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:

Supply and Demand Gap Projects: Rebecca.Mitchell@state.co.us

Water Storage Projects: Anna.Mauss@state.co.us

Conservation, Land Use Planning: Kevin.Reidy@state.co.us

Education & Innovation Activities: Mara.MacKillop@state.co.us

Agricultural Projects: Gregory.Johnson@state.co.us

Environmental & Recreation Projects: Linda.Bassi@state.co.us

Applicants interested in submitting an 'Intent to Apply' in the future are encouraged to check he ☐ and fill in all sections with the best information available at the time. Exhibits excluded.

This "Intent to Apply" will help CWCB prioritize Projects that are not ready for fully completed Water Plan Grant Application due to the initial timeframe and deadlines required.

Water Project Summary

Name of Applicant	Geothermal Greenhouse Partnership, Inc.
Name of Water Project	Community Garden and Innovation Greenhouses

CWP Grant Request Amount	$174,500
Other Funding Sources CO Garden Foundation	$34,000
Other Funding Sources Aquaponic professionals	$50,000
Applicant Funding Contribution	
Total Project Cost	$258,500

Applicant & Grantee Information	
Name of Grantee(s)	Geothermal Greenhouse Partnership
Mailing Address	PO Box 5333, Pagosa Springs, CO 81147
FEIN	45-4786340
Organization Contact	Sally High
Position/Title	GGP Board President
Email	sallymhigh@gmail.com
Phone	(970) 799-1693
Grant Management Contact	Pauline Benetti
Position/Title	GGP Board VP
Email	paulineb@centurytel.net
Phone	(970)264-5232
Name of Applicant (if different than grantee)	NA
Mailing Address	
Position/Title	
Email	
Phone	

Description of Grantee/Applicant
Provide a brief description of the grantee's organization (100 words or less).
The Geothermal Greenhouse Partnership (GGP) is a collaborative group of community members and organizations who since 2009 have been focused on: 1) using our abundant geothermal and solar resources to grow food year-round for consumption and sale, 2) teaching the principles of sustainable agriculture and the use of renewable energy resources to the community, 3) engaging the community in the 21st century agricultural challenge involving the intersection and future of water, food and renewable energy. Collaboration with the Town of Pagosa Springs ensured the project land (.7 acres) and water (100 gpm) in 2012. The same year, GGP became an educational 501c3 corporation. The Board of Directors and its committees continue to keep the fire burning over the long haul, building local, regional and state-wide relationships and acquiring funding. Now with real physical work to be done community involvement is phenomenal – plumbers, electricians, carpenters, laborers, gardeners, event planners, etc. This year, we celebrate a productive greenhouse with a revenue stream, educational programming underway, our 5th Annual Pagosa Environmental Film Festival, our inaugural San Juan Sounds Concert Series and our 2nd annual Breakfast with Balloons event. Completed, our vision includes three domes, Education (complete), Community, and Innovation, outside gardens (both vegetable and ornamental), and the unique garden amphitheater (complete) and will fulfill our mission in the following four areas: Water Use and efficiency: Water has both consumptive and non-consumptive uses in this project. The river provides consumptive irrigation water for the project and the closed-loop geothermal heating system comprises the non-consumptive use. Equally important is the water savings from the greenhouse. Agriculture in closed structures, such as domes, results in significantly less evaporative loss. Plus, with the addition of drip systems, water is used more efficiently yielding more crop per gallon. Education and Conservation: All three domes are dedicated to educating children and adults in the principles and practices of water conservation. The Education Dome brings teachers, youth and curricula together for hands-on practice with the resulting produce to be taken home by students. Life Long Learning workshops involve adults in the study of such topics as permaculture, xeric landscaping, a healthy river, greenhouse growing, wise use of water, and environmental conservation. Transfer of Technology and Philosophy: While the Education and Community Domes allow us to teach and grow without interruption year-round, most citizens do not have access to such a facility. For that reason, we include an outside Community Garden. Here participants will be able to transfer knowledge about water use and efficiency to an experience which they can replicate at home. Incidental transfer occurs even now as visitors using the River Walk are brought into the GGP Park and often stop at the Education Dome to see what is going on. Volunteers in the Dome field questions regarding water use, energy conservation, crops and soil. Not infrequently, these are non-local visitors and carry information and inspiration away with them. Economic Development in Rural Colorado: The Geothermal Greenhouse Partnership is an Enterprise Zone project in an economically challenged downtown. Revitalization of Pagosa Springs' downtown is an economic development goal shared by the town and county. More than half of Archuleta Schools' students qualify for free and reduced lunches. GGP is teaching self-reliance and vegetable production, but also job skills that point students toward choices of careers in a sustainable future. Pagosa's economy is largely based on tourism and the GGP park draws tourists and revenue. Already in our first year of operation, we are hosting dozens of out-of-towners.

Type of Eligible Entity (check one)	
	Public (Government): Municipalities, enterprises, counties, and State of Colorado agencies. Federal agencies are encouraged to work with local entities. Federal agencies are eligible, but only if they can make a compelling case for why a local partner cannot be the grant recipient.
	Public (Districts): Authorities, Title 32/special districts (conservancy, conservation, and irrigation districts), and water activity enterprises.
	Private Incorporated: Mutual ditch companies, homeowners associations, corporations.
	Private Individuals, Partnerships, and Sole Proprietors: Private parties may be eligible for funding.
X	**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)	
	Study
X	Construction
	Identified Process or Program
	Other

Category of Water Project (check all that apply)		
	Supply and Demand Gap Projects - Multi-beneficial projects and those projects identified in basin implementation plans to address the water supply and demand gap. (Applicable Exhibit A Task(s) _____)	
	Water Storage Projects - Projects that facilitate the development of additional storage, artificial recharge into aquifers, and dredging existing reservoirs to restore the reservoirs' full decreed storage capacity. (Applicable Exhibit A Task(s) _____)	
	Conservation and Land Use Planning Projects - Activities and projects that implement long-term strategies for conservation, land use, and drought planning. (Applicable Exhibit A Task(s) _____)	
X	Engagement & Innovation Projects - Activities and projects that support water education, outreach, and innovation efforts. Please fill out the Supplemental Application available on the website. (Applicable Exhibit A Task(s) _____)	
	Agricultural Projects - Projects that provide technical assistance and improve agricultural efficiency. (Applicable Exhibit A Task(s) _____)	
	Environmental & Recreation Projects – 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	Archuleta County
Latitude	37.1604° N
Longitude	107.0067° W

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.
CWCB funding will be used to construct and build-out the Community and Innovation Domes, facilitating the following community and regional outreach, education and innovation activities: <u>The Community Dome</u> Inquiries have come from diverse organizations seeking to know how they might be involved in our project. Thus was born the idea of giving community organizations growing space to fulfill their specific goals simultaneously achieving our own goal, *Growing food and community with local energy*, anchored in water conservation principles. A small sampling of interested groups include Vets for Vets (providing constructive and instructive activities); the Sheriff's Office (providing training/constructive activities); Victim's Assistance (providing food and a healing experience. These groups working together in the greenhouse, will advance their interests in the community and reap the potential benefits of collaboration and cooperation. Most importantly to our mission, they will be reaching populations of the community that are most in need of and least available, with lessons in sustainability. An understanding of conservation of Colorado's water in the 21st century will be embedded in the many experiences offered in the Dome. <u>The Innovation Dome</u> The Innovation Dome will be an aquaponic growing environment, demonstrating high yields of food and extreme water conservation. While all greenhouse growing saves water, a closed loop aquaponic greenhouse conserves over 90% of the water consumed in conventional soil growing. Aquaponics is a growing technique involving raising both fish and vegetables in a closed loop system. The Innovation Greenhouse will provide an ongoing income stream to the nonprofit. The produce will be sold to local restaurants and markets. Workshops in 21st Century Sustainable Agriculture will draw locals and outsiders to Pagosa Springs to study these proven water-conservative growing techniques. The Innovation Dome will be open to the public for learning opportunities only a day or two each month. Clear windows will allow observation from the outside. Bio-security and safe food practices will be of paramount importance. The GGP Park in Pagosa Springs will become a touchstone for learning about the intersection and future of water, food and renewable energy.

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)	
	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)	
N/A. Applicable later.	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	
	Other	Explain:

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;)

The stated goals of the Colorado Water Conservation Board's (CWCB) Colorado Water Plan (CWP) "are to meet the water supply gap, defend Colorado's compact entitlements, improve regulatory processes, and explore financial incentives—all while honoring Colorado's water values and ensuring that the state's most valuable resource is protected and available for generations to come" (CWCB, 2015, p. 1.12). This Geothermal Greenhouse Partnership (GGP) Project supports the CWP goal to help meet the state's projected 2050 water supply gap of 560,000 acre feet (AF; p. 1.9). The GGP Project will work toward narrowing that gap by using a water right to develop a beneficial- and multi-use agricultural project, as well as an environmental education project. In addition, water savings from the GGP Project will result from the closed-system dome structures, which significantly reduces evaporative losses. Moreover, the use of drip irrigation systems requires less water and yields more crops per gallon. In general, growing domes use 1/3 less water than conventional methods.

The Statewide Water Supply Initiative (SWSI) was developed in 2004 by the CWCB. Similar to the CWP, the goals of each of the SWSI initiatives was to comprehensively identify Colorado's current and future water needs to the year 2030. The most recent SWSI initiative determined that "Colorado will need between 600,000 and 1 million acre-feet/year of additional municipal and industrial (M&I) water by 2050" (CWCB, 2010, p. 3). Therefore, and similar to the gap narrowing and water saving benefits discussed above, this GGP Project also supports the SWSI goals to help meet the state's projected water supply and demand gaps.

The GGP Project supports the goals of Southwest Basin Roundtable (SBR) Basin Implementation Plan (BIP) under the heading of *New Multi-Purpose, Cooperative, and Regional Projects & Processes* (CWCB, 2015a, p. 92). As previously referenced, this GGP Project uses a water right to develop a beneficial- and multi-use agricultural project, as well as an environmental education project. Additional multi-purpose benefits of the GGP Project include:

- Demonstrating water conservation methods and practices.
- Growing food locally using sustainable agricultural practices.
- Promoting community engagement that supports communication, education, outreach, and public participation efforts related to water and horticulture.
- Providing economic development benefits.[1]
- Supporting innovation efforts that advance water ecosystems such as aquaponic and hydroponic growing environments (with produce sold to local restaurants and markets), while also demonstrating high yields of food and extreme water conservation[2].
- Utilizing renewable, geothermal energy to grow food at high altitudes.

The cooperative and regional nature of the GGP Project includes relationships with and support from local, national, non-profit, private, public, regional, and state entities such as:

[1] The GGP Project is an Enterprise Zone Project in downtown Pagosa Springs. Revitalization of the downtown district is an economic development goal shared by the town and county. The town's economy is based on tourism and the GGP Project draws tourists and revenue from around the world. More than half of Archuleta Schools' students qualify for free and reduced lunches. The GGP Project teaches not only self-reliance and food production, but also provides students with agriculture-related job skills.

[2] Closed loop aquaponic greenhouses conserve over 90% of the water consumed in conventional soil growing.

- Archuleta County Board of County Commissioners
- Archuleta County Seniors, Inc. and Area Agency on Aging
- Archuleta County Sheriff's Office
- Archuleta School District 50 Jt.
- Audubon Weminuche Chapter
- Audubon Rockies
- Ballantine Family Fund
- Chama Peak Land Alliance
- Colorado Alliance for Environmental Education
- Colorado Department of Agriculture
- Colorado Department of Local Affairs
- Colorado Energy Office
- Colorado Environmental Education Leadership Council
- Colorado Environmental Film Festival
- Colorado Health Foundation
- Colorado School of Mines
- Colorado Senator Gail Schwartz (former)
- Colorado Representative Barbara McLachlan (current)
- Colorado State University Extension Service
- Colorado Water Conservation Board
- Community Foundation Serving Southwest Colorado
- Courtney King Architect
- Davis Engineering Services
- Four Corners Office for Resource Efficiency
- Governor John Hickenlooper
- Growing Spaces
- Pagosa Homeschool Connection
- Laura Jane Musser Foundation
- Livewell Colorado
- Numerous local churches
- Pagosa Area Water and Sanitation District
- Pagosa Mountain Morning Rotary
- Pagosa Springs Farmer's Market
- Pagosa Springs Town Council
- Pagosa Verde
- Region 9 Economic Development District
- San Juan Headwaters Forest Health Partnership
- San Juan Water Conservancy District
- Southwest Basin Roundtable
- Southwest Organization for Sustainability
- Southwestern Water Conservation District
- U.S. Environmental Protection Agency
- U.S. Congressman Scott Tipton (current)
- U.S. Senator Mark Udall (former)
- U.S. Senator Michael Bennett (current)
- Vets for Vets
- Rise Above Violence (Victim's Assistance Program)

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The GGP Project supports the goals of SBR Public Education and Participation Outreach (PEPO) Plan. This plan includes the following consensus-built priorities:

- Bridge the consumptive and non-consumptive communities while highlighting progressive, **multi-purpose** solutions.
- **Communicate** statewide implications of identified projects and processes.
- **Educate** roundtable members.
- Energize **water education** efforts.
- **Engage diverse stakeholders**.

As indicated in bold above, the GGP Project supports all five identified priorities. The project "supports multi-purpose projects when possible and when they can be accomplished in a manner that is protective of the values present" (CWCB, 2015b, p. 12). The GGP Project has positive statewide implications. The project will become a touchstone not only for state, but regional, national, and global lessons-learned related to the intersection and future of water, food, and renewable energy. Moreover, the GGP Project, with one of its primary goals being education, will not only educate roundtable members but a multitude of additional sectors as well. As an example, all three domes are dedicated to educating children and adults about the principles and practices of water conservation. The Education Dome brings teachers, youth, and curricula together for hands-on practice with the resulting produce to be taken home by students. Life Long Learning workshops involve adults in the study of such topics as permaculture, xeric landscaping, healthy rivers, greenhouse growing, wise use of water, and environmental conservation. Finally, as presented previously, the GGP Project engages a diversity of stakeholders.

All of the GGP Project's education efforts support the CWCB's CWP goals to support outreach, education, public engagement, and innovation in an effort to "enhance Colorado's water communication, outreach, education, and public engagement efforts; advance Colorado's water supply planning process; and support a statewide water innovation ecosystem" (CWCB, 2015, pp. 9.53-9.61). The purpose of the CWCB and GGP efforts are to engage the public in an effort to promote well-informed community understanding and decision-making related to statewide water solutions, support Colorado water innovation, and foster commitments to collaboration and community engagement. The GGP Project is perfectly positioned and in-line with these stated CWCB CWP objectives.

It is our hope that the CWCB will recognize that this GGP Project fits perfectly within the CWP framework for State support of a water project as it aligns with Colorado's water values (CWCB, 2015, 9.43-9.47). As indicated, "the State will use the following criteria to determine alignment with these values" (p. 9-43):

1. *Does the project proponent demonstrate a commitment to collaboration?*
   As indicated previously, the GGP Project addresses more than one type of need—it uses a water right to develop a beneficial- and multi-use agricultural project, as well as an environmental education project. The Project involves multiple participants, which includes local, national, non-profit, private, public, regional, and state entities. As such the GGP Project has consulted with a broad set of local stakeholders and local governments early in the development process and provided a plethora of meaningful opportunities for input (e.g., information sessions, meetings, surveys, work sessions, etc.).
2. *Does the project proponent demonstrate sustainability?*
   Water conservation best practices were described in paragraphs 1 and 2 above. The GGP Project has no adverse effects to environmental or recreational interests. Conversely, environmental and recreational interests are enhanced and supported through this Project when the environmental effects of growing food locally are taken into consideration, plus the recreational benefits of gardening. The GGP Project has no effect, negative or otherwise, on water quality. Moreover, the

Project enhances economic and social impacts related to agriculture and rural communities. As mentioned previously, the GGP Project maximizes the use of an existing water right resource for multiple beneficial and multi-use purposes. The Project proponents are partnering with local governments to incorporate best water use practices into land use planning. As a matter-of-fact, the Archuleta County Water Wise Task Force[3] was recently accepted into the Sonoran Institute's Water and Land Use Planning Workshop being conducted in Keystone in September of this year. Finally, the GGP Project will not affect interstate compacts or curtailments of existing water rights.

3. Does the project proponent establish the fiscal and technical feasibility of the project?

The GGP Project demonstrates over-all cost-effectiveness. The Project incorporates local investments and collaborative contributions. The Project will also leverage this CWCB grant with other funding sources. The GGP Project uses a technically and legally available water supply for the project. Finally, proponents can demonstrate readiness to proceed with this Project based upon receipt of CWCB funding. Engineering and architectural plans and relationships with an established contractor, plumbers and electricians already exist.

References

Colorado Water Conservation Board. (2015). *Colorado water plan*. Denver, CO: Author.

Colorado Water Conservation Board. (2015a). *Southwest Basin Roundtable basin implementation plan*. Denver, CO: Author.

Colorado Water Conservation Board. (2015b). *Southwest Basin Roundtable public education and participation outreach plan*. Retrieved from http://cwcbweblink.state.co.us/weblink/0/doc/198061/Electronic.aspx?searchid=46b9e468-6303-4603-9503-3478a15ee202

Colorado Water Conservation Board. (2010). *SWSI 2010 mission statement, key findings, and recommendations*. Retrieved from http://cwcb.state.co.us/WATER-MANAGEMENT/WATER-SUPPLY-PLANNING/Pages/SWSI2010.aspx

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.
N/A

[3] Among other entities, this includes Archuleta County, Pagosa Area Water and Sanitation District, San Juan Healthy Forests Partnership, San Juan Water Conservancy District, and the Town of Pagosa Springs.

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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.
Current CWCB grant (WSRA & Statewide funds) 1) Geothermal Greenhouse Partnership, Inc, 2) PDAA 2500 SW Geothermal Greenhouse Partnership project 3) San Juan Basin Roundtable 4) March 18, 2015 5) POGG1 PDAA 20150000000000000252 6) 0%

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

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Submittal Checklist	
X	I acknowledge the Grantee will be able to contract with CWCB using the Standard Contract.
Exhibit A	
X	Statement of Work(1)
X	Budget & Schedule(1) *(Spreadsheet)*
X	Letters of Matching and/or Pending 3rd Party Commitments(1)
Exhibit C	
X	Map(1)
X	Photos/Drawings/Reports
X	Letters of Support (Support letter from Basin Roundtable encouraged)
X	Certificate of Insurance (General, Auto, & Workers' Comp.)
X	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	
X	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.