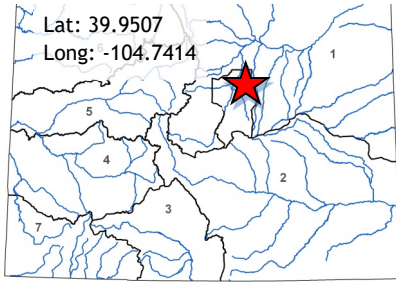




Barr Lake Maximum Normal Operating Water Level Raise Farmers Reservoir and Irrigation Company

September 2021 Board Meeting

Water Plan Grant Application



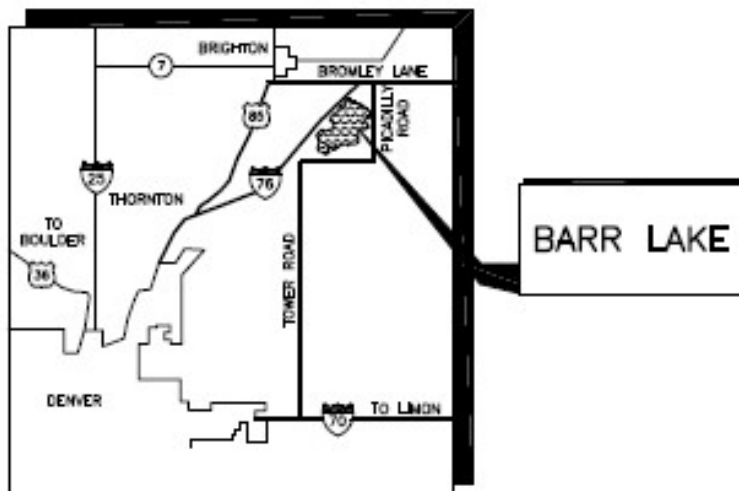
D E T A I L S	
Total Project Cost:	\$429,221
Water Plan Grant Request:	\$278,607
Other CWCB Funding:	\$0
Other Funding Amount:	\$101,858
Applicant Match:	\$48,756
Project Type(s):	Study & Construction
Project Category(Categories):	Water Storage & Supply
Measurable Result:	1,000-1,800 acre-feet created

L O C A T I O N	
County/Countries:	Adams
Drainage Basin:	Metro

The Farmers Reservoir and Irrigation Company (FRICO) is a mutual ditch company formed in 1902. Currently, it supplies water for irrigation, municipal and industrial purposes between the northern Front Range and Greeley. It accomplishes this through approximately 400 miles of canals and several reservoirs, including Marshall, Standley, and Barr Lakes. Municipal water provided by FRICO supplies approximately 300,000 people in the communities of Westminster, Thornton, Northglenn, and East Cherry Creek Valley Water and Sanitation District.

The project is the enlargement of Barr Lake’s storage capacity. Utilizing Colorado Dam Safety’s new Regional Extreme Precipitation Study (REPS) tool, the Probable Maximum Precipitation (PMP) for the reservoir’s watershed was decreased as compared to the previous design amount. This PMP was then used to update the hydrologic model, which showed that the operating water surface elevation could be safely raised. By raising the spillway culvert, approximately 1,500 AF of new water storage will be created in the reservoir; however, it will also inundate structures in the surrounding state park, necessitating their replacement. Grant funds will be used for additional design work, permitting costs, and construction.

Funding Recommendation: Staff is recommending partial approval of the request in the amount of \$183,963 from the Water Storage and Supply category. This is approximately 43% of total project costs, and includes all un-incurred engineering costs (\$40,563) as well as 50% of construction costs (\$143,400.) This project aligns with the Water Plan’s measurable goal of creating 400,000 AF of water storage by 2050 by providing new storage in the Metro basin.





Last Updated: May 2021

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 & Supply Projects	Matthew.Stearns@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
Water Sharing & ATM 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	Farmers Reservoir and Irrigation Company	
Name of Water Project	Barr Lake Maximum Normal Operating Water Level Raise	
CWP Grant Request Amount:	\$278,607	
Other Funding Sources : _____	\$101,858 (Expenses previously paid by FRICO)	
Other Funding Sources: _____	\$	
Other Funding Sources: _____	\$	
Applicant Funding Contribution:	\$48,756	
Total Project Cost:	\$429,221	



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Applicant & Grantee Information	
Name of Grantee(s)	
Mailing Address: Farmers Reservoir and Irrigation Company	
FEIN: 84-0200860	
Organization Contact	
Position/Title: Scott Edgar/General Manager	
Email: Scott@farmersres.com	
Phone: (303) 659-7373	
Grant Management Contact	
Position/Title: Scott Edgar/General Manager	
Email: Scott@farmersres.com	
Phone: (303) 659-7373	
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).	
<p>FRICO is a mutual ditch company headquartered in Brighton, CO that has been operating for over 120 years. FRICO supplies water primarily for Irrigation, municipal, and industrial purposes via several ditches and reservoirs. FRICO has four major reservoirs (Marshall, Standley, Barr and Milton), several smaller reservoirs and approximately 400 miles of canals extending from the Front Range foothills to Greeley, Colorado. FRICO provides water for four municipalities (~300,000 people) in the northwest Denver area including Westminster, Thornton, Northglenn, and East Cherry Creek Valley Water and Sanitation District. The Company is managed by a Board of Directors.</p>	



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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.
x	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
X	Construction
	Other

Category of Water Project (check the primary category that applies and include relevant tasks)			
x	<p>Water Storage & Supply - Projects that facilitate the development of additional storage, artificial aquifer recharge, and dredging existing reservoirs to restore the reservoirs' full decreed capacity, multi-beneficial projects, water sharing agreements, Alternative Transfer Methods, and those projects identified in basin implementation plans to address the water supply and demand gap. <i>Applicable Exhibit A Task(s):</i></p> <p>Note: For Water Sharing Agreements or ATM Projects - please include the supplemental application available on the CWCB's website.</p>		
	<p>Conservation and Land Use Planning - Activities and projects that implement long-term strategies for conservation, land use, water efficiency, and drought planning. <i>Applicable Exhibit A Task(s):</i></p>		
	<p>Engagement & Innovation - Activities and projects that support water education, outreach, and innovation efforts. <i>Applicable Exhibit A Task(s):</i></p>		
	<p>Agricultural - Projects that provide technical assistance and improve agricultural efficiency. <i>Applicable Exhibit A Task(s):</i></p>		
	<p>Environmental & Recreation - Projects that promote watershed health, environmental health, and recreation. <i>Applicable Exhibit A Task(s):</i></p>		
	<table border="1"> <tr> <td>Other</td> <td>Explain:</td> </tr> </table>	Other	Explain:
Other	Explain:		



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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/Countries	Adams
Latitude	39.950671181862376
Longitude	-104.74136570549388

Water Project Overview
<p>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., , 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.</p> <p>The Applicant shall also provide, in Exhibit A, a detailed Statement of Work, Budget, Other Funding Sources/Amounts and Schedule.</p>
<p>The project involves raising the Barr Lake operating water surface elevation (WSEL) between ½ to one foot for a storage capacity increase of approximately 1,500 ac-ft. This will involve raising the surface limiting spillway (36" culvert) inlet by ½ to one foot. Raising the WSEL inundates structures in the adjacent state park. Grant funds will be used for the construction work.</p> <p>The Barr reservoir, fed by the O’Brian canal, is contained by an earthfill dam classified by the Colorado DWR Dam Safety as a high hazard structure which are required to convey an inflow design flood based on the probable maximum precipitation (PMP). Dam Safety, in January 2019, revised the guidance for estimating PMPs based on a Regional Extreme Precipitation Study (REPS). Using the REPS tool results in a decrease PMP value than that used in previous design work. The hydrologic model was updated and it was found that the operational WSEL could be raised approximately ½ to one foot depending on review and approval of the HEC-HMS model by Dam Safety and the results of the ground survey completed in June 2021. Grant funds will be used for additional design work and to cover permitting costs.</p>

Measurable Results	
To catalog measurable results achieved with the CWP Grant funds, please provide any of the following values as applicable:	
1,000 to 1,800	New Storage Created (acre-feet)
	New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive
30,057	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 or water sharing agreement



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	Number of Coloradans Impacted by Incorporating Water-Saving Actions into Land Use Planning	
	Number of Coloradans Impacted by Engagement Activity	
	Other	Explain:

Water Project Justification

Provide a description of how this water project supports the goals of [Colorado’s Water Plan](#), the [Analysis and Technical Update to the Water Plan](#), 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 Barr Lake enlargement project supports Colorado’s Water Plan in many ways. A key goal of the Water Plan is to reduce the projected 2050 municipal and industrial gap to zero acre-feet by 2030. Barr Lake will help reduce these gaps because it is a key storage component of the water supply systems for the City of Brighton, the East Cherry Creek Valley Water Sanitation District (ECCV) and Arapahoe County Water and Wastewater Authority (ACWWA). These entities have water storage rights in Barr Lake and use water stored in the lake to meet replacement requirements associated with their plans for augmentation. Additional storage in Barr Lake will increase the reliability of these water supply systems, increase the demand that can be met by the growing populations of these municipalities and water and sanitation districts, and reduce the risk of shortages during droughts. Therefore, this project will mitigate future water supply gaps. Barr Lake provides water to industrial water users such as Anadarko Petroleum Corp and Nobel Energy for their fracking operations. Additional storage at Barr Lake will increase the amount of water potentially available to meet the current and future demands associated with those industrial entities. Additional storage at Barr Lake will also increase the water supply that is available to serve lands irrigated by Barr Lake shareholders. Additional water may increase the acres that could be irrigated and crop yields and reduce shortages for irrigated crops thereby maintaining agricultural productivity. Barr Lake is also the key feature of Barr Lake State Park, which offers numerous recreational opportunities including hiking, fishing and camping and is a premier bird-watching area. Increasing the amount of water stored at Barr Lake will benefit the recreational experience and environmental conditions at the park. As described above, an enlargement of Barr Lake would address more than one type of need including (agricultural, municipal, industrial, recreation, and environmental needs (CWP, Pg. 9-43). This project addresses an identified water gap and will meet a need identified in the SWSI. There are significant future gaps estimated for the South Platte/Metro basin. Under the hot growth scenario, future gaps in agricultural and M&I sectors were estimated to be 22% and 31% on average, respectively (pg. 149 and 150, CWP Analysis and Technical Update). Between the years 2015 and 2050, the South Platte Basin as a whole is projected to grow from approximately 3.8 million to between 5.4 million and 6.5 million people in the low and high growth scenarios, respectively (pg. 139, CWP Analysis and Technical Update). This project will help address and reduce those gaps by meeting additional municipal, industrial and agricultural demands.

Finally, this project demonstrates sustainability. Additional capacity at Barr Lake will help firm the yield of existing water rights stored at Barr Lake and increase the ability of Barr Lake water users to withstand droughts. It will benefit environmental and recreational interests as described above and mitigate impacts on agricultural and rural communities by increasing the water supply available to the irrigated lands served by Barr Lake.



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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.

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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.

- 1) Applicant name: **Farmers Reservoir and Irrigation Company/Manuel Montoya**
- 2) Water activity name: **FRICO Alternative Agricultural Transfers**
- 3) Approving RT(s):
- 4) CWCB board meeting date:
- 5) Contract number or purchase order: **150428**
- 6) Percentage of other CWCB funding for your overall project: **0%**

- 1) Applicant name: **Farmers Reservoir and Irrigation Company/Scott Edgar**
- 2) Water activity name: **2013 Flood Damage Repair**
- 3) Approving RT(s):
- 4) CWCB board meeting date:
- 5) Contract number or purchase order: **Northern Water Contract No. 2.57**
- 6) Percentage of other CWCB funding for your overall project: **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.

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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 3 rd 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)
Water Sharing Agreements and Alternative Transfer Methods ONLY	
	Water Sharing Agreements and Alternative Transfer Methods 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.



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Colorado Water Conservation Board
Water Plan Grant - Exhibit A

Statement Of Work	
Date:	June 30, 2021
Name of Grantee:	Scott Edgar/General Manager - Farmers Reservoir and Irrigation Company
Name of Water Project:	Barr Lake Maximum Normal Operating Water Level Increase
Funding Source:	Self-funding and Grant Funds
Water Project Overview:	
<p>The project involves increasing the storage capacity in the reservoir via raising the maximum normal operating level. This would be accomplished by raising the inlet of the surface limiting spillway. The surface limiting spillway would be raised on the order of ½ to one foot. The existing capacity of the reservoir is 30,057 ac-ft. The raise would provide additional storage of 1,000 to 1,800 ac-ft.</p> <p>Some of the infrastructure in the adjacent Barr Lake state park (trails, boardwalks and gazebos) would be raised to accommodate the rise in water level.</p> <p>The raise became a possibility with the SEO's new understanding of maximum precipitation depths and its impacts on dam safety. In 2019, the SEO's published new guidance for evaluating the probable maximum precipitation (PMP) depth using the Regional Extreme Precipitation Study (REPS) tool.</p>	
Project Objectives:	
<p>Increase the water storage in Barr Lake such that making water supply more reliable for stakeholders who depend on the water for crop irrigation to maintaining their agricultural productivity, to alleviate some of the shortfalls in municipal water supply demands that are expected to occur due to increased population, and providing water availability to industrial users.</p>	



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Tasks
<p>Task 1 – Engineering</p>
<p>Description of Task:</p> <p>Discuss the REPS procedure and Hydraulic modeling with Dam Safety Review water rights Gather historic water use data Use the REPS tool to evaluate the new PMP. Complete a hydrologic and hydraulic evaluation using the new PMP estimate from the REPS evaluation. Evaluate the facility for impacts due to a raise in water surface</p> <ol style="list-style-type: none"> 1. Upstream inundation and impacts to State Park 2. Impact on Dam Break 3. Burlington canal backwater effects 4. Dam slope stability and seepage impacts 5. Wave runup analyses 6. Performance monitoring <p>Apply for a Dam Safety permit. Coordinate with Adams County for Grading and Erosion/Sediment Control permit requirements Complete Pre-Construction Notification (PCN) per Nationwide Permit No. 42 (Recreational facilities, NWP 42) of Section 404 of the Clean Water Act Complete survey of the crest, emergency spillway and surface limiting spillway to confirm elevations for the H/H modeling</p>
<p>Method/Procedure:</p> <p>Calculate new PMP value based on the REPS. Compare old site-specific PMP (Applied Weather Associates, 2004/2006) to new REPS PMP. If new PMP less, run hydrologic/hydraulic model to determine magnitude of WSEL raise. Determine whether water rights exist. Complete supporting analyses to see how the embankment will react to the increased load and any other issues that may arise from the raise in water surface. Determine new inundation area and identify infrastructure within the area that require modifications. Prepare design report and drawings to summarize the evaluation and show the planned construction. Apply for and obtain required permits.</p>
<p>Deliverable:</p> <p><u>Issued Items</u></p> <ol style="list-style-type: none"> 1. Submitted Barr Lake Operating Water Surface Elevation Increase Evaluation to Dam Safety on 10/26/20. 2. HEC-HMS model issued to Dam Safety for review on 6/16/21. 3. Issued PRE-CONSTRUCTION NOTIFICATION NATIONWIDE PERMIT 42 4/23/21 <p><u>To be Issued</u></p> <ol style="list-style-type: none"> 1. Dam Safety Permit Application – to include Design Report addressing the evaluation items from above 2. Finalized H/H model to be issued to Dam Safety 3. Finalized survey of the crest elevation 4. Bid documents will be prepared and will include General Terms and Conditions, Scope of Work, bid sheet with line items of the construction activities, technical specifications, and drawings.



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Tasks
Task 2 – Construction
Description of Task: Below is a list of construction items that will be completed for the project and a description of the work involved. Concrete: <ol style="list-style-type: none">1. Attach onto the existing concrete sill at the inlet of the surface limiting spillway and raise it between 0.5 and 1.0 feet.2. Construct new concrete pier foundations to support raised boardwalks.3. Modify existing pedestrian bridge approach to accommodate raised bridge. Trails: <ol style="list-style-type: none">1. Raise approximately 6,000 ft of gravel trails around various parts of the lake perimeter.2. Fill the subgrade portion of raised trail with native compacted materials.3. Cover the trail with 4 to 5 inches of 3/8" crushed compacted gravel. Pedestrian Bridge: <ol style="list-style-type: none">1. Remove and store the pedestrian bridge2. Replace the pedestrian bridge after the abutments have been raised. Boardwalk and Gazebo: <ol style="list-style-type: none">1. Reconstruct 530 feet of boardwalk one foot higher2. Reconstruct the 300 sq ft Rookery gazebo
Method/Procedure: FRICO will contract with a local construction company to complete the work through a bidding process. The contractor will be responsible for supply all materials, labor and equipment required to complete the work. FRICO may self-perform some of the work using company owned construction equipment depending on availability. Construction surveying will be completed by a third-party entity to confirm elevations of the constructed structures. Construction inspection and testing of construction materials will be completed, as necessary, to confirm conformance to the approved plans and specifications. Approved plans will be stored on the site and redlined as necessary to show field changes.
Deliverable: Monthly Progress reports Monthly invoices from Contractor Redlines As-Built Drawings As-Built report which includes results of testing, daily reports, and photographs Certificate of Completion



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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 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



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Colorado Water
Conservation Board

Department of Natural Resources

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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.

