



COLORADO WATER CONSERVATION BOARD



WATER SUPPLY RESERVE ACCOUNT APPLICATION FORM

Today's Date: January 30, 2015

Water Information Dashboards for Improved Efficiency, South Platte Basin and Statewide

Name of Water Activity/Project

Central Colorado Water Conservancy District (CCWCD)

Name of Applicant

South Platte

Amount from Statewide Account: 200,000.00

Amount from Basin Account(s): 20,000.00

Total WSRA Funds Requested: 220,000.00

Approving Basin Roundtable(s)

(If multiple basins specify amounts in parentheses.)

FEIN

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Required Exhibits

- Statement of Work, Budget, and Schedule
- Project Map
- Letters of support, schematic, image, project map

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Instructions

To receive funding from the Water Supply Reserve Account (WSRA), a proposed water activity must be approved by the local Basin Roundtable **AND** the Colorado Water Conservation Board (CWCBC). The process for Basin Roundtable consideration and approval is outlined in materials in Appendix 1.

Once approved by the local Basin Roundtable, the applicant should submit this application **with a detailed statement of work including budget and schedule as Exhibit A** to CWCBC staff by the application deadline.

WSRA applications are due with the roundtable letter of support 60 calendar days prior to the bi-monthly Board meeting at which it will be considered. Board meetings are held in January, March, May, July, September, and November. Meeting details, including scheduled dates, agendas, etc. are posted on the CWCBC website at: <http://cwcb.state.co.us> Applications to the WSRA Basin Account are considered at every board meeting, while applications to the WSRA Statewide Account are only considered at the March and September board meetings.

When completing this application, the applicant should refer to the WSRA Criteria and Guidelines available at: <http://cwcb.state.co.us/LoansGrants/water-supply-reserve-account-grants/Documents/WSRACriteriaGuidelines.pdf>

The application, statement of work, budget, and schedule **must be submitted in electronic format** (Microsoft Word or text-enabled PDF are preferred) and can be emailed or mailed on a disk to:

Craig Godbout - WSRA Application
Colorado Water Conservation Board
1580 Logan Street, Suite 200
Denver, CO 80203
Craig.godbout@state.co.us

If you have questions or need additional assistance, please contact Craig Godbout at: 303-866-3441 x3210 or craig.godbout@state.co.us.

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Part I. - Description of the Applicant (Project Sponsor or Owner);

1.	Applicant Name(s):	Central Colorado Water Conservancy District		
	Mailing address:	CCWCD 3209 W 28th Street Greeley CO 80634		
	FEIN #:			
	Primary Contact:	Randy Ray	Position/Title:	Executive Director
	Email:	rray@ccwcd.org		
	Phone Numbers:	Cell:	Office:	970-330-4540
	Alternate Contact:	Lynn Kramer	Position/Title:	Contracts Manager
	Email:	lkramer@ccwcd.org		
	Phone Numbers:	Cell:	Office:	970-330-4540

2. Eligible entities for WSRA funds include the following. What type of entity is the Applicant?

- ☐ Public (Government) – municipalities, enterprises, counties, and State of Colorado agencies. Federal agencies are encouraged to work with local entities and the local entity should be the grant recipient. 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 defined as any organization that is not part of the government.

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3. Provide a brief description of your organization

The Central Colorado Water Conservancy District, in the South Platte Basin, was formed to develop, manage and protect water resources in northeast Colorado. CCWCD currently provides water augmentation and decree administration for over 1100 irrigation wells within the district. District boundaries cover land from Brighton north to Greeley, and east to Fort Morgan, encompassing parts of three different counties. The main District and two Subdistricts own an extensive portfolio of water rights, including ditch, river and reservoir shares. We administer dozens of water management sites, covering reservoirs to recharge ponds.

The home office is located in Greeley, though field staff can be found anywhere from Wiggins to Denver. Central has a court appointed Board of Directors, currently at 15 members. Board of Director meetings are held the third Tuesday of every month and are open to the public.

4. If the Contracting Entity is different then the Applicant (Project Sponsor or Owner) please describe the Contracting Entity here.

CCWCD shall act as the Project Sponsor

5. Successful applicants will have to execute a contract with the CWCB prior to beginning work on the portion of the project funded by the WSRA grant. In order to expedite the contracting process the CWCB has established a standard contract with provisions the applicant must adhere to. A link to this standard contract is included in Appendix 3. Please review this contract and check the appropriate box.



The Applicant will be able to contract with the CWCB using the Standard Contract



The Applicant has reviewed the standard contract and has some questions/issues/concerns. Please be aware that any deviation from the standard contract could result in a significant delay between grant approval and the funds being available.

6. 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.

N/A

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Part II. - Description of the Water Activity/Project

1. What is the primary purpose of this grant application? (Please check only one)

☐

Nonconsumptive (Environmental or Recreational)

☒

Agricultural

☐

Municipal/Industrial

☐

Needs Assessment

☐

Education

☐

Other

Explain:

2. If you feel this project addresses multiple purposes please explain.

The tools developed by this project will be available to help future municipal and industrial users achieve water use efficiency improvements. As instruments of information collection and transfer, the products of this project may support Needs Assessment activities. Recreational and environmental benefits are realized from this project in the form of improved reservoir and streamflow operations.

3. Is this project primarily a study or implementation of a water activity/project? (Please check only one)

☐

Study

☒

Implementation

4. To catalog measurable results achieved with WSRA funds can you provide any of the following numbers?

New Storage Created (acre-feet)

New Annual Water Supplies Developed, Consumptive or Nonconsumptive (acre-feet)

Existing Storage Preserved or Enhanced (acre-feet)

Length of Stream Restored or Protected (linear feet)

Length of Pipe/Canal Built or Improved (linear feet)

Efficiency Savings (acre-feet/year OR dollars/year – **circle one**)

Area of Restored or Preserved Habitat (acres)

Other -- Explain:

This project supports improved storage and streamflow quality and operational efficiency.

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4. To help us map WSRA projects please include a map (Exhibit B) and provide the general coordinates below:

Latitude:

see Exhibit B map

Longitude:

5. Please provide an overview/summary of the proposed water activity (no more than one page). Include a description of the overall water activity and specifically what the WSRA funding will be used for. A full **Statement of Work** with a detailed budget and schedule is required as **Exhibit A** of this application.

Among the goals in the South Platte and Metro Basin Implementation Plan are to “develop new voluntary measures to sustain irrigated agriculture”, to establish “systems where farmers can decide for themselves how to manage their water rights while...offering potential new transactional methods to help lessen the associated impacts on others”.

To support these goals, the range of needs for water information and operational management tools, in the South Platte Basin and throughout Colorado, is incredibly broad. However, by commercial software standards, it is not a large user community and individual needs are complex and diverse. Historically this has made it difficult for traditional software development projects to successfully meet the needs of Colorado water entities. This project proposes to leverage free technology and build on existing tools to assemble a platform and toolbox of reusable Water Information modules that belong to the Colorado water community and will continue to be updated and extended collectively over time.

This project will begin with a Statewide Needs Assessment in coordination with the DWR. The project will deliver “Water Information Dashboards” to the cash-matching partners to integrate separate data management and analysis tools, or “modules,” into a single, web-based interface, to support more efficient operations, transparent communication and better water sharing and collaboration. Dashboard “modules” are the reusable programs and functions that can be combined in different ways to make unique Dashboards from a common set of tools. Modules will share a fundamental code base, be based on the same technology, and be non-proprietary. Examples of module functions include:

1. Web pages that combine live data from multiple sources;
2. Web map interfaces for data access and system management;
3. River call data feeds that users can tailor to specific administrative locations;
4. Collaborative water exchange and sharing forums;
5. Mobile device friendly tools for field data entry or system operations;
6. Automated reporting for stakeholders and administrators;
7. Web-based spreadsheet water accounting that links to real-time data sources.

This project will include updating previously developed tools and creating new tools, and delivering a suite of modern, web-based Dashboard modules in a common technology framework. All of the modules created in this project will be made available to users statewide in an open-source repository. A comprehensive “wish list” of additional Dashboard modules will be developed from a series of working meetings around the state to lay the groundwork for future development to meet the needs of users, various interests and other Basins not directly benefited from this initial project.

The project long term vision includes a wide range of module functions to support a variety of local, regional and Statewide challenges. This project will focus on meeting current needs of the cash-matching partners in the South Platte Basin, and will capitalize on work already in progress and existing tools in Divisions 1 and 2. As leaders in sustainable water management practices, this work in the South Platte and Arkansas basins can serve as a template for further work. With up-front investment by the CWCB, water users throughout Colorado can have access to custom water management tools that fit very their very specific needs, built from a common store of modular and reusable components.

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Part III. – Threshold and Evaluation Criteria

1. Describe how the water activity meets these **Threshold Criteria**. (Detailed in Part 3 of the Water Supply Reserve Account Criteria and Guidelines.)

- a) The water activity is consistent with Section 37-75-102 Colorado Revised Statutes.¹

The proposed activities support water administration in accordance with existing decrees, and do not impair, limit or otherwise affect existing decrees or other water rights. No new diversions or allocation of existing diversions is proposed. This project shall conform to the requirements and language of the above Statute. We affirm the prior appropriation doctrine and water rights adjudication system as presented in C.R.S. 37-75-102.

- b) The water activity underwent an evaluation and approval process and was approved by the Basin Roundtable (BRT) and the application includes a description of the results of the BRT's evaluation and approval of the activity. At a minimum, the description must include the level of agreement reached by the roundtable, including any minority opinion(s) if there was not general agreement for the activity. The description must also include reasons why general agreement was not reached (if it was not), including who opposed the activity and why they opposed it. Note- If this information is included in the letter from the roundtable chair simply reference that letter.

This application was approved for funding by the South Platte Basin Roundtable. No minority opinions were expressed in their approval. The Chairman of the South Platte Roundtable will send their letter of approval directly to the WSRA Program coordinator.

¹ 37-75-102. Water rights - protections. (1) It is the policy of the General Assembly that the current system of allocating water within Colorado shall not be superseded, abrogated, or otherwise impaired by this article. Nothing in this article shall be interpreted to repeal or in any manner amend the existing water rights adjudication system. The General Assembly affirms the state constitution's recognition of water rights as a private usufructuary property right, and this article is not intended to restrict the ability of the holder of a water right to use or to dispose of that water right in any manner permitted under Colorado law. (2) The General Assembly affirms the protections for contractual and property rights recognized by the contract and takings protections under the state constitution and related statutes. This article shall not be implemented in any way that would diminish, impair, or cause injury to any property or contractual right created by intergovernmental agreements, contracts, stipulations among parties to water cases, terms and conditions in water decrees, or any other similar document related to the allocation or use of water. This article shall not be construed to supersede, abrogate, or cause injury to vested water rights or decreed conditional water rights. The General Assembly affirms that this article does not impair, limit, or otherwise affect the rights of persons or entities to enter into agreements, contracts, or memoranda of understanding with other persons or entities relating to the appropriation, movement, or use of water under other provisions of law.

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- c) The water activity meets the provisions of Section 37-75-104(2), Colorado Revised Statutes.² The Basin Roundtable Chairs shall include in their approval letters for particular WSRA grant applications a description of how the water activity will assist in meeting the water supply needs identified in the basin roundtable's consumptive and/or non-consumptive needs assessments.

This proposed water activity will engage a wide range of stakeholders, to develop information management tools useful to a variety of Colorado water entities, for improvements in efficiency and efficacy of their water use and sharing operations. The products delivered to individual water users within the South Platte Basin and to the State will promote more efficient water operations and water sharing intra-Basin, as well as information sharing and collaboration inter-Basin and with the State.

- d) **Matching Requirement:** For requests from the **Statewide Fund**, the applicants will be required to demonstrate a 25 percent (or greater) match of the total grant request from the other sources, including by not limited to Basin Funds. A minimum match of 5% of the total grant amount shall be from Basin funds. A minimum match of 5% of the total grant amount must come from the applicant or 3rd party sources. Sources of matching funds include but are not limited to Basin Funds, in-kind services, funding from other sources, and/or direct cash match. Past expenditures directly related to the project may be considered as matching funds if the expenditures occurred within 9 months of the date the application was submitted to the CWCB. Please describe the source(s) of matching funds. (NOTE: These matching funds should also be reflected in your Detailed Budget in **Exhibit A** of this application)

The following is the high level summary regarding matching funds:

WSRA Statewide Account, proposed request:	\$200,000
WSRA South Platte Basin account, proposed request:	\$20,000
Matching contributions, cash and in-kind:	\$112,200

These proposed matching amounts satisfy the percentage requirements stated above, and demonstrate the commitment to these collective project goals, unattainable without grant support. The budget in exhibit A provides further details of proposed project costs, matching contributions, and grant requests.

² 37-75-104 (2)(c). Using data and information from the Statewide Water Supply Initiative and other appropriate sources and in cooperation with the on-going Statewide Water Supply Initiative, develop a basin-wide consumptive and nonconsumptive water supply needs assessment, conduct an analysis of available unappropriated waters within the basin, and propose projects or methods, both structural and nonstructural, for meeting those needs and utilizing those unappropriated waters where appropriate. Basin Roundtables shall actively seek the input and advice of affected local governments, water providers, and other interested stakeholders and persons in establishing its needs assessment, and shall propose projects or methods for meeting those needs. Recommendations from this assessment shall be forwarded to the Interbasin Compact Committee and other basin roundtables for analysis and consideration after the General Assembly has approved the Interbasin Compact Charter.

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2. For Applications that include a request for funds from the **Statewide Account**, describe how the water activity/project meets all applicable **Evaluation Criteria**. (Detailed in Part 3 of the Water Supply Reserve Account Criteria and Guidelines and repeated below.) Projects will be assessed on how well they meet the Evaluation Criteria. **Please attach additional pages as necessary.**

Evaluation Criteria – the following criteria will be utilized to further evaluate the merits of the water activity proposed for funding from the Statewide Account. In evaluation of proposed water activities, preference will be given to projects that meet one or more criteria from each of the three “tiers” or categories. Each “tier” is grouped in level of importance. For instance, projects that meet Tier 1 criteria will outweigh projects that only meet Tier 3 criteria. WSRA grant requests for projects that may qualify for loans through the CWCB loan program will receive preference in the Statewide Evaluation Criteria if the grant request is part of a CWCB loan/WSRA grant package. For these CWCB loan/WSRA grant packages, the applicant must have a CWCB loan/WSRA grant ratio of 1:1 or higher. Preference will be given to those with a higher loan/grant ratio.

Tier 1: Promoting Collaboration/Cooperation and Meeting Water Management Goals and Identified Water Needs

- a. The water activity addresses multiple needs or issues, including consumptive and/or non-consumptive needs, or the needs and issues of multiple interests or multiple basins. This can be demonstrated by obtaining letters of support from other basin roundtables (in addition to an approval letter from the sponsoring basin).
- b. The number and types of entities represented in the application and the degree to which the activity will promote cooperation and collaboration among traditional consumptive water interests and/or non-consumptive interests, and if applicable, the degree to which the water activity is effective in addressing intrabasin or interbasin needs or issues.
- c. The water activity helps implement projects and processes identified as helping meet Colorado’s future water needs, and/or addresses the gap areas between available water supply and future need as identified in SWSI or a roundtable’s basin-wide water needs assessment.

Tier 2: Facilitating Water Activity Implementation

- d. Funding from this Account will reduce the uncertainty that the water activity will be implemented. For this criterion the applicant should discuss how receiving funding from the Account will make a significant difference in the implementation of the water activity (i.e., how will receiving funding enable the water activity to move forward or the inability obtaining funding elsewhere).
- e. The amount of matching funds provided by the applicant via direct contributions, demonstrable in-kind contributions, and/or other sources demonstrates a significant & appropriate commitment to the project.

Tier 3: The Water Activity Addresses Other Issues of Statewide Value and Maximizes Benefits

- f. The water activity helps sustain agriculture & open space, or meets environmental or recreational needs.
- g. The water activity assists in the administration of compact-entitled waters or addresses problems related to compact entitled waters and compact compliance and the degree to which the activity promotes maximum utilization of state waters.
- h. The water activity assists in the recovery of threatened and endangered wildlife species or Colorado State species of concern.
- i. The water activity provides a high level of benefit to Colorado in relationship to the amount of funds requested.
- j. The water activity is complimentary to or assists in the implementation of other CWCB programs.

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Continued: Explanation of how the water activity/project meets all applicable **Evaluation Criteria**.

Please attach additional pages as necessary.

See attached pages.

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Part IV. – Required Supporting Material

1. **Water Rights, Availability, and Sustainability** – This information is needed to assess the viability of the water project or activity. Please provide a description of the water supply source to be utilized, or the water body to be affected by, the water activity. This should include a description of applicable water rights, and water rights issues, and the name/location of water bodies affected by the water activity.

Water supplies for the proposed project originate from groundwater and surface water flows within the South Platte Basin. This project does not propose the development of any new water right or diversion, nor does it propose the re-allocation of any existing diversion. This project promotes more efficient operational use of existing water rights, which increases the agricultural and other values realized from existing water resources, and enhances sustainability of those resources.

2. Please provide a brief narrative of any related studies or permitting issues.

There are no permitting requirements associated with this project. Related studies and activities, which this project will coordinate with and complement, include the following: the water administration and information management tools and other activities of the Lower South Platte Water Conservancy District; Division 1 DWR Data Loggers installation; the Alluvial Aquifer Accretion Depletion Analysis Tool; and others to be identified in the project discovery stage.

3. Statement of Work, Detailed Budget, and Project Schedule

The statement of work will form the basis for the contract between the Applicant and the State of Colorado. In short, the Applicant is agreeing to undertake the work for the compensation outlined in the statement of work and budget, and in return, the State of Colorado is receiving the deliverables/products specified. **Please note that costs incurred prior to execution of a contract or purchase order are not subject to reimbursement.** All WSRA funds are disbursed on a reimbursement basis after review invoices and appropriate backup material.

Please provide a detailed statement of work using the template in Exhibit A. Additional sections or modifications may be included as necessary. Please define all acronyms and include page numbers.

REPORTING AND FINAL DELIVERABLE

Reporting: The applicant shall provide the CWCB a progress report every 6 months, beginning from the date of the executed contract. The progress report shall describe the completion or partial completion 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 Deliverable: At completion of the project, the applicant shall provide the CWCB a final report that summarizes the project and documents how the project was completed. This report may contain photographs, summaries of meetings and engineering reports/designs.

PAYMENT

Payment will be made based on actual expenditures and invoicing by the applicant. Invoices from any other entity (i.e. subcontractors) cannot be processed by the State. The request for payment must include a description of the work accomplished by major task, and estimate of the percent completion for individual tasks and the entire water activity in relation to the percentage of budget spent, identification of any major issues and proposed or implemented corrective actions. The last 5 percent of the entire water activity budget will be withheld until final project/water activity documentation is completed. All products, data and information developed as a result of this grant must be provided to the CWCB in hard copy and electronic format as part of the project documentation. This information will in turn be made widely available to Basin Roundtables and the general public and help promote the development of a common technical platform.

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The above statements are true to the best of my knowledge:

Signature of Applicant:

Randy W. Ray

Digitally signed by Randy W. Ray
DN: cn=Randy W. Ray, o=CCWCD,
ou, email=rray@ccwcd.org, c=US
Date: 2015.01.30 12:47:00 -07'00'

Print Applicant's Name: Randy Ray, Executive Director CCWCD

Project Title: Water Information Dashboards

Return an electronic version (hardcopy may also be submitted) of this application to:

Craig Godbout – WSRA Application
Colorado Water Conservation Board
1580 Logan Street, Suite 200
Denver, CO 80203
craig.godbout@state.co.us

Tier 1 - Promoting Collaboration / Cooperation and Meeting Water Management Goals and Identified Water Needs

- a. *The water activity addresses multiple needs or issues, including consumptive needs, or the needs and issues of multiple interests or multiple basins.*

Water Information Dashboard “modules” will support different water management needs, including things like real-time data publishing, aggregation and visualization of data from multiple sources, and automated calculation of values key to efficient water management such as daily effective precipitation or availability of water under right with volumetric limits. The purpose of an implemented Dashboard is to bring different functions together for groups of users in ways that create new collaboration, cooperation and coordination opportunities currently missing or difficult to achieve with existing resources. Since each Dashboard implementation is unique, the range of needs, uses and interests supported can be defined for that Dashboard and then met by assembling the required modules.

The initial project deliverables will primarily support agriculture and water use efficiency primarily. Municipal users will also benefit in terms of water efficiency and operational cost savings. Environmental and Recreational benefits will be realized in terms of improved stream and ditch management, and more effective reservoir management.

Multiple interests will benefit from the implementation of these Water Information Dashboards. Colorado water users will ultimately include Water Districts, municipalities, ditch and reservoir companies, and any other water users and administrators within the Basin who will benefit from accurate real-time data and information for efficient water management.

Water Information Dashboards can promote water management efficiency for individual water users, among water users within a Basin, and ultimately between Basins and across the State, wherever efficient water information management or sharing is desired.

- b. *The number and types of entities represented in the application and the degree to which the activity will promote cooperation and collaboration among traditional consumptive water interests and/or non-consumptive interests, and if applicable, the degree to which the water activity is effective in addressing intra-basin or interbasin needs or issues.*

We propose focusing a significant portion of this effort on identifying and developing Dashboard functions that support Division 1 and 2 water management needs and on the implementation of three to four Dashboards that support specific South Platte water users and administrators. To set the stage for larger scale benefits, we want to also include meetings with water users and DWR staff in every other Colorado Division to 1) identify additional functions or tools that would be uniquely supportive of those areas and 2) note functions being developed for Division 1 that would also be useful in other divisions. These

discussions will help prioritize development under this scope and begin defining where it would be most beneficial to focus efforts next.

- c. *The water activity helps implement projects and processes identified as helping meet Colorado's future water needs, and/or addresses the gap areas between available water supply and future need as identified in SWSI or a roundtable's basin-wide water needs assessment.*

Water Information Dashboards will enhance the efficiency of water management, reduce system losses, optimize timing and collaboration, improve storage efficiency, and other benefits to address future supply gaps. The modules developed under this activity will be non-proprietary and based on open source technology. Other water information management and collaboration projects being conducted concurrently with this work may be supported and enhanced by this effort, even as the work is progressing. With open discussions among developers and the sharing of intermediate deliverables, these CWCB funded tools can add value to projects funded by other sources.

Tier 2: Facilitating Water Activity Implementation

- d. *Funding from this Account will reduce the uncertainty that the water activity will be implemented.*

The probability that a system like this will be built without grant funds is very low. While there are many beneficiaries of the proposed system, the ability for these users to afford the “cost of entry” for their own system is very low. With grant funds, however, this project will be able to develop a Statewide platform and completed modules for the South Platte applicants, thereby “getting in front” of the cost of entry challenge, and making these water use efficiency tools available to a wide variety of Colorado water entities.

For more than five years LRE has been creating water information management tools for Colorado clients. Each project has been driven by very specific user needs and funding, with limited potential to create adaptable tools that can be re-used for other users and purposes. This project application is asking for financial support for activities that focus on a broad range of users and interests; to properly document and upgrade already developed tools so they can be understood and used by others; to identify and fill in functional gaps with new tools; to reach out to other regions, users, administrators, and public interests to understand where the common needs are that can be addressed with these tools. With funding from this account, a Statewide Water Information Dashboard system platform will be delivered, so that future individual Dashboards can support improved water use efficiency at a cost that individual water users can afford.

- e. *The amount of matching funds provided by the applicant via direct contributions, demonstrable in-kind contributions, and/or other sources demonstrates a significant and*

appropriate commitment to the project.

In addition to matching cash and in-kind contributions, this project will leverage past work and build on non-proprietary tools that were funded by a number of different public and private entities. The code developed for these projects an advanced starting point for this project. Beyond the project Applicants, the entities below can also benefit from this project. While much of this previous work is too dated to qualify as “in-kind” contribution, the investments made by the following organizations are extremely valuable:

Central Colorado Water Conservancy District (CCWCD) - Starting in 2007, CCWCD has paid LRE to develop many data processing and analysis tools and functions for calculating well pumping, depletions and accretions, flow shift/adjustment tools and web-based recharge pond accounting and depletion/recharge lagging tools. CCWCD has been committed to the use of open source technology and reusable approaches. The tools developed for CCWCD will serve as the largest store of existing code to be leveraged for this work. CCWCD’s existing modules and dashboards will be updated and they will receive one of the implemented Dashboards included within the scope of this work.

Greeley Irrigation and Canal Company (GIC) - In 2012 GIC funded the development of a web-based accounting/reporting tool for Canal No. 3 shareholders to get daily cfs/share values automatically calculated daily based on SCADA and telemetry data managed by City of Greeley. The tools developed for this Accounting Dashboard will be documented, updated and included in the first set of modules.

JBS Five Rivers - The first tools developed by LRE using the proposed open source technology and approach were funded by Five Rivers, in order to publish their real-time telemetry data tracking flows through an aug station so that DWR staff could access the data at any time. While this code has been updated since for other users, this funding helped kick off the original efforts.

Urban Drainage and Flood Control District (UDFCD) - UDFCD has been pushing the envelope on the development of web-based, non-proprietary water information and management tools since the early 2000s. UDFCD has funded breakthroughs in the development of web-based mapping interfaces, real-time graphical display of direct web services feeds, and web-interfaces to water analysis and modeling tools.

Colorado Water Conservation Board (CWCB) - Previous projects funded by CWCB lead directly to this work and funded some of the foundational components that will be immediately usable for Dashboards. In 2010, CWCB funded a web-interface that allowed stakeholders and decision makers to review StateMod model results. While the tool developed is no longer online, the technology behind it has been leveraged again and again for other users and other purposes. It remains our best example of state funds providing value in multiples of the originally funded amount. Recently, CWCB funded the development

of a user data entry portal for water efficiency plan data. The code used for that tool can be adapted to many other kinds of Dashboard functions.

City and County of Broomfield - Broomfield has funded the development of functions that bridge the gap between database and web tools designed for internal water users and the required excel-based reports needed for reporting to DWR. Automated Excel report generation from a web interface will be included in the first set of Dashboard modules.

Boulder County - Boulder County shared in funding code that uses Northern Colorado Water Conservation District web services data and combines it with other site specific data to automatically calculate daily reservoir evaporation.

Caribou Ranch - In addition to sharing the funding of automated daily reservoir evaporation calculations, Caribou Ranch funded an approach to leverage Google Spreadsheets and bring sophisticated spreadsheet water accounting into a web-site framework. This breakthrough will allow future Dashboards to include accounting along side data visualization and reporting.

Tier 3: The Water Activity Addresses other Issues of Statewide Value and Maximizes Benefits

- f. *The water activity helps sustain agriculture, and open space, or meets environmental or recreational needs.*

In over-appropriated basins such as Divisions 1 and 2, collaboration and communication are becoming more fundamental to make efficient use of the limited water available. Dashboards are all about improving communication of water information and enabling collaboration between water users and water administrators. Most water diversion structures in Colorado's over-appropriated basins support multiple uses, as water rights have been changed over time to meet increasing municipal, industrial and augmentation uses. Dashboards allow users that share a diversion structure to better coordinate their activities. Dashboards can support regional operations involving multiple structures too, such as alternative water transfer strategies, water banking, reuse of western slope water to exhaustion, tracking and use of excess recharge pond accretions - the list goes on. All of these activities benefit multiple interests and water uses.

- g. *The water activity assists in the administration of compact-entitled waters or addresses problems related to compact entitled waters and compact compliance and the degree to which the activity promotes maximum utilization of state waters.*

Most of Colorado's basins cross out of the state with some kind of legal delivery requirements to our neighbors. Meeting these delivery obligations as Colorado grows and meets its own water demands will require innovation and coordination between many

interests and regions. We believe that the Water Information Dashboards concept can play a key role in this and the potential for a Statewide Compact Deliveries Dashboard is not outside the realm of reasonable imagination.

- h. *The water activity assists in the recovery of threatened and endangered wildlife species or Colorado State species of concern.*

Conflicting interests between consumptive and nonconsumptive water uses constantly challenge our attempts to balance environmental needs with human driven water uses. Open and transparent exchange of data and information is key to finding consensus between stakeholders and achieving win-win solutions to meeting consumptive use demands while balancing environmental needs. Water Information Dashboards can be a part of these win-win solutions.

- i. *The water activity provides a high level of benefit to Colorado in relationship to the amount of funds requested.*

With this funding, a foundation can be created that others can build on. By investing this time and money in tools that are reusable, adaptable, and non-proprietary, the value realized over time as other projects leverage this work and other developers build on these modules will be multiples of the original investment.

- j. *The water activity is complementary to or assists in the implementation of other CWCB programs, for example water made available to the CWCB for the Stream and Lake Protection Program or compact compliance purposes.*

In addition to future CWCB funded efforts yet to be designed, this project builds on two specific prior CWCB funded projects and may complement several additional projects going on now. The 2010 Colorado River Water Availability Study (CRWAS) included the development of a web based tool for stakeholders and the public to explore StateMod modeling results. The technology behind that tool has been updated and reused many times since and will be a fundamental part of the original set of Dashboard modules created under this scope. More recently, CWCB funded the development of a Water Efficiency Data Portal, a web-based interface for water providers to enter their water efficiency plan data. The code developed for that work was consciously developed to be reusable in other Dashboards. Current efforts that may be complemented or enhanced by this work include (but are not limited to) the alternative water transfer methods program development in the Lower South Platte, groundwater level investigations and modeling in the Gilcrest/LaSalle stretch of the South Platte, and the Arkansas Basin water users' efforts to develop exchange tracking tools and make accounting of water in Pueblo Reservoir and the Arkansas River more transparent.