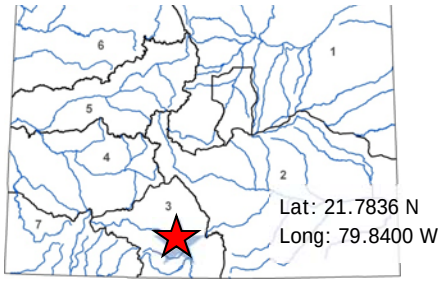
COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Food Asset Mapping for Ag Economic Development & Water Conservation
Colorado State University

November 2019 Board Meeting

Water Plan Grant Application



LOCATION	
County/Counties:	Alamosa, Conejos, Costilla, Rio Grande, Saguache, Mineral
Drainage Basin:	Rio Grande

DETAILS	
Total Project Cost:	$327,929
Water Plan Grant Request:	$163,885
Recommended Amount:	$163,885
Other CWCB Funding:	$0
Other Funding Amount:	$106,000
Applicant Match:	$58,044
Project Type(s): Study	
Project Category(Categories): Agricultural	
Measurable Result:	Agricultural water conservation

Agriculture is the primary economic driver in the Rio Grande Basin, with a significant share of the region's gross domestic product and the largest source of base jobs. Agriculture in the San Luis Valley faces many challenges including persistent drought. Aquifer sustainability requirements are applying pressure to agricultural water users to change historic practices and have the potential to significantly alter agricultural water use and production in the future.

To address these challenges, there is interest in pursuing strategies for maintaining the sustainability of the aquifer systems and the economic base of local communities. One such strategy identified in the Rio Grande Basin Implementation Plan is to explore opportunities to reduce pumping through alternative cropping rather than drying up productive farm ground. Incorporating alternative crops and farming methods that reduce consumptive water use are opportunities to maintain an economically stable future for agricultural producers but have challenges, as equipment needs and market conditions make switching to new crops complex.

Spearheaded by Colorado State University, in collaboration with a diverse stakeholder group, this project seeks to better understand the challenges associated with creating market-opportunities and resources to encourage potential shifts in crop production through the development of a Colorado-specific protocol to support food asset mapping for local communities, implementing the protocol in the San Luis Valley, and assessing potential water conservation, job creation, and economic impacts associated with changing production, rotation, or supply chains that meet growing Front Range/Denver Metro Area market opportunities for Colorado-grown products. In particular, the project will conduct an assessment of market opportunities in the Denver metro area (e.g. institutional buyers) and determine how meeting these demands will influence economic development and water use in the San Luis Valley. Findings will be included in an action plan that highlights how the Department of Natural Resources, Department of Local Affairs (DOLA), Colorado Department of Agriculture (CDA), Colorado Office of Economic Development and International Trade (OEDIT) can coordinate public resources to facilitate market connections between urban markets and rural agricultural areas.

Staff recommends Board approval for the full grant amount requested. This project furthers several of Colorado's Water Plan critical action goals relating to agriculture including maintain agriculture viability, promoting voluntary and incentive-based water conservation measures, and conserving irrigated agricultural land for future generations. The project also supports innovative solutions to regional water challenges and alternatives to potential permanent reductions in irrigated agriculture while meeting regional demands. The project also supports collaboration; bringing a diverse group of stakeholders together to leverage public dollars. Project partners including Denver's Office of Public Health and Environment, DOLA, CDA, Adams State University, the San Luis Valley Development Resources Group, and the San Luis Valley Local Foods Coalition.

Colorado Water Conservation Board

Water Plan Grant Application

Instructions

To receive funding for a Water Plan Grant, applicant must demonstrate how the project, activity, or process (collectively referred to as "project") funded by the CWCB will help meet the measurable objectives and critical actions in the Water Plan. Grant guidelines are available on the CWCB website.

If you have questions, please contact CWCB at (303) 866-3441 or email the following staff to assist you with applications in the following areas:

Water Storage Projects	Anna.Mauss@state.co.us
Conservation, Land Use Planning	Kevin.Reidy@state.co.us
Engagement & Innovation Activities	Ben.Wade@state.co.us
Agricultural Projects	Alexander.Funk@state.co.us
Environmental & Recreation Projects	Chris.Sturm@state.co.us

FINAL SUBMISSION: Submit all application materials in one email to *waterplan.grants@state.co.us*
in the original file formats [Application (word); Statement of Work (word); Budget/Schedule (excel)]. Please do not combine documents. In the subject line, please include the funding category and name of the project.

Water Project Summary	
Name of Applicant	Colorado State University
Name of Water Project	Food asset mapping to understand opportunities for agricultural economic development that reduce water consumption
CWP Grant Request Amount	$ 163,885
Other Funding Sources	$ 91,000 (City and County of Denver/FFAR)
Other Funding Sources	$ 15,000 (Ohio State University)
Other Funding Sources	
Applicant Funding Contribution	$ 58,044
Total Project Cost	$ 327.929

Applicant & Grantee Information
Name of Grantee(s) Colorado State University
Mailing Address: Sponsored Programs 2002 Campus Delivery, Fort Collins 80523-2002
FEIN: 846000545

Organization Contact: Becca Jablonski
Position/Title: Assistant Professor and Food Systems Extension Economist
Email: Becca.JablonskI@colostate.edu
Phone: 970-491-6133
Grant Management Contact: Catherine Douras
Position/Title: Senior Research Administrator
Email: Catherine.Douras@colostate.edu
Phone: 970-491-2375
Name of Applicant (if different than grantee)
Mailing Address
Position/Title
Email
Phone
Description of Grantee/Applicant
Provide a brief description of the grantee's organization (100 words or less).

Colorado State University has a unique mission in the state of Colorado. The land-grant concept of a balanced program of teaching, research, extension, public service, and engagement provides the foundation for the University's teaching and research programs, Agricultural Experiment Station, Cooperative Extension, and Colorado State Forest Service. The University has long been a leader in recognizing the rapidly changing global environment, and has a commitment to excellence in international education in its instructional, research, and outreach programs. The University continues to make education and training accessible to deserving applicants from all classes and groups, and maintains a wide range of research, extension, and public service programs in response to the needs of the people of Colorado, the nation, and the world.

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: Private parties may be eligible for funding.
	Non-governmental organizations (NGO): Organization that is not part of the government and is non-profit in nature.
	Covered Entity: As defined in Section 37-60-126 Colorado Revised Statutes.

Type of Water Project (check all that apply)

x	Study
	Construction
	Identified Projects and Processes (IPP)
	Other

Category of Water Project (check the primary category that applies and include relevant tasks)	
	Water Storage - Projects that facilitate the development of additional storage, artificial aquifer recharge, and dredging existing reservoirs to restore the reservoirs' full decreed capacity and Multi-beneficial projects and those projects identified in basin implementation plans to address the water supply and demand gap.. *Applicable Exhibit A Task(s):*
	Conservation and Land Use Planning - Activities and projects that implement long-term strategies for conservation, land use, and drought planning. *Applicable Exhibit A Task(s):*
	Engagement & Innovation - Activities and projects that support water education, outreach, and innovation efforts. Please fill out the Supplemental Application on the website. *Applicable Exhibit A Task(s):*
x	Agricultural - Projects that provide technical assistance and improve agricultural efficiency. *Applicable Exhibit A Task(s):*

	Environmental & Recreation - Projects that promote watershed health, environmental health, and recreation. *Applicable Exhibit A Task(s):*	
	Other	Explain:

Location of Water Project	
Please provide the general county and coordinates of the proposed project below in **decimal degrees**. The Applicant shall also provide, in Exhibit C, a site map if applicable.	
County/Counties	Rio Grande, Saguache, Alamosa, Conejos, Costilla, Mineral
Latitude	
Longitude	

Water Project Overview
Please provide a summary of the proposed water project (200 words or less). Include a description of the project and what the CWP Grant funding will be used for specifically (e.g., studies, permitting process, construction). Provide a description of the water supply source to be utilized or the water body affected by the project, where applicable. 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, and area of habitat improvements, where applicable. 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, Other Funding Sources/Amounts and Schedule.

Agriculture is the primary economic driver in the Rio Grande Basin, with a significant share of the region's gross domestic product and the largest source of base jobs. Agriculture in the San Luis Valley faces many challenges including persistent drought. Aquifer sustainability requirements are applying pressure to agricultural water users to change historic practices and have the potential to significantly alter agricultural water use and production in the future.

To address these challenges, there is interest in pursuing strategies for maintaining the sustainability of the aquifer systems and the economic base of local communities. One such strategy is to explore opportunities to reduce pumping through alternative cropping rather than drying up productive farm ground. Incorporating alternative crops and farming methods that reduce consumptive water use are opportunities to maintain an economically stable future for agricultural producers but have challenges, as equipment needs and market conditions make switching to new crops complex.

This project seeks to address some of the challenges associated with creating markets and resources for potential shifts in crop production through the development a Colorado-specific protocol to support food asset mapping for local communities, implementing the protocol in the San Luis Valley, and assessing potential water conservation, job creation, and economic impacts associated with changing production, rotation, or supply chains that meet growing Front Range/Denver market opportunities for Colorado-grown products. Colorado State University and the Denver's Office of Public Health and Environment are already working to leverage urban market opportunities to support Colorado farmers and ranchers through a Foundation for Food and Agricultural Research (FFAR) funded project. However, little attention has been paid to how meeting these market opportunities with particular crops may further state and regional water resource management and rural economic development objectives.

The opportunities available to different communities necessarily depend on existing food system assets (i.e., available irrigated acreage, kitchen incubators, distribution, cold storage, packing sheds). Thus, identifying and mapping these assets - as well as understanding their condition, capabilities, limitations, and untapped potential - before making recommendations is critical. The results of this project include: 1) creation of a Colorado-specific food asset mapping tool (including technical assistance for its use); 2) identification of market opportunities for San Luis Valley-grown products that reduce consumptive water use, 3) enhanced understanding of how the Department of Local Affairs (DOLA), Department of Natural Resources (DNR), Office of Economic Development and International Trade (OEDIT), Colorado Department of Agriculture (CDA), and other state and local agencies can leverage public and private resources to support agricultural economic development and rural job creation that concomitantly meets Colorado's Water Plan goals of maintaining Colorado's agricultural productivity and supporting rural economies.

Measurable Results		
To catalog measurable results achieved with the CWP Grant funds, please provide any of the following values as applicable:		
	New Storage Created (acre-feet)	
X	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)	
	Quantity of Water Shared through Alternative Transfer Mechanisms	
	Number of Coloradans Impacted by Incorporating Water-Saving Actions into Land Use Planning	
	Number of Coloradans Impacted by Engagement Activity	
X	Other	Explain: Maintaining agricultural viability and economic resiliency

Water Project Justification

Provide a description of how this water project supports the goals of Colorado's Water Plan, the most recent Statewide Water Supply Initiative, and the applicable Roundtable Basin Implementation Plan and Education Action Plan. 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).

The proposed water project shall be evaluated based upon how well the proposal conforms to Colorado's Water Plan Framework for State of Colorado Support for a Water Project (CWP, Section 9.4, pp. 9-43 to 9-44;)

This project furthers several goals included in the Critical Action Plan of Colorado's Water Plan including:

- Maintaining Colorado's agricultural productivity, support of rural economies, and food security (through meaningful incentives and grassroot efforts).

- Support Colorado's agricultural industry to make it more efficient, resilient, and able to reduce water consumption without impacting agricultural productivity.

More specifically, the project conforms to Colorado's Water Plan criteria by:

- Involves multiple participants and demonstrates a commitment to collaboration (Colorado Department of Local Affairs, Colorado Department of Agriculture, Colorado Office of Economic Development and International Trade, Colorado State University, Colorado Potato Administrative Committee, San Luis Valley Local Foods Coalition, San Luis Valley Value Added Agriculture Sector Partnership, The Valley Roots Food Hub and Tap Root Cooperative, Adams State University, Alamosa County Economic Development, University of Colorado Boulder, Colorado Food Systems Advisory Council);
- Consults a broad set of local stakeholders (Center, Rio Grande, Mosca-Hooper, Costilla and Conejos Conservation Districts; Rio Grande Water Conservation District; Rio Grande Basin RoundTable list local partners);
- Addresses an identified water gap and critical resource challenge;
- Identified in a BIP (see below);
- Mitigates or avoids economic and social impacts on agricultural and rural communities; and
- Maximizes the use of water resources (aquifer sustainability).

The Rio Grande Basin Implementation Plan has identified the following resource issues: significant aquifer decline, prolonged and systemic drought, climate change, lack of a diverse economy, and compact obligations to downstream states. To address these concerns, the BIP discusses at length the possibility of exploring opportunities to reduce demand on basin water systems through incorporation of alternative crops such as quinoa, hemp, and potato varieties, as well as, the challenges of transitioning to new crops such as lack of technical assistance and market opportunities.

Additionally, this project addresses the following Rio Grande Basin Implementation Plan Goals:

- Sustain the confined and unconfined aquifers in accordance with Senate Bill 04-222 and operate within the State Engineer's new Rules and Regulations for the San Luis Valley.

- Manage water use to sustain optimal agricultural economy throughout the Basin's communities.
- Support the development of projects and methods that have multiple benefits for agricultural, municipal and industrial, and environmental and recreational water needs.
- Promote water management and administrative practices that are adaptive, flexible, and responsive to optimize multiple benefits.

The communities, governments, and citizens of the San Luis Valley are actively exploring approaches for achieving and maintaining groundwater sustainability and other water resource goals while maintaining the economic base of local communities. In particular, this project will support those efforts through holistically evaluating economic market opportunities that can strengthen agricultural water conservation and the regional economy.

Related Studies

Please provide a list of any related studies, including if the water project is complementary to or assists in the implementation of other CWCB programs.

This project is complementary to agriculture water projects throughout the Rio Grande Basin, the State of Colorado and across the U.S.

Rebecca Hill and James Pritchett. (2016) Economic Impact Analysis and Regional Activity Tool for Alternative Irrigated Cropping in the San Luis Valley

Rebecca Hill and James Pritchett. (2016) Economic Impact Analysis and Regional Activity Tool for Alternative Irrigated Cropping: County Level Tool Report. http://www.cwi.colostate.edu/media/publications/sr/28.pdf

Dawn Thilmany McFadden, Becca Jablonski, and Greg Graff. (2017) Colorado Blueprint of Food and Agriculture. https://foodsystems.colostate.edu/extension-outreach/colorado-blueprint/

Michael Hancock. (2017). Denver Food Vision. https://www.denvergov.org/content/dam/denvergov/Portals/771/documents/CH/Final_FoodVision_2017.pdf

Pathways to prosperity: Collaborative local governing for rural wealth creation. U.S. Department of Agriculture, National Institute of Food and Agriculture, $574,420 (CSU sub contract $92,550, Becca Jablonski PI), 2019-2022.

San Luis Valley Value Added Agriculture Sector Partnership. Strategic Plan. 2016-2018.

LiveWell Colorado's Mapping and Reporting Tool (now being redeveloped by Colorado State University). The prototype is available here: https://ffar.erams.com/

Integrating Community and Modeling Efforts to Evaluate Impacts and Tradeoffs of Food System Interventions, Becca Jablonski PI. Foundation for Food and Agricultural Research (FFAR), $1,000,000 (FFAR); $1,000,718 (match); $2,000,718 (total), 2018-2021.

Becca Jablonski, Michael Carolan, James Hale, Dawn Thilmany McFadden, Erin. Love, Libby Christensen, Tabitha Covey, Laura Bellows, Rebecca Cleary, Olaf David, Kevin Jablonski, Paul Meiman, Jason Quinn, Elizabeth Ryan, Meagan Schipanski, Hailey Summers, and Mark Uchanski. 2019. Connecting Urban Food Plans to the Countryside: Leveraging Denver's Food Vision to Explore Meaningful Rural-Urban Linkages. *Sustainability* 11(7):2022.

Previous CWCB Grants, Loans or Other Funding

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; 6) Percentage of other CWCB funding for your overall project.

Colorado State University, Ag Weather Data Delivery Improvement, Gunnison, March 2011, CT150499

Colorado State University, Re-establishment of Lysimeters in North Park to Determine High Altitude, Hay Meadow Crop Coefficients, North Platte, Sept 2014, CTGG1 2015-2323

Colorado State University (on behalf of Water Preservation Partnership), Economic Analysis and Design of Policies to Reduce Colorado's Groundwater Use in the Northern Plains Groundwater Basin, South Platte, Sept 2014, CTGG1 2015-3111

Colorado State University, Continuation of lysimeter operations and consumptive use quantification in high-altitude, irrigated meadows, Yampa-White-Green, March 2016, POGG1 2016-799

Taxpayer Bill of Rights

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

N/A

Submittal Checklist	
	I acknowledge the Grantee will be able to contract with CWCB using the Standard Contract.
Exhibit A	
	Statement of Work(1)
	Budget & Schedule(1)
	Engineer's statement of probable cost (projects over $100,000)
	Letters of Matching and/or Pending 3rd Party Commitments(1)
Exhibit C	
	Map (if applicable)(1)
	Photos/Drawings/Reports
	Letters of Support (Optional)
	Certificate of Insurance (General, Auto, & Workers' Comp.) (2)
	Certificate of Good Standing with Colorado Secretary of State(2)

	W-9[2]
	Independent Contractor Form[2] (If applicant is individual, not company/organization)
Engagement & Innovation Grant Applicants ONLY	
	Engagement & Innovation Supplemental Application[1]

(1) Required with application.
(2) Required for contracting. While optional at the time of this application, submission can expedite contracting upon CWCB Board approval.

Colorado Water Conservation Board
Water Plan Grant - Exhibit A

Statement Of Work	
Date:	**7/12/19**
Name of Grantee:	**Colorado State University**
Name of Water Project:	

Funding Source:	**Colorado Water Plan Grant, Agriculture**

Water Project Overview:

This project will develop a Colorado-specific protocol to support food asset mapping for local communities, implement the protocol in the San Luis Valley, and assess potential water savings, high-quality job creation, and economic impact associated with changing production, rotation, or supply chains that meet growing Denver-area market opportunities for Colorado grown products. Colorado State University and the Denver's Office of Public Health and Environment are already working to leverage urban market opportunities to support Colorado farmers and rural communities. However, little attention has been paid to how meeting these market opportunities with particular crops may result in water savings in adherence to the Colorado water plan. In addition, the opportunities available to different communities necessarily depend on existing food system assets (i.e., available irrigated acreage, kitchen incubators, distribution, cold storage, packing sheds). Thus, understanding and mapping these assets before making recommendations is critical.

This project builds directly from several previous or ongoing efforts. Rebecca Hill and James Pritchett built a tool for evaluating the economic impact and regional activity of alternative irrigated cropping in the San Luis Valley. However, this tool was last updated in 2016 and only includes four crops - alfalfa hay, potatoes, barley and wheat. From a water savings perspective, understanding potential market opportunities that are broader than these commodities, as well as impacts resulting from changes in the variety of potato planted (water needs for russets, for example, can vary by over 6 inches alone depending on variety!), is critical to support effective planning and transitions in the San Luis Valley. The Colorado Blueprint for Food and Agriculture worked to identify key food and agricultural areas through stakeholder conversations that explore opportunities for food systems led community economic development across Colorado. As part of this effort, regional town hall meetings were convened, which resulted in regional opportunity reports. Identifying market opportunities, infrastructure and technical assistance to support value added agriculture was a top priority. At the same time that the Colorado Blueprint of Food and Agriculture was in development, Denver was working on its Food Vision. Preserving agricultural and working lands were one of its identified priorities under its 'resilience' pillar. Finally, the San Luis Valley has a strong local foods coalition to serve as the SLV liaison and a value added agriculture sector partnership that was strong, but has waned in recent years. Despite this, there is a group that can be revived to support this type of work.

Project Objectives:

The objectives of this project include: 1) creation of a Colorado-specific food asset mapping tool - a Colorado specific tool is needed given unique geographies, natural resource base, demographic trends, etc.; 2) identification of market opportunities for San Luis Valley grown products that yield water savings; 3) enhance understanding of how the DOLA, DNR, OEDIT, CDA, and local agencies can leverage public and private resources to support agricultural economic development and rural job creation that concomitantly meets Colorado's Water Plan goals of maintaining Colorado's agricultural productivity and supporting rural economies.

Tasks

Task 1 – Conduct assessment of market opportunities in the Denver metro area as in-kind match from the City/County of Denver and CSU led FFAR grant, and with support from Rebecca Hill on hemp, and determine water and economic impacts of various crop production/rotation scenarios.

Description of task:

1. Through an existing Foundation for Food and Agriculture (FFAR) grant, led by CSU and including a subcontract with the City and County of Denver, an employee was hired (Marion Kalb) to work with Denver metro region's institutional buyers to understand market opportunities for Colorado grown and raised products. As part of this effort, she is documenting commodities, quantities, prices, current local purchases, and other key attributes (i.e., certified organic) of products purchased (or demanded) by institutional buyers.
2. Rebecca Hill will lead an assessment of market opportunities in Colorado for products that utilize hemp.
3. Once the list of commodities purchased and/or demanded is complete, this information will be provided to researchers at Colorado State University to understand the water, economic multiplier, and high-quality job creation impacts associated with potential changes in production to meet Denver's market opportunities. For example, if potato growers substitute barley rotations with quinoa, there are likely water savings effects and financial benefits that can be documented.
4. The list of market opportunities, including project water, economic, and employment impacts will be put into report and presentation formats and shared with San Luis Valley stakeholders at the convening described below.

Method/Procedure:

1. Documenting market opportunities: Marion Kalb and a student intern are leveraging relationships through the City's Office of Procurement (Jails, Head Start), Denver Public Schools, Hospital Compact, and other large institutional buyers to gain access to information about procurement. They have created an intake form wherein institutional buyers can enter their data. To date, they have had tremendous success in gaining access to the required information.
2. Water impacts: Dr. Chris Goemans, Associate Professor in the Department of Agricultural and Resource Economics will lead this aspect of the project. The project team will establish a field-level, water use baseline utilizing Colorado Decision Support System cropping and water use data for the Rio Grande river basin. Alternative water use scenarios will be developed based on the adoption of alternative cropping patterns, irrigation technologies, and watering strategies on select fields throughout the study region. Estimated water use savings will be calculated by comparing baseline water use to estimates obtained under each scenario.
3. Economic and employment impacts: Dr. Allie Bauman, Research Scientist in the Department of Agricultural and Resource Economics will lead this part of the study, working in conjunction with Drs. Becca Jablonski and Rebecca Hill. Economic impacts occur (positive or negative) based on changes to inter-industry linkages both within and among sectors of an economy. A shift in production from one commodity to another will generate positive or negative economic impacts depending on how that shift impacts other sectors in the local economy, as well as labor utilization. For example, if a new commodity requires more labor, additional local input expenses (for example higher cost seeds or other inputs), or yields additional revenue that the farm owner responds locally, we would expect positive impacts to occur. A Social Accounting Matrix (SAM) model is an accounting system that links the economic transactions within an economy among production sector, labor and other factors of production, and government and other institutions. A SAM is used to quantify these changes and provide a multiplier effect associated with potential changes (i.e., for every $1 of additional expenditure on X, we expect $Y of additional local economic activity). Dr. Bauman will utilize a SAM model to calculate potential economic impacts associated with various crop shifting scenarios.

Deliverable:

Report and powerpoint presentation that identifies water, economic, and employment impacts associated with commodities identified in Denver's market opportunity list and makes recommendations for actions/next steps.

Tasks
Task 2 – Create a Colorado-specific protocol to support food asset mapping and pilot the protocol in the San Luis Valley.
Description of Task:
1. Convene project advisory committee to define the goals and outcomes associated with food system mapping and how it can be used once complete, including assessing existing public and private financial resources for implementation of project recommendations. 2. Conduct a national survey of food asset mapping that can be used to support the Colorado-specific protocol. 3. Develop a Colorado specific food asset mapping protocol that meets statewide needs and can be piloted in the San Luis Valley. 4. Review and refine protocol with the advisory committee. 5. Hire ½ time employee in the San Luis Valley, in conjunction with the San Luis Valley Local Foods Coalition, Adams State University, Alamosa Economic Development to coordinate the pilot food asset mapping exercise. 6. Utilize secondary data to pre-populate the food asset map, collected and aggregated as match from Ohio State University. 7. Verify secondary data and populate primary data on the food asset map, and conduct interviews with key ag and food stakeholders in the Valley. 8. Integrate data into Colorado statewide GIS platform such that the data are publicly available (draft, funded by the FFAR grant, available here: https://ffar.erams.com/).
Method/Procedure:
Food Asset Mapping is a technique that is used to understand historic changes and shifts in food assets over time. Changes in the flow and diversity of the population impact farming, food processing and manufacturing, as well as shift the dynamics of the food retail environment. Food assets include the local food infrastructure that maintains food-secure, and economically vibrant communities and regions - agricultural inputs, farms and ranches, processing and distribution capacity, food businesses,markets, retailers, kitchens, waste treatment facilities, emergency food distribution, as well as non-physical assets such as funding, investment opportunities, services, and technical assistance support. Unlike many previous food asset mapping exercises, it is critical in Colorado to consider natural resource assets, particularly water, which may limit potential opportunities or put other food assets at risk.
Deliverable:

Food asset mapping data integrated into the statewide food mapping and reporting tool (currently being built and temporarily housed here: https://ffar.erams.com/). Dissemination of data at meetings held in conjunction with the San Luis Valley's Value Added Ag Sector Partnership. SWOT analysis integrated into final report. .

Task
Task 3 – Convene key stakeholders in the San Luis Valley, leveraging support from the statewide advisory committee.
Description of Task:
1. Convene the San Luis Valley's Value Added Ag Sector Partnership, including the Salazar Center at Adams State, a minimum of three times over the project period. The statewide project advisory committee will also be asked to attend each of the convenings. The first convening will be to discuss the goals of the project and potential outcomes with the goal of informing to work of the asset mapper. The second convening will be to provide an update from the asset mapping, including results from the secondary data compilation led by Ohio State. The third meeting will be to share results from Denver's market assessment, and the San Luis Valley's food asset mapping exercise to determine next steps, including identification and assessment of public and private financial resources, to support agricultural economic development and the goals of Colorado's Water Plan. 2. Write up the results from the convenings. Work with the statewide project to determine how DOLA, SNR, OEDIT and CDA can coordinate resources to implement next steps/recommendations developed throughout the project.
Method/Procedure:

Liza Marron will act as the San Luis Valley liaison, overseeing the food asset mapping employee. She will be responsible for communicating with key partners in the Valley and ensuring information about the convening is disseminated to key stakeholders.
Deliverable:
Report from the convenings, including clearly identified opportunities for next steps.

Task 4 – Write and disseminate final report and recommendations
Description of Task:

The final report will be comprised of data from a) the Denver market assessment - for both food and hemp products, b) analysis from the water use, economic and employment impacts based on production/rotation scenarios, c) analysis of primary and secondary data from the asset mapping exercise, and d) discussions from the San Luis Valley convenings.

Based on these data and the corresponding analysis, recommendations will include next steps for the San Luis Valley to meet market opportunities leveraging existing assets. This may include discussions about infrastructure gaps. In addition, the final report will include recommendations that can guide DOLA, OEDIT, CDA, DNR, and other state agencies in highlighting where specific state grant programs could be utilized to support market development.

Method/Procedure:

The writing of the final report will be led by Dr. Beca Jablonski, in conjunction with Dr. Rebecca Hill, Dr. Allie Bauman, and Liza Marron.

Deliverable:

Final report

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.

Reporting Requirements

Progress Reports: The applicant 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.

Final Report: At completion of the project, the applicant shall provide the CWCB a Final Report on the applicant'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.

The CWCB will pay out the last 10% of the 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 purchase order or grant will be closed without any further payment.

Payment

Payment will be made based on actual expenditures and must include invoices for all work completed. 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.

Costs incurred prior to the effective date of this contract are not reimbursable. The last 10% of the entire grant will be paid out when the final deliverable has been received. All products, data and information developed as a result of this contract must be provided to CWCB in hard copy and electronic format as part of the project documentation.

Performance Measures

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 Water Plan Grant Guidelines, the CWCB will pay out the last 10% of the 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 purchase order or grant will be closed without any further payment.
(b) Accountability: Per Water Plan 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 Water Plan 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.

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Colorado Water Conservation Board

Water Plan Grant - Exhibit B
Budget and Schedule

Prepared Date: 7/31/2019

Name of Applicant: Colorado State University

Name of Water Project: Asset mapping to understand opportunities for agricultural economic development that reduce water

Project Start Date: January 1st, 2020

Project End Date: June 30th, 2021

Task No.	Task Description	Task Start Date	Task End Date	Grant Funding Request	Match Funding (cash & in-kind)	Total
	Tasks					
1	TASK 1 – Conduct assessment of market opportunities in the Denver metro area as in-kind match from the City/County of Denver and CSU led FFAR grant, and with support from Rebecca Hill on hemp, and determine water and economic impacts of various crop production/rotation scenarios.			$91,032	$118,743	$209,775
2	TASK 2 – Create a Colorado-specific protocol to support food asset mapping and pilot the protocol in the San Luis Valley.			$37,749	$31,247	$68,996
3	TASK 3 – Convene key stakeholders in the San Luis Valley, leveraging support from the statewide advisory committee.			$24,524	$7,028	$31,552
4	TASK 4 – Write and disseminate final report and recommendations			$10,519	$7,028	$17,547
						$0
						$0
						$0
						$0
						$0
						$0
			Total	$163,824	$164,046	$327,870

P.O. Box 181
Alamosa, CO. 81101

July 24, 2019

Dear Review Committee:

Our organization is very excited about the proposal (Asset mapping to understand opportunities for agricultural economic development that reduce water consumption) that is being submitted by Colorado State University to the Colorado Water Conservation Board. We have a long and strong history of collaboration with Colorado State University and are very excited to work together on this effort!

The San Luis Valley Local Foods Coalition works to foster an equitable local food system that restores the health of the people, community, economy and ecosystem. We were formed as a grassroots organization in 2009 and became a nonprofit in 2012 and currently work with a broad coalition of stakeholders throughout the region.

To fulfill our mission we:

- Operate the Valley Roots Food Hub, an aggregation and distribution service for regional farmers complete with a licensed commercial kitchen for value-added activity.
- Own and manage a 38-acre farm park and farm incubator on the Rio Grande in its 4th year with 8 farmers participating. This project also provides as a demonstration farm for regenerative agriculture practices.
- Run the Healthy Habits mobile kitchen project promoting purchase and consumption of local and seasonal fruits and veggies at area farmers markets.
- Sponsor the Cooking Matters Program™ offering multiple 6-week courses across the SLV teaching families to cook healthy (and local as possible) on a budget.
- Produce the Local Roots guide connecting consumers with the good food of the San Luis Valley.
- Convene the SLV Farm to School Task Force building capacity for farm to school in the 14 school districts of the SLV, and
- Coordinate the Local Foods Local Places Strategic Plan and Stakeholders Group to increase economic opportunity through a "Taste of Place" with local foods, art, music and recreation.
- Participate and help lead the San Luis Valley Value-Added Ag Sector Partnership.

Our community is very interested in finding opportunities to leverage our existing agricultural assets, particularly around value added agriculture, in an effort to support community economic development and preserve our water resources. Additional resources to help us analyze our existing food assets, as well as ways to profitably and sustainably meet the demands of local and Denver market opportunities align with our mission. Working with the group of organizations established as part of this application, and taking advantage of their collective expertise, would provide welcome support to our food system initiatives and coalition. Accordingly, as part of this grant, we

will happily coordinate the food asset mapping assessment, following the protocol developed by Colorado State and the Advisory Committee, as well as coordinate opportunities to disseminate and discuss findings and next steps.

We hope that you will see fit to fund this important work that will support our diverse network. Please do not hesitate to let us know if you have additional questions.

Sincerely,

Liza Marron
San Luis Valley Local Foods Coalition
Executive Director
directorslvlocalfoods@gmail.com
719-539-5606

Masters of the Environment
UNIVERSITY OF COLORADO **BOULDER**

July 19, 2019

Dear Members of the Water Board Review Committee:

CU Boulder's Masters of the Environment professional graduate degree program (MENV) is in strong support of the project proposal (asset mapping to understand opportunities for agricultural economic development that reduce water consumption) led by Colorado State University. We have participated in on-going conversations with statewide stakeholders about food asset mapping, are engaged in some such work ourselves, and are excited to see this effort come together.

MENV's Sustainable Food Systems specialization track trains students to approach key food system challenges critically and innovatively. The specialization defines food systems holistically, to include all stages of the food supply chain: from agriculture and production, through processing, transportation, retail, consumption, and waste; and including the diversity of private sector, NGO, research, and government agencies that aim to influence the sustainability of these systems. Students learn how to think about food and the environment from a systems perspective; to understand the interactions between science, policy, and ethics; and to understand the trade-offs and synergies between different objectives, solutions, and outcomes.

Accordingly, our faculty and students are well positioned to support a Colorado-focused food asset mapping tool. We are very much in favor of piloting this protocol in the San Luis Valley, and like the idea of ensuring that all data collected will be made publicly available through a statewide platform, administered in part by the Colorado Food Systems Advisory Council.

There is no question that consumers are increasingly demanding highly differentiated food products, which creates new opportunities for the state's farmers and ranchers. More work to understand how to connect all stakeholders throughout the food system in an effort to converse scare natural resources while improving the profitability of our farmers and ranchers is needed. CU Boulder is excited to be part of this effort!

Sincerely,

Nicole Civita, JD, LL.M.
Sustainable Food Systems Lead - Masters of the Environment Program
Sustainability, Energy, and Environment Complex
4001 Discovery Drive
Boulder, Colorado 80309
Phone: 303-735-6136
nicole.civita@colorado.edu
colorado.edu/menv

THE CITY OF ALAMOSA
GATEWAY TO THE GREAT SAND DUNES

Office of the City Manager
300 Hunt Avenue
PO Box 419
Alamosa, CO 81101
(719) 589-2593

July 26, 2019

Dear Review Committee:

The City of Alamosa is pleased to be part of this important project for San Luis Valley as Agriculture is the heart of the SLV. Resources, natural and others are becoming more of a concern in maintaining the family farm to pass to future generations. Finding ways to effectively conserve our most precious resource enabling our farming community to continue in agriculture for generations to come is more important than ever.

The San Luis Valley Local Foods Coalition works to foster an equitable local food system that restores the health of the people, community, economy and ecosystem. We were formed as a nonprofit in 2008 and currently work with a broad coalition of stakeholders throughout the region.

To fulfill its mission:
- Operate the Farmers' Market, the Healthy Habits program promoting consumption of fruits and veggies,
- Sponsor the Cooking Matters Program™ offering educational films along with speakers and events to the public, participate in policy development that affects the production and distribution of local foods,
- Produce the Local Roots guide in an effort to connect consumers with the good food of the San Luis Valley, and
- Run the Valley Roots Food Hub.

Our community is very interested in finding opportunities to leverage our existing agricultural assets, particularly around value added agriculture, in an effort to support community economic development and preserve our water resources. Additional resources to help us analyze our existing food assets, as well as ways to profitably and sustainably meet the demands of local and Denver market opportunities would be great. Working with the group of organizations established as part of this application, and taking advantage of their collective expertise, would provide welcome support to our food system initiatives and coalition. Accordingly, as part of this grant, we will happily coordinate the food asset mapping assessment, following the protocol developed by Colorado State and the Advisory Committee, as well as coordinate opportunities to disseminate and discuss findings and next steps.

San Luis Valley
Colorado Genuine

We hope that you will see fit to fund this important work that will support our diverse network. Please do not hesitate to let us know if you have additional questions. Thank you so much for your consideration.

Sincerely,

Heather Brooks, City Manager
City of Alamosa

John Glenn College of Public Affairs

Page Hall
1810 College Road
Columbus, OH 43210
glenn.osu.edu

THE OHIO STATE UNIVERSITY

July 23, 2019

Colorado Water Conservation Board
Colorado Department of Natural Resources
1313 Sherman St.
Denver, CO 80203

Re: Letter of Support

To Whom It May Concern:

I am writing this letter in support of the water plan grant proposal "Asset Mapping to Understand Opportunities for Agricultural Economic Development that Reduce Water Consumption." This is a timely and important proposal and I am excited to provide matching support for this project.

I am an associate professor in the Glenn College of Public Affairs at Ohio State University. My research explores food systems governance, the policy process, and community engagement. Additionally, I am the principal investigator for "Pathways to Prosperity," a USDA funded research and extension project exploring collaborative strategies for leveraging rural assets towards agriculture and food systems-based economic development.

As part my contribution to this project, I am committed to funding a research associate to collect secondary data that can be aggregated and utilized in the CSU proposed food asset mapping exercise in the San Luis Valley. This support, totaling $15,000 salary and benefits will include collection, aggregation, and cleaning of existing publicly available data on county-level metrics of community assets and value-added agriculture from USDA Census of Agriculture, USDA Compass, USDA Food Environment Atlas, American Community Survey, Census Bureau County Business Patterns, and the U.S. Census. Data will include metrics for financial, built, social/political, human, natural, and cultural assets, as well as metrics for value-added agriculture development such as the number of farms engaged in direct-to-consumer sales, number of organic farms, etc.

These data will be used to develop a nation-wide, county-level database that will help identify combinations of community assets associated with development and/or conservation practices. Furthermore, matching support will include the development of county/regional-level descriptive profiles, drawing on compiled secondary data. I look forward to partnering on this exciting effort!

Sincerely,

THE OHIO STATE UNIVERSITY

Jill K. Clark, Ph.D.
Clark.1099@osu.edu

July 19, 2019

Dear Review Committee:

Our organization is very excited about the proposal (Asset mapping to understand opportunities for agricultural economic development that reduce water consumption) that is being submitted by Colorado State University to the Colorado Water Conservation Board. We have a long and strong history of collaboration with Colorado State University and are very excited to work together on this effort!

Adams State University's mission is to educate, serve, and inspire our diverse populations in the pursuit of their lifelong dreams and ambitions. One aspect of that mission is to provide agricultural education in the context of our agricultural San Luis Valley. Adams State Univesity (ASU) convenes the Value-Added Agricultural Sector Partnership (VAASP) in partnership with the City of Alamosa's Economic Development Department. ASU would be glad to extend the leadership of ag professor Zena Buser and the VAASP as a local advisory team with members vetting the progress and results of the asset mapping project.

ASU and the VAASP are very interested in finding opportunities to leverage our existing agricultural assets, particularly around value added agriculture, in an effort to support community economic development and preserve our water resources. Additional resources to help us analyze our existing food assets, as well as ways to profitably and sustainably meet the demands of local and Denver market opportunities would be great.

Working with the group of organizations established as part of this application, and taking advantage of their collective expertise, would provide welcome collaboration with ASU. Accordingly, as part of this grant, we will happily coordinate the VAASP, to support the protocol developed by Colorado State and the Advisory Committee, as well as coordinate opportunities to disseminate and discuss findings and next steps.

We hope that you will see fit to fund this important work that will support our diverse network. Please do not hesitate to let us know if you have additional questions.

Sincerely,

Margaret Doell
Interim Vice President
Adams State University

DENVER
PUBLIC HEALTH & ENVIRONMENT

July 22, 2019

To whom it may concern:

I am writing this letter in strong support of the Water Project entitled "Asset mapping to understand opportunities for agricultural economic development that reduce water consumption" proposed by Colorado State University (CSU). This project is directly aligned with ongoing work led by Denver's Department of Public Health & Environment (DDPHE) and we will provide approximately $91,000 towards this effort.

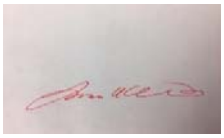
Specifically, the City and County of Denver is working to set more rigorous institutional procurement standards that meet healthy, affordable food goals while providing profitable market opportunities for Colorado farmers and ranchers that incentivize them to track and improve key on-farm sustainability metrics. Accordingly, in partnership with CSU and with funding from the Foundation for Food and Agricultural Research (FFAR), we recently hired an employee, Marion Kalb, to work with the metro area's institutional buyers. This work includes developing a list of products that buyers are currently procuring, or would like to procure in the future, from Colorado sources; the list will reference price point and attribute information.

Once we have gathered this data, we will provide it to CSU so that they can conduct an analysis to determine which of these products may result in water savings or positively impact regional economies.

We have an ongoing collaborative research and community engagement relationship with CSU's Food Systems program, and we greatly value the opportunity to better understand our local environment, water, and agricultural systems.

Please do not hesitate to contact me if you would like any additional information.

Sincerely,



Laine Cidlowski
Food Systems Administrator
Denver Department of Public Health & Environment

Denver Department of Public Health & Environment
101 W Colfax Ave, Suite 800 | Denver, CO 80202
www.denvergov.org/PublicHealthandEnvironment
p. 720-913-1311 | f. 720-865-5531 | @DDPHE

SAN LUIS VALLEY
DEVELOPMENT RESOURCES GROUP
& COUNCIL OF GOVERNMENTS

August 2, 2019

Dear Review Committee:

Our organization is very excited about the proposal - asset mapping to understand opportunities for agricultural economic development that reduce water consumption - submitted by Colorado State University to the Colorado Water Conservation Board. We have collaborated with CSU on water and economic related projects in the past and look forward to continuing this partnership.

The San Luis Valley Development Resources Group and the Council of Governments is the certified planning agency for our U.S. Economic Development Administration Economic Development District, which is the six-county region of the San Luis Valley. Our mission is to promote and facilitate economic development programs that create jobs, improve income, and maintain our quality of life in the San Luis Valley. We also serve as the planning agency for Colorado's Planning Region 8

Our organization and the community we serve is very interested in finding opportunities to leverage our existing agricultural assets, particularly around value-added agriculture, in an effort to support community economic development and preserve our water resources. We are particularly interested in exploring the opportunities for hemp as a diversification and value-added strategy within our region. As part of this grant we will coordinate with CSU on the research into the economics of hemp in the San Luis Valley as well as disseminate and discuss findings stemming from the research.

We hope that you will see fit to fund this important work, please do not hesitate to let us know if you have additional questions.

Sincerely,

Kevin Wilkins, CEcD
Executive Director

719-589-6099 | 610 State Ave, Ste 200 | P.O. Box 300 | Alamosa, CO 81101 | www.slvdrg.org