A network of 87 stations statewide tracking agricultural weather and Colorado's climate. The Climate Center is located at Colorado State University within the Department of Atmospheric Science.

Last Update: July 31, 2018

Type of Eligible Entity (check one)	
X	**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)	
X	Study
	Implementation

Category of Water Activity (check all that apply)		
	Nonconsumptive (Environmental)	
	Nonconsumptive (Recreational)	
X	Agricultural	
	Municipal/Industrial	
X	Needs Assessment	
X	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	Jackson County
Latitude	40.716
Longitude	-106.278

Last Update: July 31, 2018

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.
In 2016, two Lysimeters were installed adjacent to the Cowdrey CoAgMET station to better quantify consumptive use in the North Platte Basin. Due to unforeseen issues with the lysimeters prevented quality data to be collected for the first two years of the project. In order to collect enough quality data, this project needs at least three more years of data collection. The CoAgMET weather stations are used to calculate ASCE Reference ET, while the lysimeters collect actual consumptive use. The data from each are then compared and used to calculate crop coefficients for hay meadow environment. This grant will continue the maintenance and operation of the three CoAgMET stations. Annual visits to the weather stations will be made in the spring to ensure the stations are functioning properly and replace bearings for wind monitors. Every other year temperature/relative humidity sensors and pyranometers (solar radiation) will be replaced and calibrated. Other maintenance visits will be completed to fix issues that may arise between scheduled visits. Wendy Ryan, with Colorado River Engineering, will maintain the lysimeters and calculate the consumptive use and crop coefficients.

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	
X	Other	Explain: Updated Crop Coefficients to better estimate crop consumptive use.

Last Update: July 31, 2018

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).
This project will help sustain agriculture in the basin by better understanding the crop water use requirements from irrigated hay meadows in North Park. Once a better handle on crop consumptive use is understood, it may have an impact on the compact with Wyoming about the consumptive use of irrigated meadows in the basin. While this project will not run the lysimeters, the weather stations are an intrigal part of quantifying crop consumptive use by comparing the lysimeters data from the calculated data. Calculated data can then be modified to match the consumptive use of the lysimeters.

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

Last Update: July 31, 2018

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)
CSU UIC	$4,471.00 (cash)
Total Match	$4,471.00 (cash)
If you requested a Waiver to the Basin Account matching requirements, indicate the percentage you wish waived.	

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):
If you requested a Waiver to the Statewide Account matching, indicate % you wish waived. (Max 50% reduction of requirement).	

Last Update: July 31, 2018

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.

The CoAgMET network currently has a similar project with the Yampa-White-Green roundtable to run lysimeters adjacent to the CoAgMET station at the Carpenter Ranch in Hayden. This project has the same goal to assess crop coefficients for high elevation hay meadows.

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) CSU
2) Colorado Agricultural Meteorological Network (CoAgMet)/ Colorado Mesonet Enhancements
3) Info
4) Info
5) CT PDAA 2018-00991

1) CSU
2) CWCB Mesonet FY19
3) Info
4) Info
5) CT PDAA 2019-002684

1) CSU
2) Re-establishment of Lysimeters in North Park to Determine High Altitude, Hay Meadow Crop Coefficients
3) Info
4) Info
5) CTGG1 2015-2323

1) CSU
2) CWCB Mesonet FY20
3) Info
4) Info
5) POGG1,PDAA,2020000002256

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.

Last Update: July 31, 2018

BUDGET

	P1(04/01/2020 - 03/31/2021)	P2(04/01/2021 - 03/31/2022)	P3(04/01/2022 - 03/31/2023)	Totals
Personnel				
Salary	$3,133.96	$3,227.98	$3,324.82	$9,686.76
Fringe	$899.45	$926.43	$954.22	$2,780.10
Personnel Subtotal	$4,033.41	$4,154.41	$4,279.04	$12,466.86
Non-personnel				
Other Direct	$1,028.20	$1,028.20	$1,028.20	$3,084.60
Non-personnel Subtotal	$1,028.20	$1,028.20	$1,028.20	$3,084.60
CSU Totals				
Total Direct Cost	$5,061.61	$5,182.61	$5,307.24	$15,551.46
Total F&A Costs	$759.24	$777.39	$796.09	$2,332.72
Totals Subtotal	$5,820.85	$5,960.00	$6,103.33	$17,884.18
Basin Account Match (25%)*	$1,455.21	$1,490.00	$1,525.83	$4,471.05
TOTAL	$7,276.06	$7,450.00	$7,629.16	$22,355.23
*Contributing entity is CSU unrecovered indirect (UIC)				

Last Update: January 9, 2018

Colorado Water Conservation Board	
Water Supply Reserve Fund	
Exhibit A - Statement of Work	
Date:	
Water Activity Name:	Continuation of Weather Stations for North Park lysimeters to determine high altitude, hay meadow crop coefficients.
Grant Recipient:	**Colorado State University (CSU)/Colorado Climate Center (CCC)**
Funding Source:	

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.

In 2016, two Lysimeters were installed adjacent to the Cowdrey CoAgMET station to better quantify consumptive use in the North Platte Basin. Due to unforeseen issues with the lysimeters prevented quality data to be collected for the first two years of the project. In order to collect enough quality data, this project needs at least three more years of data collection.

The CoAgMET weather stations are used to calculate ASCE Reference ET, while the lysimeters collect actual consumptive use. The data from each are then compared and used to calculate crop coefficients for hay meadow environment.

This grant will continue the maintenance and operation of the three CoAgMET stations. Annual visits to the weather stations will be made in the spring to ensure the stations are functioning properly and replace bearings for wind monitors. Every other year temperature/relative humidity sensors and pyranometers (solar radiation) will be replaced and calibrated. Other maintenance visits will be completed to fix issues that may arise between scheduled visits.

Wendy Ryan, with Colorado River Engineering, will maintain the lysimeters and calculate the consumptive use and crop coefficients.

Objectives: (List the objectives of the project)

1. **Continue operation and maintenance of the three weather stations in the North Platte at Cowdrey, Larand and Hebron**
2. **Continued public availability of high-quality weather and reference evapotranspiration data.**
3. **Continue working with Colorado River Engineering to deliver weather station and reference ET data so Wendy Ryan with can calculate appropriate crop coefficients for hay meadows in the North Platte Basin.**

Last Update: January 9, 2018

Tasks
Provide a detailed description of each task using the following format:
Task 1 - (Name): Weather Station Maintenance
Description of Task:
Continued operation and maintenance of the three CoAgMET Weather Stations in the North Platte to supply high quality weather data and reference evapotranspiration data on the CoAgMET website.
Method/Procedure:
Annual maintenance will be performed by CoAgMET staff. Each year, wind bearings will be changed, batteries replace if voltage is getting low and other equipment checked. Every other year the temperature/relative humidity sensors and pyranometers (solar radiation sensors) will be replaced with recalibrated equipment to ensure data quality. In the event of equipment malfunction or data issues between service visits, special emergency visits will be made. Data is then transmitted to the Colorado Climate Center via Radio transmitter and internet. Automated quality checks are performed, and data is online within minutes of being collected by the station. Within the next couple of days, the data is looked at by CoAgMET staff in closer detail for further quality control checks. If data looks suspicious, it is flagged and fixed or removed.
Grantee Deliverable: (Describe the deliverable the grantee expects from this task)
Publicly available weather data accessible on the CoAgMET site: coagmet.colostate.edu. All weather parameters are available in 5-minute, hourly and daily format and data are archived. Reference ET is calculated on the site and available in real-time. Quality reference ET data will be supplied to Wendy Ryan and Colorado River Engineering.
CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)
A record and summary of weather data collected by the CoAgMET stations and calculated reference ET used to complete analysis of crop coefficients. Service logs and maintenance records will be available upon request.

Last Update: January 9, 2018

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.

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: 01/30/2020

Water Activity Name: Continuation of Weather Stations for North Park lysimeters to determine high altitude, hay meadow crop coefficients.

Grantee Name: Colorado State University (CSU) / Colorado Climate Center (CCC)

Task No.[1]	Description	Start Date[2]	End Date	Matching Funds (cash & in-kind)[3]	WSRF Funds (Basin & Statewide combined)[3]	Total
1	Operation and Maintenance of Weather Stations in North Platte Basin			**$4,471**	**$17,844**	**$22,315**
						$0
						$0
						$0
						$0
						$0
						$0
						$0
						$0
						$0
						$0
						$0
						$0
			Total	$4,471	$17,844	$22,315

(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.

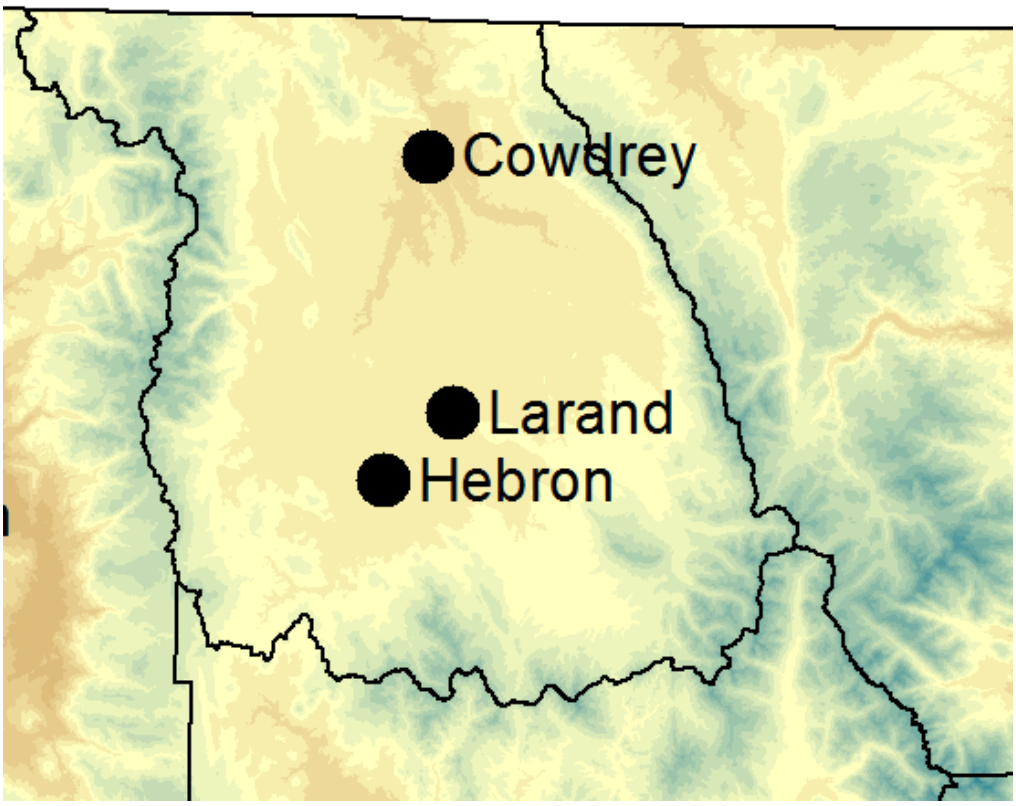
(2) Round values up to the nearest hundred dollars.

• 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

Exhibit C – Site Map



Location of three CoAgMET Weather Stations in Jackson County. The lysimeter is adjacent to the Cowdrey station.