

Feasibility Study

The Plaza Project – Phase 3: Prairie Ditch Implementation Project

**Prepared for the Colorado Water
Conservation Board's Loan Program**

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FEASIBILITY STUDY APPROVAL
Pursuant to Colorado Revised Statutes 37-60-121 & 122, and
in accordance with policies adopted by the Board, the
CWCB staff has determined this Feasibility Study meets all
applicable requirements for approval.

Signed



Date

5/9/2014

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Executive Summary

The Plaza Project - Phase 3: Prairie Ditch Implementation Project (Phase 3) is the second phase of implementation of the Plaza Plan. The Plaza Plan, the restoration master plan for the Sevenmile Plaza area of the Rio Grande, was finalized in December 2011 and completed through the Plaza Project – Phase 1: Plaza Planning Project (Phase 1). During Phase 1, the RGHRP worked with stakeholders to determine the primary issues in the area, identify remediation methods, and develop an implementation plan to improve the health and function of the Rio Grande. The identified issues include streambank instability in the 2.8-mile project reach, a degraded wetland, and aging, hazardous, and inefficient diversion structures. The Plaza Project – Phase 2: McDonald Ditch Implementation Project (Phase 2) is the first phase of implementation of the Plaza Plan. Phase 2 is underway, with completion expected in 2015. Phase 2 includes reclamation of a 2-acre wetland, stabilization of 2,000 feet of streambanks, and replacement of the McDonald Ditch diversion and headgate. The new headgate will contain automated measuring gates, while the diversion will include passage for fish and boats.

The proposed Project, Phase 3, will continue implementation of the Plaza Plan and recommendations of the 2001 Study. Phase 3 integrates the rehabilitation of the Prairie Ditch diversion and headgate with the objectives of the 2001 Study, the rehabilitation of the neighboring McDonald Ditch diversion, and the stabilization and restoration of the surrounding riparian areas. Preliminary designs for the Prairie Ditch headgate and diversion, and streambanks were developed by the NRCS in Phase 1. In Phase 3, Project engineers will finalize the design for each of the project elements, the Prairie Ditch diversion and headgate will be replaced, channel and streambank stabilization will be implemented, and outreach and education will be conducted.

The objectives of Phase 3 are to:

- Improve diversion efficiency and reduce maintenance by replacing the aging Prairie Ditch headgate, installing automated water gates, and replacing the Prairie Ditch diversion dam;
- Enhance water quality by reducing erosion and sediment input;
- Improve riparian condition by stabilizing up to 1,000 feet of streambanks in the Project area;
- Increase the capacity of the Rio Grande to transport sediment;
- Improve aquatic and wildlife habitat;
- Enhance local recreation by including fish and boat passage in the new diversion dam;
- Promote public involvement in water improvement activities through public outreach and education.

The estimated cost of Phase 3 is \$975,000. The Prairie Ditch partnered with the Colorado Rio Grande Restoration Foundation (Foundation), the fiscal agent for the Rio Grande Headwaters Restoration Project (RGHRP), to organize and raise funds for Phase 3. The RGHRP applied for \$430,000 from the Colorado Water Conservation Board (CWCB) Water Supply Reserve Account (WSRA), which will be considered by the CWCB Board in March 2014. RGHRP secured \$315,000 from the Cooperative Conservation Partnership Initiative (CCPI) Program. Additional commitments include \$100,000 from in-kind services. The Prairie Ditch will provide \$130,000, which they hope to obtain through the CWCB loan program.

Section 1 - Project Sponsors

The Project, The Plaza Project – Phase 3: Prairie Ditch Implementation Project (Phase 3), is sponsored by a partnership between the Colorado Rio Grande Restoration Foundation (Foundation) and the Prairie Ditch Company (PDC).

1.1 The Prairie Ditch Company

The PDC was incorporated as a mutual irrigation ditch company in 1896. The PDC diverts water from the Rio Grande one half mile downstream of the Sevenmile Plaza Bridge, which is 5 miles north and 7 miles west of the town of Monte Vista. The irrigation system is approximately 25 miles long and services 65 stockholders irrigating a service area of 23,000 acres. The total decree of the PDC is 367 cfs and annual deliveries average 16,000 acre-feet.

1.2 The Colorado Rio Grande Restoration Foundation and the Rio Grande Headwaters Restoration Project

The Colorado Rio Grande Restoration Foundation (Foundation), a 501(c)(3) Colorado non-profit organization, is the fiscal agent for the Rio Grande Headwaters Restoration Project (RGHRP). The mission of the Rio Grande Headwaters Restoration Project is “to restore and conserve the historical functions and vitality of the Rio Grande in Colorado for improved water quality, optimal agricultural water use, riparian habitat, wildlife and aquatic species habitat, recreation, and community safety, while meeting the requirements of the Rio Grande Compact.”

The RGHRP was formed to implement the recommendations of a study completed in 2001. The 2001 Study was prompted by local stakeholders due to a realized deterioration of the historic functions of the Rio Grande, which include providing high quality water, healthy riparian areas, fish and wildlife habitat, and a functioning floodplain. The 2001 Study analyzed the condition of the riparian area and structures along a 91-mile reach of the Rio Grande and provided recommendations for improvement. The 2001 Study was sponsored by the San Luis Valley Water Conservancy District and funded with a \$250,000 grant from the Colorado Water Conservation Board (CWCB). In 2004, the need was identified for a well-defined Rio Grande Watershed Restoration Strategic Plan (Strategic Plan). Completed in 2007, the Strategic Plan highlighted the importance of continued efforts to implement the recommendations from the 2001 Study. Since establishment, the RGHRP has accrued a successful record of performing projects on the Rio Grande through collaboration with landowners and local, state, and federal entities.

The RGHRP has four Programs: The Streambank Stabilization and Riparian Restoration Program, The Diversion and Headgate Repair and Replacement Program, The Watershed Stewardship Program, and The Outreach and Education Program. Through the Streambank Stabilization and Riparian Restoration Program, the RGHRP has administered five (5) cost-share restoration projects on fifty (50) sites with \$1.8 million grant funding raised. The projects have improved river function using a multi-faceted approach to riparian restoration and streambank stabilization, and have resulted in the treatment of approximately eleven (11) miles of streambanks. Including contribution from partners and landowners, the total value of these projects is \$2.2 million. The techniques used include bank and channel shaping, revegetation, installation of rock and log structures, and implementation of grazing best management practices. These Projects reduce sediment loading by stabilizing the streambanks, improve the riparian and upland habitat by increasing willow and riparian vegetation cover, and enhance the fishery. Additionally, the capacity of the Rio Grande to transport sediment that has entered the system from upstream reaches is increased. Finally, improvements to riparian habitat and floodplain function improve the condition of wetlands located throughout the riparian areas within the Project boundaries. The RGHRP works with the Colorado Watershed Assembly's Colorado Measurable Results Program (MRP) to complete long-term monitoring of the Projects.

Through the Diversion and Headgate Repair and Replacement Program, the RGHRP is working with ditch companies to address concerns surrounding aging and inefficient diversion and headgate structures. The first of these projects was the Plaza Planning Project – Phase 1 (Phase 1) in the Sevenmile Plaza area of Rio Grande County. The RGHRP worked with stakeholders to determine the primary issues in the area, identify remediation methods, and develop an implementation plan, The Plaza Plan, to improve the health and function of the Rio Grande in the Sevenmile Plaza area. The identified issues include streambank instability in the 2.8-mile project reach, a degraded wetland, and aging, hazardous, and inefficient diversion structures. The Plaza Project – Phase 2: McDonald Ditch Implementation Project (Phase 2) is the first phase of implementation of the Plaza Plan. Phase 2 is underway, with completion expected in 2015. Phase 2 includes reclamation of a 2-acre wetland, stabilization of 2,000 feet of streambanks, and replacement of the McDonald Ditch diversion and headgate. The new headgate will contain automated measuring gates, while the diversion will contain automated floodgates. Additionally, the diversion will include passage for fish and boats. The proposed Project, the Plaza Project – Phase 3: Prairie Ditch Implementation Project (Phase 3) will continue implementation of the Plaza Plan and recommendations of the 2001 Study. These efforts will improve continuity and function of the Rio Grande.

Through the Watershed Stewardship Program, the RGHRP works with stakeholders and partners to complete wildfire restoration and hazard mitigation projects. In the summer of 2013, the West Fork Fire Complex severely damaged over 110,00 acres of critical natural resources in the upper watershed. In response, the Rio Grande Watershed Emergency Action Coordination Team (RWEACT) was formed, with the cooperation of over 40 entities. RWEACT includes 5 committees: Hydrology, Emergency Coordination, Communications, Economic Recovery, and Natural Resources. The RGHRP has taken the lead on coordinating the natural resources committee. The natural resources committee worked closely with the US Forest Service's Burned Area Emergency Response (BAER) Team to identify Values at Risk (VARs) associated with human life and safety, cultural and historic resources, and significant natural resources. Currently, the RGHRP is coordinating several forest restoration and hazard mitigation projects through RWEACT's natural resources committee. For example, the RGHRP is working to deploy 6 water quality monitoring probes through the watershed to observe the effects of the wildfire on riparian areas and aquatic health. The RGHRP is also working to protect the historic Little Squaw Resort, built in 1930 by the Civilian Conservation Corps, from flooding and debris flows by constructing overflow channels and a berm. Finally, the RGHRP designed and implemented 10 experimental plots within the burned area to investigate different methods to provide ground cover and increase soil water holding capacity in order to improve vegetative cover and reduce hill slope erosion. Longterm data will be collected from these plots and the results will influence the methods used in future wildfire restoration projects. The implementation of this project was made possible through the donation of several mulch materials and the help of volunteers.

The RGHRP administers a robust Outreach and Education Program. Informative press releases are submitted to local and regional media with notable project updates. Talks and tours are routinely given to local schools, community groups, and water related organizations. Volunteer events encourage community members to get involved and connected with the Rio Grande. The RGHRP website provides project updates and information. Content of the Outreach and Education program includes details about projects, partnerships, funding entities, and the importance of protecting and conserving the Rio Grande.

Section 2 - Previous Studies

2.1 The 2001 Study

The 2001 Study was prompted by local stakeholders due to a realized deterioration of the functions of the Rio Grande. The 2001 Study analyzed the condition of the riparian area and structures along a 91-mile reach of the Rio Grande from the town of South Fork to the Alamosa – Conejos County line (Figures 1 and 4). The 2001 Study was sponsored by the San Luis Valley Water Conservancy District and funded with a \$250,000 grant from the Colorado Water Conservation Board (CWCB). The study evaluated the condition of the river's functions as they related to:

- a. The condition of riparian habitat and fisheries;
- b. Accessibility of the river to existing irrigation structures and their condition and performance;
- c. The protection of lives and property;
- d. The protection of channel and floodplain from flood damage;
- e. The maintenance of river channel and over bank capacity;
- f. The ability to meet the Rio Grande Compact requirements.

The 2001 Study found the primary cause of degradation to be sedimentation and identified measures that could be implemented to holistically improve the river's functions. These measures were both structural in nature, such as riparian restoration or diversion replacement, or nonstructural measures, such as grazing management practices or land use issues. Phase 3 seeks to implement these actions in order to improve the function of the Rio Grande.

2.2 The 2007 Rio Grande Watershed Restoration Strategic Plan

In 2004 the need was identified for a well-defined Rio Grande Watershed Restoration Strategic Plan (Strategic Plan). Completed in 2007, the Strategic Plan outlined priority projects for the entire Rio Grande watershed in Colorado. Priority projects included: flood protection, riparian and headgate improvements, grazing management, flow management, and future studies. The Strategic Plan highlighted the importance of continued efforts to implement the recommendations from the 2001 Study.

2.3 The Plaza Project – Phase 1: Plaza Planning Project

In 2011, Phase 1 was funded with a \$40,000 grant from the Rio Grande Basin WSRA Account. Phase 1 was a collaborative scoping and feasibility study of potential biological and structural approaches to rehabilitate the streambanks, diversion and headgate structures, and a wetland within the approximately 2.8 mile reach of the Rio Grande near the Sevenmile Plaza. Alternatives for rehabilitation of project elements included different diversion types, incorporation of micro-hydropower generation and automated headgates, and multiple streambank stabilization, riparian rehabilitation, and wetland reclamation techniques. The "Plaza Stakeholders" a diverse group of over thirty individuals, analyzed the costs and benefits of each alternative to select the desired alternative for each project element. The product the study was the Plaza Plan: A restoration master plan detailing the selected options for each project element, a timeline for implementation, possible funding mechanisms, and administrative considerations.

Section 3 - Water Source and Project Area

3.1 Water Source

The water body affected by Phase 3 is the Rio Grande. The Rio Grande watershed in Colorado covers 8,200 square miles (Figure 1). The river flows 200 miles through Colorado, originating near the Continental Divide. Numerous tributaries converge on the east slope of the Continental Divide from elevations near 13,000 feet to form the Rio Grande mainstem. The river flows to the east through the Rio Grande National Forest and then through private property for approximately 55 miles, where it passes near the town of Creede, located at approximately 8,850 feet. The Rio Grande continues its relatively steep descent for another 22 miles to the confluence with the South Fork of the Rio Grande at approximately 8,200 feet elevation, where the town of South Fork is located. The Rio Grande enters the San Luis Valley, the largest intermountain basin in Colorado, at the town of South Fork. The river then flows southeast for approximately 65 miles through Del Norte and Monte Vista to Alamosa, the largest city in the watershed, at an elevation of approximately 7,550 feet. The river turns to the south and flows for another 40 miles to the New Mexico border. The elevation at the New Mexico border is approximately 7,400 feet.

3.2 Project Area

The Project area is located within the Sevenmile Plaza in Rio Grande County, Colorado. The Project elements include the PDC diversion and headgate, and the streambanks upstream and downstream of the diversion. The closest town is Monte Vista, Colorado, which is approximately 6.5 miles east and 5 miles south of the PDC diversion.

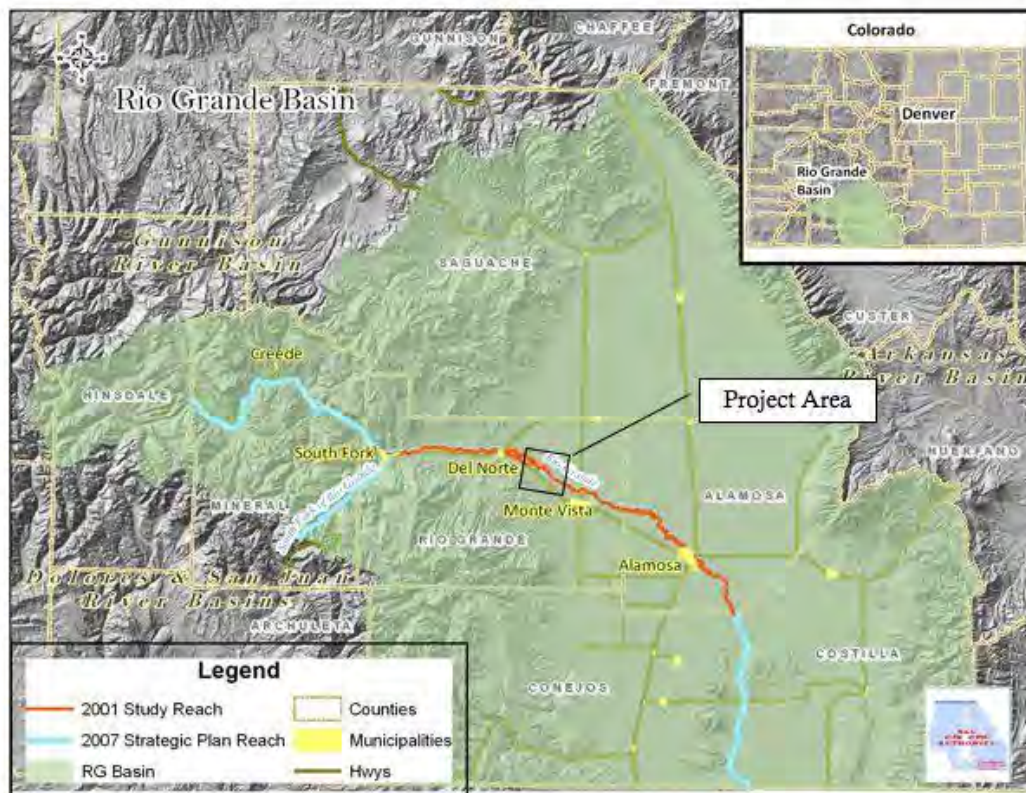


Figure 1. Location of the Plaza Project - Phase 3: Prairie Ditch Implementation Project (Phase 3)

3.3 Community

The Sevenmile Plaza is one of Colorado's oldest communities. The Sevenmile Plaza, historically known as *Plaza de los Valdeses*, has a rich cultural history. Descendants of Juan Pio Valdes, the original founder of the Plaza, still reside in this area. As the first non-Native American farmers to use the waters of the Rio Grande, Valdes and others used shovels and horse-drawn slips to dig the original ditches. In 1866, the first application of water in District 20 was made at the Sevenmile Plaza. District 20 encompasses the mainstem of the Rio Grande in Colorado Water Division 3.

Also of significance are the conservation easements other residents in the Project area have placed on their property. One easement, held by the Rio Grande Headwaters Land Trust (RiGHT), is west of the PDC diversion and borders the river for over two miles. North of the Silva/Atencio 2 diversion dam, which is 2.5 miles upstream of the PDC dam, is a conservation easement held by the NRCS Wetland Reserve Program (WRP). These efforts protect wildlife habitat, riparian areas, and wetlands into perpetuity.

3.4 Land Ownership

The land on which the project is located is owned by the PDC and a private landowner, River Bend Ranches, LLC. Please see Figure 2 for detailed landownership.



Figure 2. Land Ownership in the Project Area

3.5 Service Area

Figure 3 shows the service area of the Prairie Ditch Company.

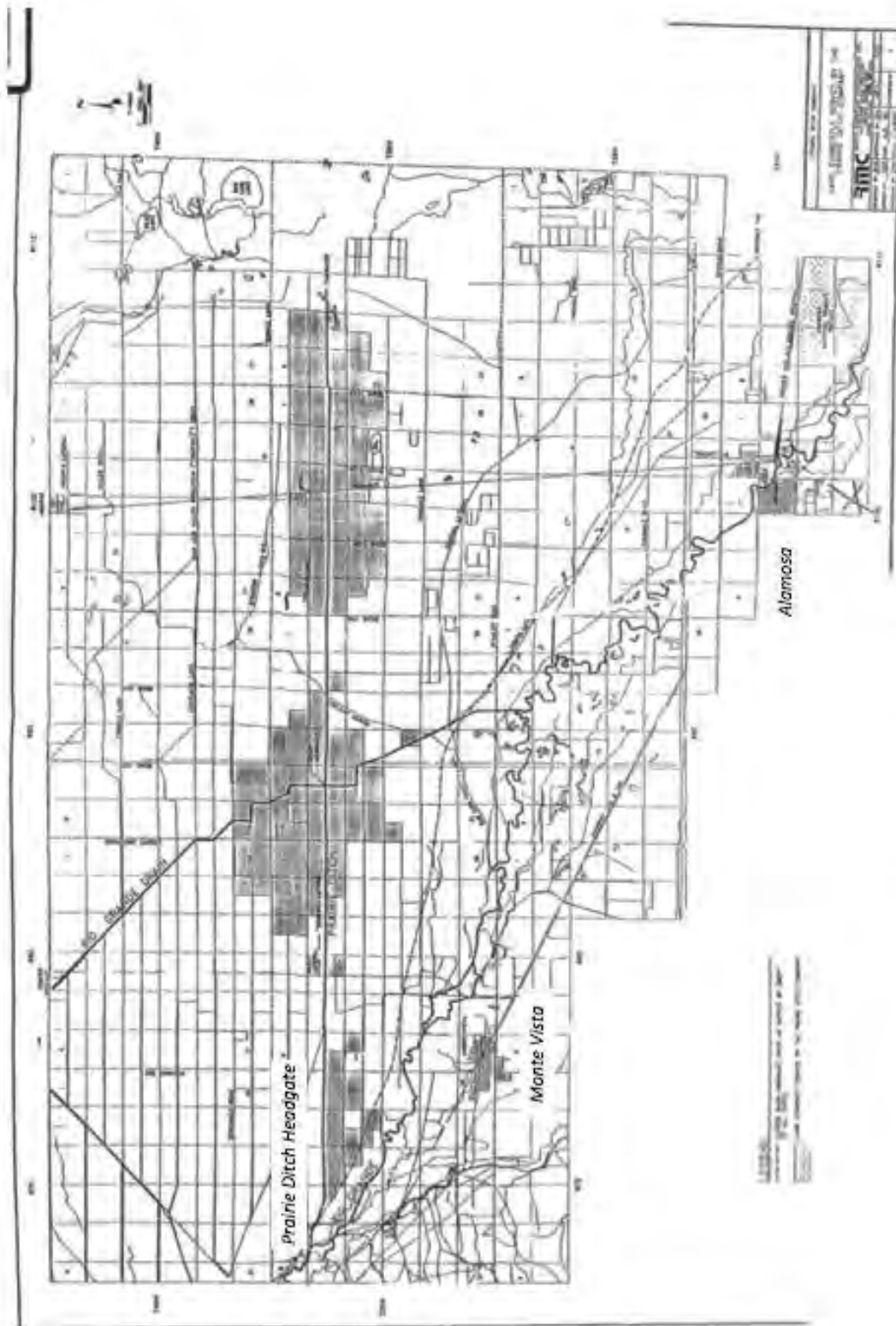


Figure 3. Prairie Ditch Company Service Area

Section 4 - Water Rights Protection

Phase 3 is a structural and riparian improvement project that will improve the ability of the Rio Grande to meet both consumptive and non-consumptive needs of the area by replacing a poorly functioning diversion and headgate, stabilizing streambanks, and increasing the ability of the river to transport water. As such, Phase 3 allows for agriculture demands to be met by increasing the ability of irrigators to divert their appropriated water right when they are in priority.

Additionally, Phase 3 sustains multiple non-consumptive uses by improving riparian conditions, repairing river channel problems, and reducing sediment load. Finally, Phase 3 supports the preservation of the long-term cultural values inherent in this rural area's historical and current agricultural lifestyle. It complies with all applicable laws, regulations, and water rights.

Phase 3 will in no way alter the current water rights held by Project participants or surrounding water users. This Project does not supersede, abrogate, or otherwise impair the State's current system of allocating water within Colorado. This project does not affect the State constitution's recognition of water rights as a private usufructuary property right nor is it 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. Phase 3 protects water users and landowners along the Rio Grande from loss by replacing an aging diversion and headgate, repairing the river channel, and restoring the riparian corridor, thereby helping to ensure that the provisions of Section 37-75-102 C.R.S. are supported and observed.

Section 5 - Existing Conditions

The project elements include the streambanks in the project area and the PDC diversion and headgate. The elements included in Phase 3 were identified as priorities for restoration in the 2001 Study, the 2007 Watershed Strategic Plan, and the Plaza Plan.

5.1 Streambanks and Channel Current Condition

The 2001 Study area was broken into reaches based on homogeneity of geomorphic, hydrologic, bed material, and man-influenced conditions. The project area is located within Subreach C1 of Reach C (Figure 4).

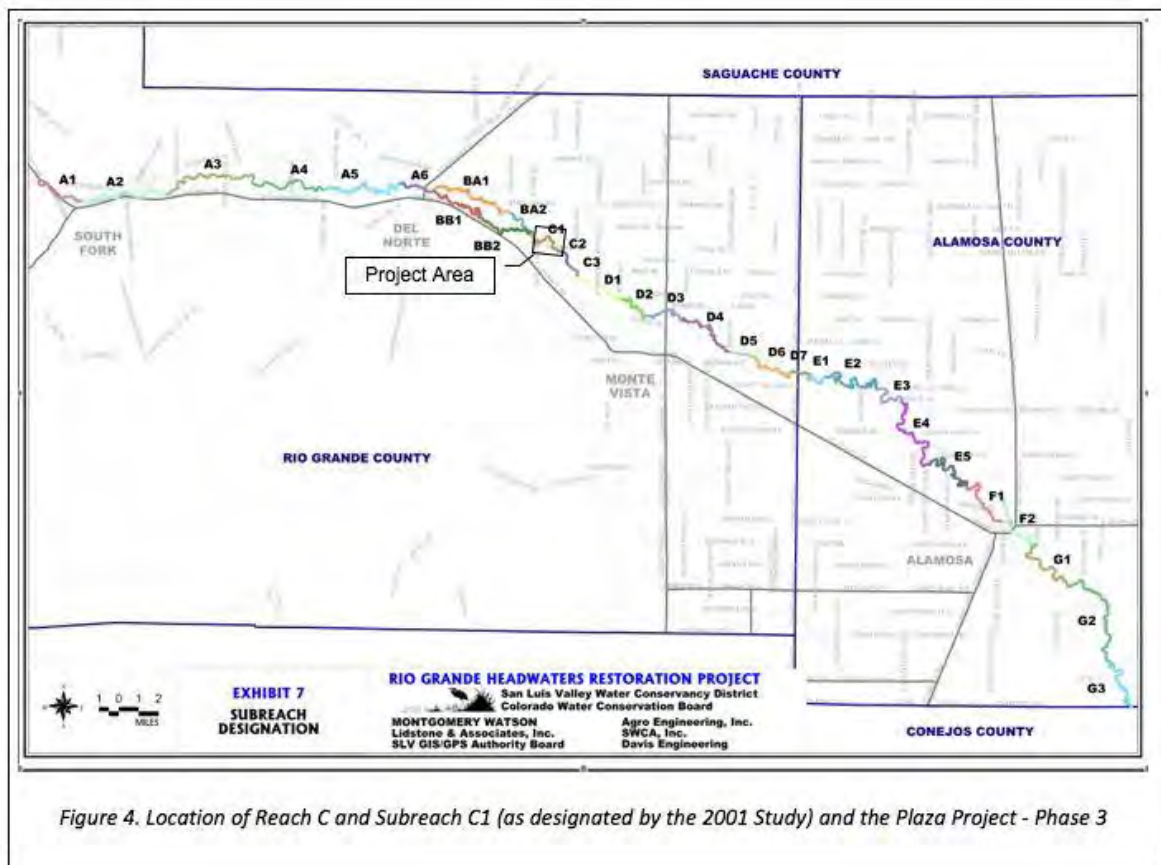


Figure 4. Location of Reach C and Subreach C1 (as designated by the 2001 Study) and the Plaza Project - Phase 3

The Rio Grande in this reach is primarily used for irrigation, wildlife habitat, ranching and recreation. Reach C was ranked “poorest” in channel stability and condition of the floodplain, and was identified as a high priority for restoration. Reach C is a moderate sloped, slightly entrenched, cobble/gravel channel. The bed form is riffle/pool. Within Reach C, the following issues with river function are present: inadequate floodplain function and connectivity; loss of flow control and system stability; and high diversion maintenance caused by erosion and the accumulation of debris and sediment. Specifically, the 2001 Study recommended that erosion and deposition problems in the vicinity of the Sevenmile Plaza area be addressed. The fishery in the project area is a transition zone between cold water and warm water fisheries. The main factors limiting the extent and quality of the cold water fishery are dewatering, channelization, and aggradation. The loss of water reduces the pool capacity, increases the water temperature, and provides for high sedimentation rates - all detrimental to the primary cold-water fish, trout. Colorado Parks and Wildlife does not manage for trout in the Project area due to lack of public lands, amount of diversions, and presence of other competing landuses. Therefore, owners of private lands assume the responsibility for the majority of habitat improvements.



Figure 5. Example of Steep, Eroding Streambanks in the Project Area

5.2 Prairie Ditch Diversion and Headgate Current Condition

The diversion dam is composed of rocks and was built in the early 1900s. It was reworked in 1962; railroad iron was driven into the bed of the channel, rocks were placed against the iron, and US Air Force surplus landing mats from World War II were used to fill in gaps and hold the rocks in place. Since this work was done, high flows moved the rocks as far as 130 feet downstream. The Prairie Ditch Company Board and stockholders have expressed concern that the next big water year may move enough of the remaining rocks the dam would stop effectively pooling water for diversion. Furthermore, the 2001 Study noted the channel in the Project area is impacted by sedimentation, which builds on the current Prairie Ditch diversion dam. The headgate, which was described by the Ditch Company's then Secretary as "One of the best, if not the best, headgate in the Valley," was completed in June of 1920. While it has served well, over 90 years of use and exposure have left the headgate crumbling and worn in places. Because of these issues, the PDC diversion dam and headgate were highlighted as structural priorities for rehabilitation in the 2001 Study.



Figure 6. Prairie Ditch Diversion (Looking Upstream)



Figure 7. Prairie Ditch Headgate

Section 6 - Alternatives Evaluated

During the development of the Plaza Plan, alternatives for the Phase 3 Project Elements were analyzed by the Plaza Stakeholders. The Plaza Stakeholders, a diverse group of 34 individuals, represent interests within the Sevenmile Plaza and the greater community of the San Luis Valley. The Plaza Stakeholders' role was to advise the Project sponsors, review and discuss Project deliverables, and make strategic planning decisions with a specific focus on agriculture needs, water administration, wetlands, wildlife habitat, and nonconsumptive uses of the Rio Grande.

6.1 Streambank Alternatives

The stakeholders examined the condition of each streambank and developed desired mitigation measures including: no action needed, bioengineering needed, stream access point development, and extensive streambank stabilization recommended. The streambank recommendations coincide with the recommendations for other elements. Because the streambanks in the project reach are all privately owned, the implementation of the stakeholders' recommendations will be dependent on landowner preference. In addition to improvements to the streambanks, the landowners can also take action to improve the riparian and aquatic habitat. As described in the 2001 study, the following actions will lead to habitat improvements:

- Protecting the riparian zone (reducing cattle grazing, provide development buffer, etc.);
- Creating various runs and riffles, thereby decreasing the existing large expanses of slow-moving water (which is lacking in habitat);
- Instigating special regulations on the taking of trout and provide more stocking;
- Preventing erosion and flooding.

6.2 Diversion Alternatives

Pulling from personal accounts and field trips to sites on the Rio Grande, Arkansas, Poudre, and Big Thompson Rivers, the Stakeholders identified types of diversions they were interested in examining for potential application at the PDC. The NRCS performed preliminary surveys of the project elements and developed initial designs and cost estimates for each of the alternatives. Costs were derived by the NRCS from "The Means Heavy Construction Cost Data."

The four alternatives were:

- Diversion Alternative #1: Concrete Diversion
- Diversion Alternative #2: Steel and Grouted Rock Diversion
- Diversion Alternative #3: Rock Diversion
- Diversion Alternative #4: Combine with McDonald Ditch Diversion Upstream

6.2.1 Diversion Alternative #1: Concrete Diversion

A concrete diversion dam would span the entire width of the river, checking the water behind it. The concrete structure would have the highest installation costs, but the lowest maintenance costs of all of the proposed diversion alternatives. The structure would not be passable to fish or boaters. It was recognized that a side channel could be added to allow fish passage. This would add to the costs of the diversion.

6.2.2 Diversion Alternative #2: Steel and Grouted Rock Diversion

A steel and grouted rock dam would span the entire width of the river, checking the water behind it. The steel and rock structure would have lower installation costs than the concrete dam, but greater maintenance needs and costs. While this structure is more "natural looking" than concrete, it is impassable by fish and boaters. Similar to Alternative #1, a side channel could be added to allow fish passage.

6.2.3 Diversion Alternative #3: Rock Diversion

A rock diversion would be composed of very large rocks and would be stacked tight enough that they would stay in place without being grouted. This alternative would include a series of drop structures, allowing for fish and boat passage. The installation costs of this structure would be less than the grouted rock and steel diversion. It would have higher maintenance than the concrete structure and the grouted rock and steel structure. Because this alternative provides boat and fish passage, it would fulfill numerous nonconsumptive needs including recreation and habitat improvement. This option was the most favorable of the diversion alternatives.

6.2.4 Diversion Alternative #4: Combine with McDonald Ditch Diversion Upstream

This alternative would include removing the current PDC diversion and moving the headgate upstream to the location of the McDonald Ditch headgate. The McDonald Ditch diversion will be replaced with a hybrid concrete and rock structure, which includes fish and boat passage, in 2014 through the Plaza Project – Phase 2: McDonald Ditch Implementation Project. In Alternative #4, all the water for the McDonald Ditch and PDC would be diverted from this location. The McDonald Ditch would divert water into its ditch at the location of their current headgate. Because the McDonald Ditch is too small to carry the PDC water, a new ditch would have to be dug to combine the ditches or provide a ditch parallel to the current McDonald Ditch. This would require a new access easement across a landowner's property, who is not a member of either ditch company. Combining the McDonald and Prairie diversions, would reduce overall maintenance. The Prairie Ditch would have to go through Colorado Water Court to change their point of diversion. It was determined that there were minimal cost savings with Alternative #4 as it would include combining diversions, installing a new headgate, digging and lining and new 0.5 mile ditch capable of carrying the maximum PDC decree, changing the point of diversion in Water Court, and acquiring an access easement to carry the PDC water from the McDonald diversion point to the PDC system.

6.3 Headgate Alternatives

Through the Plaza Plan, efforts to improve diversion efficiency, reduce maintenance costs, and explore the possibilities available for automation of the new PD headgate were explored.

6.3.1 Automated Gates and Precise Water Management

To research automated gates, the stakeholders met with Kyle Clair, engineer of the PDC's automated gate system, and Rubicon Systems America, Inc. (Rubicon Water). Clair's system uses the data transmitted by the PDC gauging station to the Colorado Division of Water Resources. The ditch superintendent programs the desired flow rate into the automated gate system, which then triggers a motor to raise and lower the headgate until the flow the gauging station is reporting equals the desired flow. Rubicon Water, an Australian based company, provides cutting edge water management systems. Rubicon's system has an operating system that can be programmed onsite or remotely via computer or smart phone. Rubicon utilizes overshot gates with sensors that measure the upstream and downstream pools. The gate then adjusts to deliver the programmed flow. Rubicon engineers complete the gate design and installation. They then provide training and customer support for the system. The Stakeholders were impressed with the automated systems and insisted they be included in headgates in the Project area. This will allow for improved irrigation efficiency and accounting of water, which is critical to on-farm and Rio Grande Compact management.

6.4 Micro-Hydropower Production Potential

Stakeholders were interested in investigating the potential to include low head micro-hydropower (micro-hydro) production in the diversions or headgates in the Project area. A feasibility study was commissioned with Applegate Group Inc., who recently completed a study on including micro-hydro production in canals and ditches across Colorado. Micro-hydro

production is not recommended at any of the Plaza Project elements at this time, as detailed in the following excerpt from the Executive Summary of the feasibility study: “At this time, the development of the three sites is not recommended. The very low head available at the diversion dams makes a potential project economically unfavorable. Innovative low head turbines are relatively new to the market and are priced at a premium. As more of these turbines are installed, we hope that the prices will come down and make these sites more favorable.”

Section 7 - Selected Alternatives

The stakeholders narrowed the developed alternatives and crafted a desired implementation plan for each of the project elements. The stakeholders developed the implementation plans with the project goals and objectives for each element in mind.



Figure 8. Project Elements and Deliverables - Phase 3: Prairie Ditch Implementation Project

7.1 Selected Alternatives for the Streambanks

The Stakeholders determined it was critical to improve the stability of streambanks and riparian vegetation in the project area. Currently, the streambanks upstream and downstream of the diversion are held in place by rocks and rubble. Removing the rubble and stabilizing and revegetating the banks will improve flow and river function. The streambanks will be sloped, stabilized, and revegetated, and fish habitat structures will be installed.

7.2 Selected Alternatives for the Prairie Ditch

The Stakeholders selected mitigation measures for the PD diversion and headgate.

7.2.1 Prairie Ditch Diversion

The Stakeholders selected Diversion Alternative #3: Rock Diversion for the PD diversion replacement. This option will greatly improve diversion efficiency and riparian condition. The diversion will have a sluice, which will move sediment and debris past the headgate and downstream. Finally, the rock drop structures will allow for fish and boat passage; this will improve the habitat and recreation potential in the reach.

7.2.2 Prairie Ditch Headgate

The Stakeholders selected a concrete headgate with four gates. Three manual gates and one solar-powered automated gate. The automated gate will regulate ditch flows, improving diversion accuracy and accounting. The manual gates will be used to regulate ditch flows if the automated gate malfunctions.

Section 8 - Project Budget and Schedule

8.1 Project Budget

Phase 3 will be funded with \$430,000 from the Colorado Water Conservation Board (CWCB) Water Supply Reserve Account (WSRA) (pending CWCB Board approval in March 2014), \$315,000 from the Cooperative Conservation Partnership Initiative (CCPI) Program, \$130,000 from Landowners (CWCB loan), and \$100,000 from in-kind services. Total estimated project cost is \$975,00.00. The 1% loan origination fee is not included in the budget. A complete budget with expenses broken down by task, timing, and source of funds is attached in Appendix A.

8.2 Project Schedule

Preliminary designs for the streambanks and PDC headgate and diversion were developed by the NRCS in Phase 1. Currently, project engineers are finalizing the design for each of the project elements. Phase 3 will be a four-year project with execution of designs in years 1 and 2, monitoring in years 2 and 3, and final reporting in year 4. A complete milestone table is attached in Appendix B.

Section 9 - Financial Plan

9.1 Current Financial Condition

The PDC proposes to apply for a \$130,000 loan from the Colorado Water Conservation Board (CWCB) for 10 years at 1.75% interest. This amount represents 14% of the total project cost. Other sources of funds are detailed in Section 8. The 1% loan origination fee and loan payments will be paid with funds from the PD savings and stock assessments. Revenue is derived from assessments of 257 shares of stock at \$300 annually. This assessment value has been constant for over five years. Shareholders plan to impose a special fee to pay the loan off in full in the 10 year term.

9.2 Credit Worthiness

The financial condition of the PDC is solid at the present time. The company has no debt and no outstanding obligations. The PDC has a history of responsible borrowing; in the 1990s, an operating loan was executed and paid in full.

Section 10 - Opinion of Feasibility

There do not appear to be significant roadblocks that would keep the PDC and RGHRP from successfully completing the project. The Project co-sponsors have secured 86% of the total Project costs from grants, NRCS programs, and in-kind contributions. As such, the PDC does not anticipate having to raise stock shares to meet the CWCB loan requirements. The Project will greatly improve the function of the Rio Grande and the ability of the PDC to deliver water to shareholders. A failure at the PDC diversion and headgate would stop all deliveries to water users. As such, the project will secure the long-term stability of the PDC system.

Following is a cost-benefit analysis of the project:

Total Project Cost (including interest)

\$ 845,000	Project Engineering, Construction, and Administration – Minus Loan
\$ 130,000	Expected Prairie Ditch 13% Contribution – CWCB Loan
\$ 1,300	1% Loan Origination Fee
\$ 12,838	Total Interest to Be Paid on the Loan

\$989,138 TOTAL

Total Cost per Share of Stock

$\$989,138 / 257 = \$3,848.79$

Cost per Share of Stock per Year

$\$3,848.79 / 10 \text{ years} = \384.88

Annual Cost per Acre-foot of Water Delivered For an Average Year

$\$989,138 / (16,000 \text{ acre-feet}) = \61.82

Using a rental rate of \$75 per acre foot, which is the value farmers must pay to pump one acre-foot of water in the San Luis Valley's Subdistrict #1, and the total cost of the project per year as the cost, the benefit to cost ratio for the project is:

Benefit/Cost = $[(\$75 \times 16,000 \text{ acre-feet}) / (\$989,138/10)] = 12.13$

Section 11 - Collateral

The Prairie Ditch Company can offer the following collateral for the CWCB loan:

1. The revenue from assessments as allowed by the Company By-Laws and Articles of Incorporation.
2. A certificate of deposit account in the amount of one annual payment to be held by the State Treasurer.
3. The project itself.

Section 12 - Social, Economic, and Physical Impacts

The project will improve the social, economic, and physical condition of the Rio Grande in the Project reach. The social condition will be influenced by the diversion, which will include fish and boat passage. This will lead to improved condition of the fisheries and opportunity for recreation. The economic condition will be improved as maintenance costs will be reduced and the proposed headgate automation will more efficiently provide irrigation water to the stockholders. The physical condition of the Project area will be improved as the streambank stability, riparian and aquatic habitat, and PDC diversion and headgate will be enhanced.

Section 13 - Permitting

The PDC and the Engineers believe no Environmental Assessment (EA) or Environmental Impact Statement (EIS) will be required. Work surrounding the PDC diversion and headgate is associated with agriculture and will fall under the Nation Wide Permits. The work on the streambanks will be permitted under the US Army Corps of Engineers' (USACE) 404 permits. The local USACE representative has been involved in this Project throughout the planning phase. As such, not permitting issues are anticipated.

Section 14 - Institutional Considerations

Entities that are, or may be, involved in the management, design, construction and financing of the project include:

- Prairie Ditch Company: project owner, co-sponsor, financing, and project management;
- Colorado Rio Grande Restoration Foundation and Rio Grande Headwaters Restoration Project: project co-sponsor, financing, and project management;
- Natural Resources Conservation Service: financing, design, and construction;
- Colorado Water Conservation Board: financing and construction;

PDC and RGHRP are the co-sponsors of the Project. PDC will enter into contracts with CWCB for a loan and with the NRCS. RGHRP will enter into a contract with CWCB for a grant and has a contract with NRCS in place.

Appendices

Appendix A – Project Budgets

Appendix B – Project Schedule

Appendix C – CWCB Loan Application

Appendix D – Prairie Ditch Articles of Incorporation

Appendix E – Prairie Ditch Bylaws

Appendix F – PDC 2013 Balance Sheet

Appendix G – PDC 2014 Balance Sheet

Appendix A – Detailed Project Budget

Detailed Budget for the Plaza Project - Phase 3: Prairie Ditch Implementation Project										
Project Tasks	Year 1: 2014	Year 2: 2015	Year 3: 2016	Year 4: 2017	Total	Sources of Funds				
						Cash Contribution			In-Kind Contribution	
						CCPI	WSRA	Landowners	NRCS	RGHRP
Task 1: Finalize Design										
NRCS District, Area, and State Engineers will complete the Project design - in-kind contribution is a NRCS Estimate.	90,000	-	-	-	90,000	-	-	-	90,000	-
Total Task 1	90,000	-	-	-	90,000	-	-	-	90,000	-
Task 2: Diversion Replacement *										
Site Preparation: Includes clearing and grubbing, removal of the old structure, channel clearing and shaping, pollution control, mobilization, and traffic control.	49,000	-	-	-	49,000	-	-	49,000	-	-
Foundation Work: Includes removal of water and installation of steel sheet piles.	14,000	-	-	-	14,000	-	-	14,000	-	-
Earthwork: Includes excavation, earthfill and drainfill.	20,000	-	-	-	20,000	-	-	20,000	-	-
Rock Rip Rap: Rock Diversion Dam	340,000	-	-	-	340,000	200,000	140,000	-	-	-
Radial Sluice Gate	31,000	-	-	-	31,000	-	31,000	-	-	-
Structural Work: Includes metal fabrication of the trash rack and catwalk.	12,000	-	-	-	12,000	-	12,000	-	-	-
Landowner Contingency	15,000	-	-	-	15,000	-	-	15,000	-	-
Total Task 2	481,000	-	-	-	481,000	200,000	183,000	98,000	-	-
Task 3: Headgate Replacement *										
Site Preparation: Includes clearing and grubbing, removal of the old structure, channel clearing and shaping, pollution control, mobilization, and traffic control.	16,500	-	-	-	16,500	-	-	16,500	-	-
Foundation Work: Includes removal of water.	6,500	-	-	-	6,500	-	1,000	5,500	-	-
Earthwork: Includes earthfill.	10,000	-	-	-	10,000	-	-	10,000	-	-
Concrete and Reinforcement: Includes concrete headgate and steel reinforcement of the headgate.	230,000	-	-	-	230,000	115,000	115,000	-	-	-
Conventional and Automated Water Control Gates and Valves	69,000	-	-	-	69,000	-	69,000	-	-	-
Total Task 3	332,000	-	-	-	332,000	115,000	185,000	32,000	-	-
Task 4: Channel Shaping and Streambank Stabilization *										
Channel clearing and shaping.	7,000	-	-	-	7,000	-	7,000	-	-	-
Revegetation: Includes seeding, sprigging, and mulching disturbed sites.	-	5,000	-	-	5,000	-	5,000	-	-	-
Total Task 4	7,000	5,000	-	-	12,000	-	12,000	-	-	-
Denotes costs based on "Means Heavy Construction Cost Data" utilized by NRCS.										

Appendix A – Detailed Project Budget

Page 2

Detailed Budget for the Plaza Project - Phase 3: Prairie Ditch Implementation Project											Page 2 of 2
Project Tasks	Year 1: 2014	Year 2: 2015	Year 3: 2016	Year 4: 2017	Total	Sources of Funds					Total
						Cash Contribution			In-Kind Contribution		
						CCPI	WSRA	Landowners	NRCS	RGHRP	
Task 5: Monitoring											
Field Personnel - RGHRP Personnel will coordinate and complete post-construction monitoring of Project sites. These hours include monitoring preparation, data collection, and data analysis.	-	2,000	1,500	500	4,000	-	4,000	-	-	-	4,000
Field Volunteer - One volunteer will assist in data collection. The volunteer will contribute approximately 12 hours per year for two years at an in-kind value of \$20.85 per hour.	-	250	250	-	500	-	-	-	-	500	500
Total Task 6	-	2,250	1,750	500	4,500	-	4,000	-	-	500	4,500
Task 6: Outreach and Education											
Project Outreach and Education; press, tours, production of materials, and volunteer coordination by the RGHRP.	1,000	1,500	1,000	-	3,500	-	3,500	-	-	-	3,500
Total Task 7	1,000	1,500	1,000	-	3,500	-	3,500	-	-	-	3,500
Task 7: Administration											
Cost for the RGHRP to administer the Project at the average rate of \$32.50.	20,000	12,000	5,500	5,000	42,500	-	42,500	-	-	-	42,500
Office Support In-Kind Match: office space and utilities are donated by the San Luis Valley Water Conservancy District. The value is \$140.00 per month. Because the RGHRP has 3 active Projects, the in-kind match for the Project is 1/3 of total office support.	550	550	550	350	2,000	-	-	-	-	2,000	2,000
Project Administration In-kind Match: The President and Secretary of the Colorado Rio Grande Restoration Foundation contributes 1 volunteer hours per week each to assist in Project Administration. The value of this time is \$20.85 per hour at 52 hours per year.	2,150	2,150	2,150	1,050	7,500	-	-	-	-	7,500	7,500
Total Task 8	22,700	14,700	8,200	6,400	52,000	-	42,500	-	-	9,500	52,000
TOTAL	\$ 933,700	\$ 23,450	\$ 10,950	\$ 6,900	\$ 975,000	\$ 315,000	\$ 430,000	\$ 130,000	\$ 90,000	\$ 10,000	\$ 975,000
						Percent of Project Cost					
						32%	44%	14%	9%	1%	100%

Appendix A – Summary Project Budget

Summary Budget for the Plaza Project - Phase 3: Prairie Ditch Implementation Project									
Project Tasks	Total	Sources of Funds					In-Kind		Total
		CCPI (RGHRP/NRCS)	WSRA (RGHRP/CWCB)	Landowners	NRCS	RGHRP			
Task 1: Finalize Design	90,000	-	-	-	90,000	-	-	90,000	
Task 2: Diversion Replacement	481,000	200,000	183,000	98,000	-	-	-	481,000	
Task 3: Headgate Replacement	332,000	115,000	185,000	32,000	-	-	-	332,000	
Task 4: Channel Shaping and Streambank Stabilization	12,000	-	12,000	-	-	-	-	12,000	
Task 5: Monitoring	4,500	-	4,000	-	-	500	-	4,500	
Task 6: Outreach and Education	3,500	-	3,500	-	-	-	-	3,500	
Task 7: Administration	52,000	-	42,500	-	-	9,500	-	52,000	
TOTAL	\$ 975,000	\$ 315,000	\$ 430,000	\$ 130,000	\$ 90,000	\$ 10,000	\$ 975,000	\$ 975,000	
Percent of Project Cost		32%	44%	14%	9%	1%	100%	100%	

Appendix B - Project Schedule

Milestone Table for the Plaza Project - Phase 3: Prairie Ditch Implementation Project																
Project Tasks	Year 1 - 2014				Year 2 - 2015				Year 3 - 2016				Year 4 - 2017			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Task 1: Finalize Design																
Task 2: Diversion Replacement																
Task 3: Headgate Replacement																
Task 4: Channel Shaping and Streambank Stabilization																
Task 5: Monitoring																
Task 6: Outreach and Education																
Task 7: Administration																

COLORADO WATER CONSERVATION BOARD
WATER PROJECT LOAN APPLICATION

Instructions: This application should be typed or printed neatly with black ink. Attach additional sheets as necessary to fully answer any question or to provide additional information that would be helpful in the evaluation of this application. When finished, please sign and return this application to:

THE COLORADO WATER CONSERVATION BOARD
Finance Section
1580 Logan St., Suite 600
Denver, CO 80203
Attn: Anna Mauss, P.E.
Phone: (303) 866-3441 x3224 Fax (303) 894-2578
Email: anna.mauss@state.co.us

Part A. - Description of the Applicant (Generally, the applicant is also the prospective owner and sponsor of the proposed project)

1. Name of applicant Prairie Ditch Company
Mailing Address PO Box 32 Mosca, CO 81146

Business Phone (719) 378-2209 Fax (719) 587-2270
Federal ID Number 84-0497104 email prairieditch@gmail.com
2. Person to contact regarding this application:
Name Mary Dzuris
Position/Title Secretary / Treasurer
Address PO Box 32 Mosca, CO 81146
Business Phone (719) 378-2209 Cell (719) 588-6228
Email prairieditch@gmail.com
3. Type of organization (Ditch Co., Irrigation District, Municipality, etc.): Ditch Company
Date of Annual Meeting February 1, 2014
Is the organization incorporated in the State of Colorado? YES X NO (If YES, please include a copy of the articles of incorporation, and the bylaws)

Appendix C – Loan Application

page 2

CWCB Water Project Loan Application

4. Please provide a brief description of the owner's existing water supply facilities and describe any existing operational or maintenance problems. Attach a map of the service area

The Prairie Ditch diverts 367 cfs to 65 stockholders on a 25 miles ditch with a 23,000 acre

service area. The diversion is in poor condition and at risk of failure. The headgate is aging and in need of repair. These elements require high maintenance and are a local restoration priority.

For existing facilities indicate:

Number of shareholders 65 or Number of customers served _____

Current Assessment per share \$ 300.00 Number of shares 257

Number of acres irrigated 23,000 Water Right: 367 CFS.

Average water diverted per year: 16,000 acre-feet.

Part B. - Description of the Project

1. Name of the Project Plaza Project - Phase 3: Prairie Ditch Implementation Project (Phase 3)

2. Purpose of this loan application. Check one.

☐	New project
☒	Rehabilitation or replacement of existing facility
☐	Enlargement of existing facility
☐	Emergency Repair
☐	Other (describe) _____

3. If the project is for rehabilitation of an existing reservoir, is the reservoir currently under a storage restriction order from the State Engineer? YES ☐ NO ☐

4. General location of the project. (Please include county, and approximate distance and direction from nearest town, as well as legal description, if known.

Phase 3 is located in Rio Grande County, approximately 5 miles north and 6.5 miles west of Monte Vista. Coordinates: 37° 38' 42.45"N / 106° 14' 0.44"W

5. Please provide a brief narrative description of the proposed project including purpose, need, facilities, type of water uses to be served and service area. Attach separate sheet, if needed.

Phase 3 includes replacing the PD diversion with a rock dam that allows fish/boat passage, installing a headgate with automated gates, and rehabilitating nearby streambanks.

See the feasibility study for details.

6. Will the acquisition of additional water rights be necessary? YES ☐ NO ☒

If YES, please explain. _____

Appendix C – Loan Application**page 3****CWCB Water Project Loan Application**

7. Please list the names, addresses and phone numbers of the Applicants' engineer(s) and attorney(s).

<u>NAME</u>	<u>ADDRESS and PHONE</u>
Rod Clark, P.E.	101 S. Craft Dr. Alamosa, CO 81101 (719) 589-6432
Laurie Clark, P.E.	881 Hwy 285 N. Monte Vista, CO 81144 (719) 852-5114
Bill Paddock, Attorney	bpaddock@chp-law.com (303) 861-9000

8. List any feasibility studies or other investigations that have been completed or are now in progress for the proposed project. If so, submit one copy of the study with this application

A feasibility study for Phase 3 was completed and submitted to CWCB. Other relevant studies include the 2001 Study, 2007 Strategic Plan, and Plaza Plan. See feasibility study for details.

9. Estimated cost of the project. Please include estimated engineering costs, and estimated construction costs, if known.

Estimated Engineering Costs:	\$ 90,000.00	
Estimated Construction Costs:	\$ 825,000.00	
Estimated Other Costs:	\$ 60,000.00	(land, water rights purchase, etc.)
Estimated Total Costs:	\$ 975,000.00	

10. Loan amount and terms you are requesting.

Requested Loan Amount:	\$ 130,000.00	(Usually 90 % of est. Total Costs)
Term (length) of loan:	10 years	(Usually 10, 20, or 30 years)
Interest Rate:	1.75% interest	(Please call for our current rates)

Part C. - Project Sponsor Financial Information

Because the CWCB's Fund is a revolving fund, it is important that the project sponsor have the financial capacity to repay any loans made by the CWCB. The following information is needed to assist the CWCB in a preliminary assessment of the applicant's financial capacity. The project sponsor will submit the three most recent annual financial statements.

1. List any existing long-term liability (multi-year) or indebtedness that exceeds one thousand dollars. For example, bank loans, government agency loans, bond issues, accounts payable, etc. Include names and addresses of lenders, amounts, due dates and maturity dates.

Appendix C – Loan Application

page 4

CWCB Water Project Loan Application

<u>Lender Name & Address</u>	<u>Remaining Amount</u>	<u>Annual Payment</u>	<u>Maturity Date</u>
None			

2. Are any of the above liabilities now in default, or been in default at any time in the past?
YES ☐ NO ☒ . If YES, please give detailed explanation.

3. Please provide a brief narrative description of sources of funding, in addition to the CWCB, which have been explored for this project (Examples would be Banks, USDA Rural Development, NRCS, Colorado Water Resources and Power Development Authority, Colorado Division of Local Government, etc.). The Prairie Ditch partnered with the Colorado Rio Grande Restoration Foundation for Phase 3. They secured \$315,000 through the NRCS CCPI Program.

The Foundation has requested \$430,000 through the CWCB WSRA. In-kind commitments total \$100,000.

4. What collateral will you be offering for this loan? Possibilities include a pledge of revenues, the project itself, real estate, water rights. The Prairie Ditch can offer revenue from assessments, a certificate of deposit in the amount of the annual payment, or the Project itself. The Prairie Ditch is prepared to add a special assessment to annual assessments to provide additional funds.

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

Signature of Applicant _____

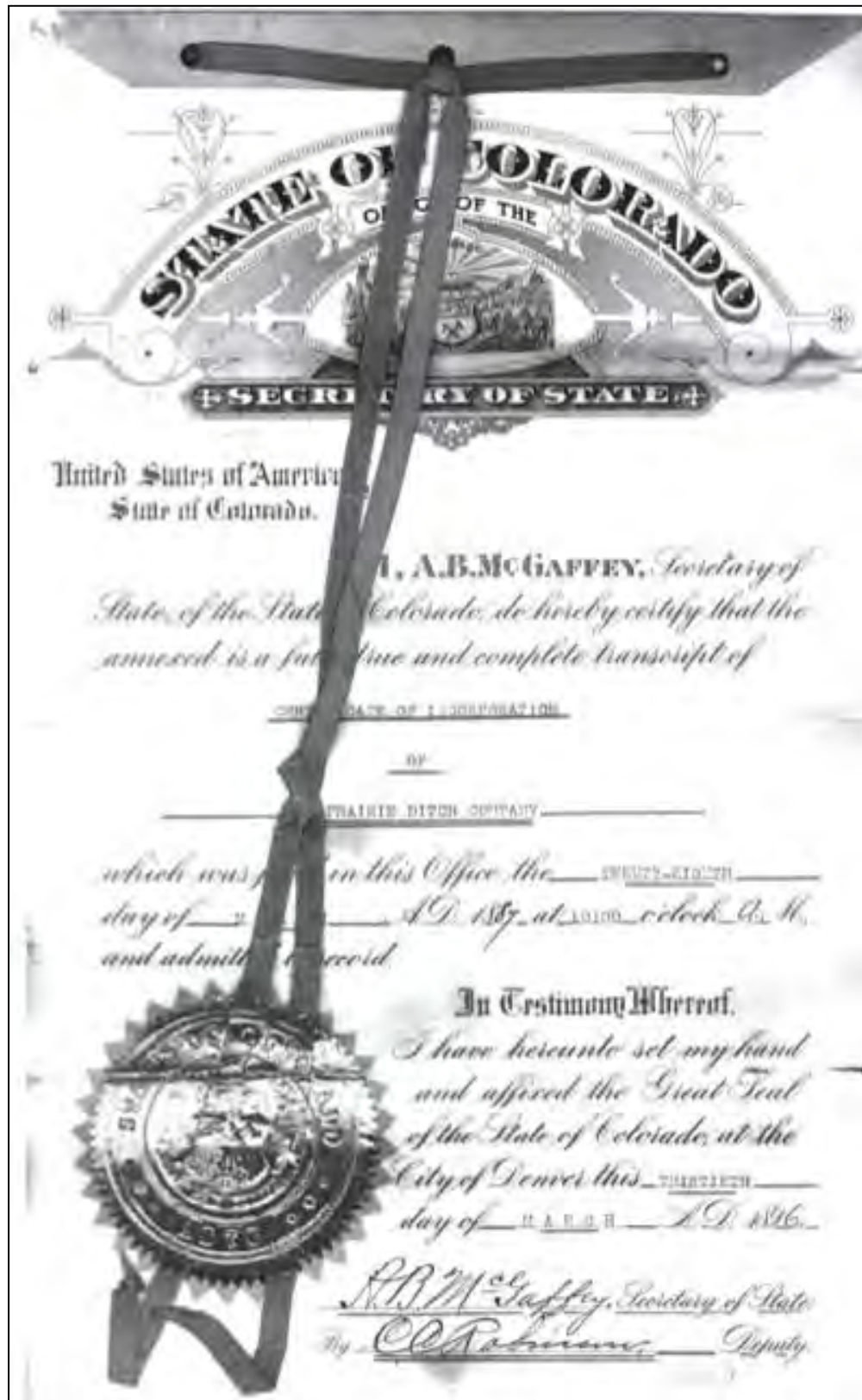
Printed Name LaVern Hart

Title President, Prairie Ditch Company

Date January 28, 2014

Appendix D – Prairie Ditch Articles of Incorporation

Page 1



KNOW ALL MEN BY THESE PRESENTS, - that we the undersigned,
have this day voluntarily associated ourselves together for the
purpose of forming a corporation under the laws of the State of
Colorado, and we hereby certify. _____

First- That the name of said corporation is _____
THE PRAIRIE DITCH COMPANY.

Second- That the object for which it is formed is to irri-
gate farming lands in Rio Grande and Costilla counties, State of
Colorado. _____

Third- That the capital stock is thirty thousand dollars. _____

Fourth- That the term for which it is to exist is twenty
years from and after the date of its incorporation. _____

Fifth- That the number of shares of its capital stock
shall be two hundred and fifty. _____

Sixth- That the number of directors shall be five, and
the names and residences of those who have been appointed the
first year are J. C. De-Annond, Alamosa, Costilla County, Colo-
rado; Arthur More, Alamosa, Costilla County, Colorado; S. W.
Hathaway, Alamosa, Costilla County, Colorado; James Dunbar,
Alamosa, Costilla County, Colorado and James W. Shields, Del
Norte Rio Grande County, Colorado. _____

Seventh- That the place where the principal office of
said corporation shall be kept is on J. C. DeAnnond's ranch,
Costilla County, Colorado. _____

-2-

Eighth- That the place where its principal business is to be carried on is in Rio Grande and Costilla Counties, State of Colorado. _____

Ninth- That the stream from which water is to be taken is the Rio Grande River. _____

Tenth- That the point on said stream from which water is to be taken is at the headgate of the ditch known as the John D. McDonald ditch in section Eight, Tp 39 N R 7 E N M M in Rio Grande County State of Colorado. _____

Eleventh- That the line of said ditch as near as may be is, starting from the headgate of said McDonald ditch thence in a southeasterly direction to the center line running east and west of sec. 9, in Tp. 39 N R 7 E N M M; thence east on said line and its extensions to the west line of sec 7 Tp 39 N R 9 E N M M, in Costilla County. _____

In witness whereof we have hereunto set our hands and seals this 21st day of October, A D One Thousand Eight Hundred and Eighty Six. _____

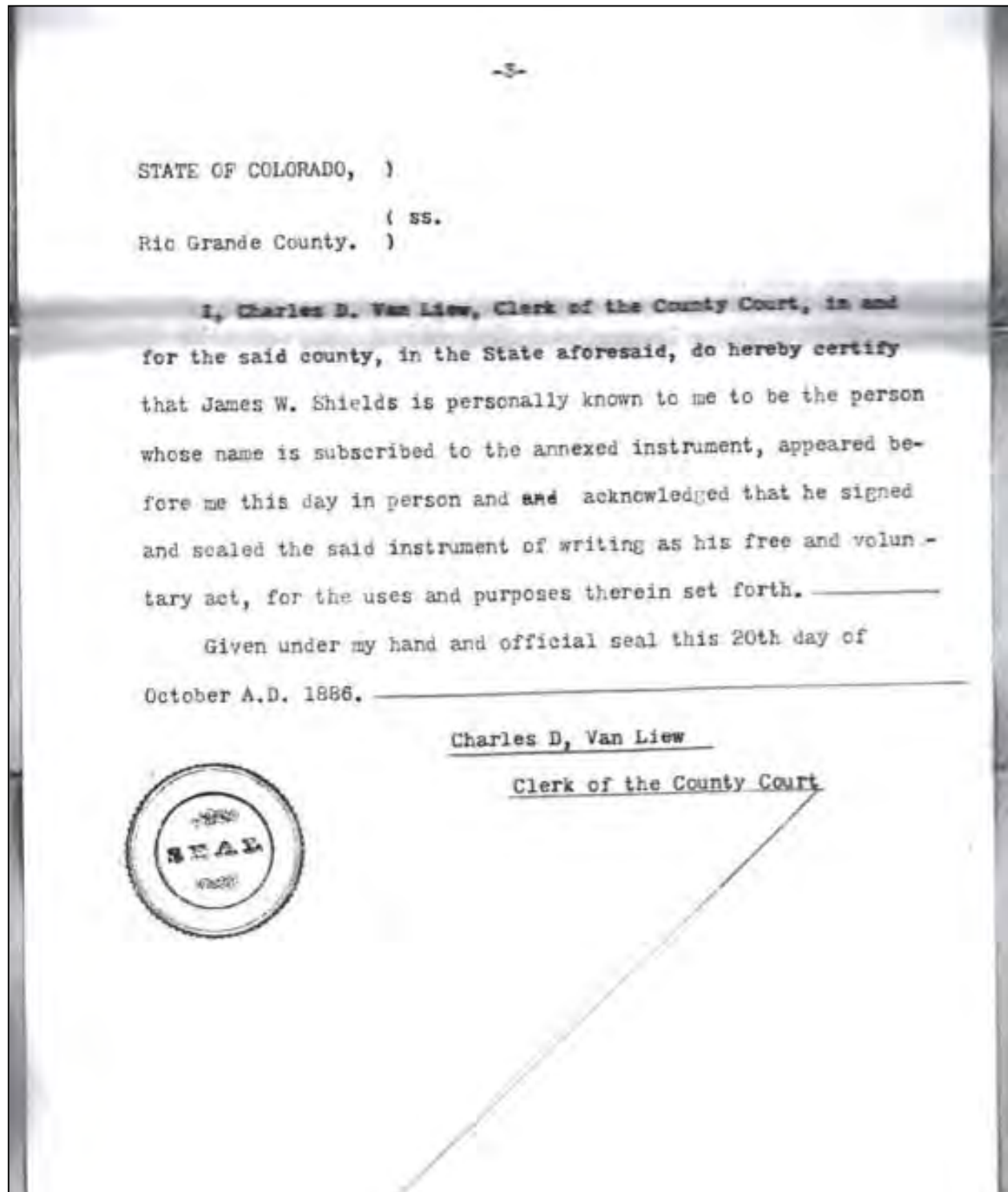
J. C. De Annand (seal)

Arthur Moore (seal)

S. W. Hathaway (seal)

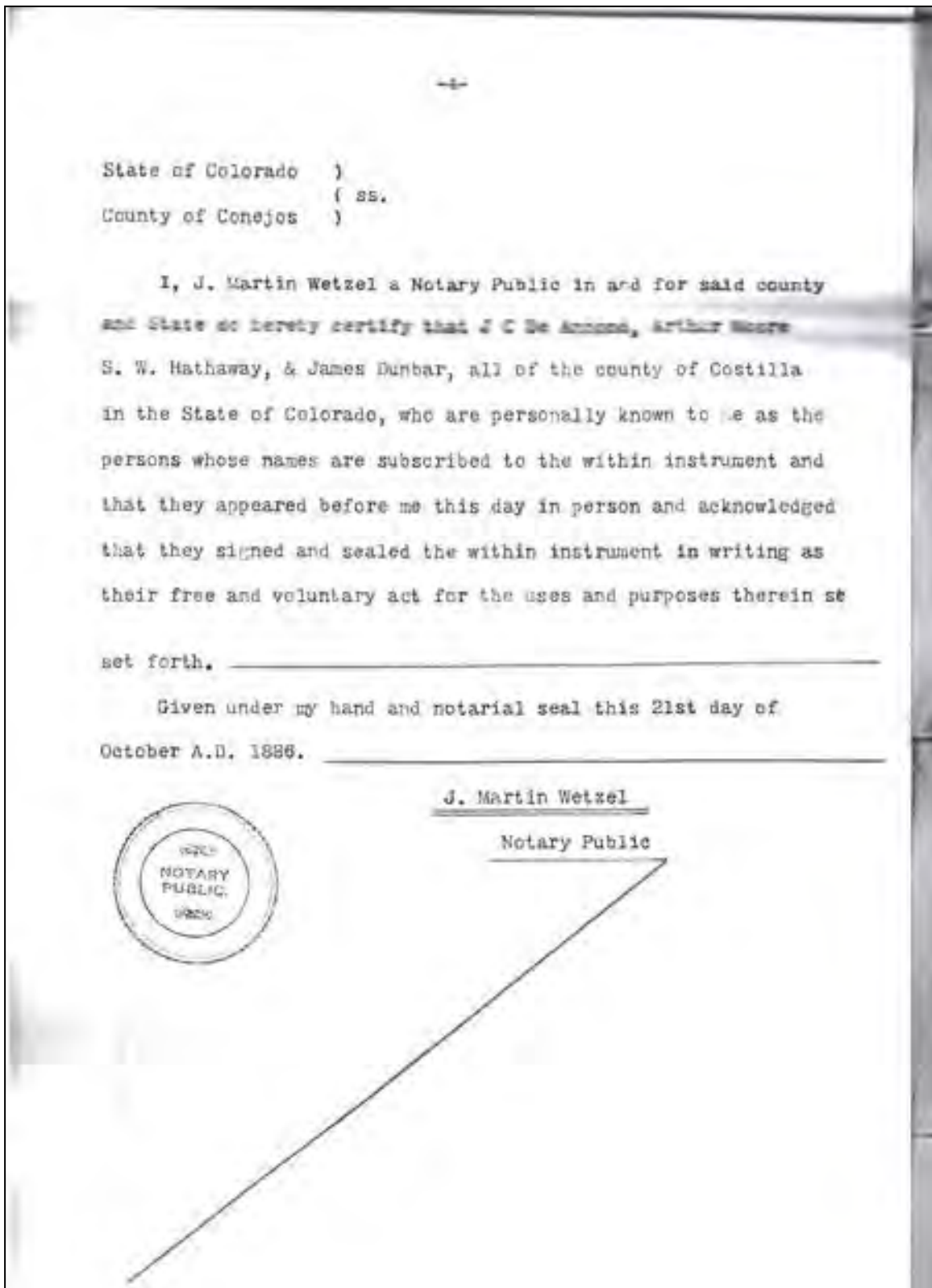
James Dunbar (seal)

James W. Shields (seal)



Appendix D – Prairie Ditch Articles of Incorporation

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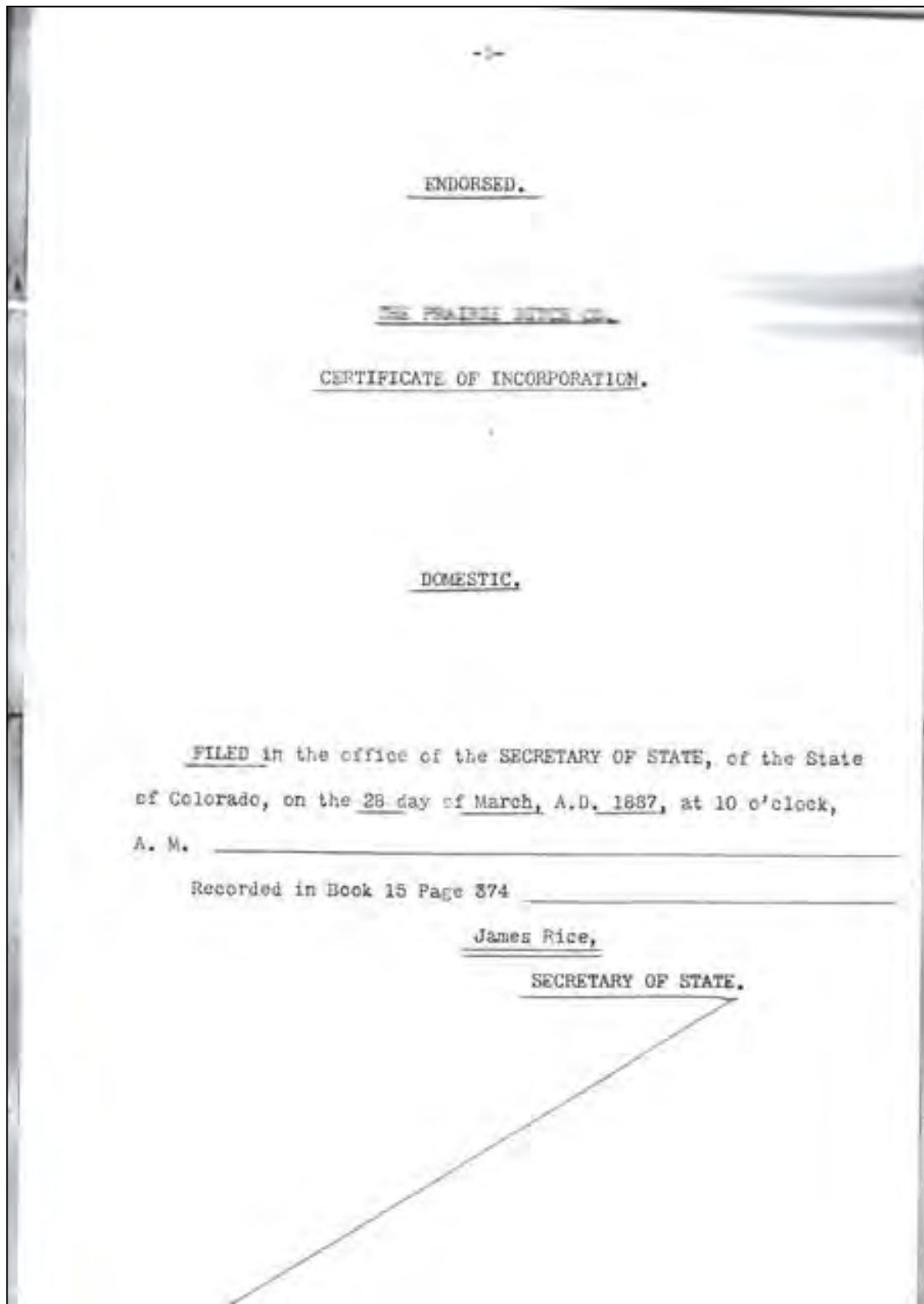
State of Colorado)
 (ss.
County of Conejos)

I, J. Martin Wetzel a Notary Public in and for said county
and State do hereby certify that J C De Arment, Arthur Moore
S. W. Hathaway, & James Dunbar, all of the county of Costilla
in the State of Colorado, who are personally known to me as the
persons whose names are subscribed to the within instrument and
that they appeared before me this day in person and acknowledged
that they signed and sealed the within instrument in writing as
their free and voluntary act for the uses and purposes therein set
set forth. _____

Given under my hand and notarial seal this 21st day of
October A.D. 1886. _____

J. Martin Wetzel
Notary Public





Appendix E – Prairie Ditch Bylaws

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Appendix E – Prairie Ditch Bylaws

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**BYLAWS FOR
THE PRAIRIE DITCH COMPANY**

ARTICLE I

Directors

SECTION 1. The Board of Directors shall consist of five members, elected separately by the stockholders at the annual meeting and serve for a term of three years, or until their successors are elected and qualified. One member shall be a stockholder of the Eastern District, one from the Central District, and one from the Western District of the Prairie Ditch lands as such Districts are defined and described in Section 2 hereof, and two members at large.

SECTION 2. The Eastern District shall consist of all lands irrigated by the Prairie Ditch laying east of the township line which runs north and south about three miles west of the town of Mosca; the Central District shall consist of all and irrigated by the Prairie Ditch lying between the township line mentioned above and the county line forming the boundaries between Rio Grande and Alamosa counties; the Western District shall consist of all lands watered by the Prairie Ditch lying east of the county line forming the boundary between Alamosa and Rio Grande counties.

SECTION 3. Any vacancy or vacancies in the office of Director may be filled by the remaining Director or Directors until the next meeting of the Stockholders.

SECTION 4. No Person shall be eligible to the office of Director of this corporation who is not, at the time of assuming the duties of such office, a stockholder in the corporation, and transfer by a director of all of his stock therein shall operate as a resignation of his office and create a vacancy.

SECTION 5. Meetings of the Board of Directors will be called by the President or any Member of the Board when deemed necessary; to be held in the office in Mosca or at any other place the Board may designate and be held on the second Thursday of every month.

SECTION 6. Terms of office for the Board of Directors shall be staggered every 3 years, and to begin rotation after 1997. East end, one year; Central two years; Western three years; first at-large two years; and second at-large three years.

ARTICLE II

Officers

SECTION 1. The officers of this corporation shall be the President, Vice-President, Secretary-Treasurer and the Superintendent, who shall be elected by the Board of Directors. The President and Vice-President shall be members of the Board of Directors.

SECTION 2. The President shall preside at all meetings of the stockholders and of the Board of Directors. He shall sign all certificates of stock, contracts and any other official documents of the Company. He may call special meetings of the Board of Directors at any time of his own volition, and shall do so upon written request by two or more members thereof. He shall perform such other executive duties and functions as ordinarily devolve upon the chief officer of a corporation.

SECTION 3. The Vice-President, in the absence or inability of the President to discharge the duties of his office, the Vice-President shall act in his place and have and exercise all the powers of the President. In the absence of inability of both the President and Vice-President, the Board of Directors may elect a President Pro-Term who shall perform all the duties and functions of such officers.

SECTION 4. The Secretary-Treasurer, shall have charged custody of the books, record, documents and correspondences of the Company; (s)he shall keep a record of the proceedings of all meetings of the stockholders and of the Board of Directors; shall sign all certificates of stock: and shall sign and give notice of the time and place of all meetings of the stockholders and Board of Directors. He or she shall have custody of the corporate seal and shall affix it to all certificates of stock, deeds, contracts and other instruments executed by or on behalf of the Company requiring a corporate seal after the same has been signed by the President.

The Secretary-Treasurer shall keep a full and accurate records upon stock ledgers and certificate books, showing the name, post office address and amount of stock held by each stockholder; (s)he shall prepare and present a full, true and complete written report of the condition of the Company's affairs and finances at the annual meeting of the stockholders and shall make such further and other reports and at such other times as the Board of Directors may require.

The Secretary-Treasurer shall furnish good and sufficient bond with sureties to be approved by the Board of Directors in such amount as the Board shall determine before entering on their duties.

The Secretary-Treasurer shall have custody and control of the funds and securities of the Company, shall collect all assessments, money and properties due and owing to the Company, and shall hold, deposit, disburse and deliver the same as the Board of Directors may direct; (s)he shall have the custody of all checks, notes, drafts, and notes and orders for payment of money received and given and shall pay and dispose of the same under the direction of the Board of Directors; (s)he shall keep proper books and accounts showing the financial transactions and condition of the Company, which books and accounts shall be open to inspection by any officer, director or stockholder during usual business hours; (s)he shall deposit all money of the Company in some safe and secure bank to be selected by the Board of Directors in the name of the Company and shall render a true and correct statement of his/her accounts whenever required to do so by the Board of Directors or by the President.

The Secretary-Treasurer shall prepare and attend to the filing of all reports required to be filed by the Company under the law and shall give notices required to be given of any matters either to the stockholders or to others.

SECTION 5. The Superintendent shall have charge of the construction, operation, care and management of the ditches, canals and reservoirs of the Company, as well as the distribution of water. He shall be subject to the direction of the Board of Directors in all matters.

ARTICLE III

Stockholder

SECTION 1. The annual meeting of the stockholders of the Company shall be held at the Community Building in the town of Mosca, Alamosa County, State of Colorado, at the hour of nine o'clock in the forenoon of the first Saturday in February of each year commencing in February 1996.

SECTION 2. Special meetings of the stockholders may be called to be held at the Community Building in the Town of Mosca, Alamosa County, State of Colorado, at any time by the resolution of the Board of Directors. The Board of Directors shall call such meeting upon written request of the owners of one-third (1/3) of the stock issued and

outstanding. Notice shall be given to stockholders of any special meeting and such notice shall state the purpose thereof.

SECTION 3. A quorum of any meeting of the stockholders shall consist of one-third (1/3) of the voting stock of the corporation issued and outstanding, represented in person or by proxy and majority of such quorum shall decide any question that may come before the meeting. (Amended 2/6/1971).

SECTION 4. Representation by written proxy, subscribed by the registered stockholders, shall be allowed, and the instrument authorizing the proxy to act at the meeting shall be exhibited at the time of such meeting when called for, and filed with the Secretary.

SECTION 5. At all meetings of the stockholders, each stockholder shall be entitled to one vote for each share of stock appearing upon the stock books of the corporation as registered in his name, which vote may be given personally or by written proxy, as herein provided, and to cast as many votes as he owns or represents shares of stock in the corporation.

SECTION 6: The President or Vice-President and the Secretary-Treasurer of the corporation shall act as the presiding officer and secretary, respectively, at all the stockholders' meetings, unless the meeting shall otherwise determine.

SECTION 7. At the opening of the annual meeting of the stockholders the chairman shall appoint a committee of three (3) stockholders to serve as a Credentials Committee and Judges of Election. It shall be the duty of such committee to immediately canvass the meeting and to examine all proxies and to make report of the number of shares of stock represented by the proxies and to make report of the number of shares of stock represented by the owners in person and by valid proxies and upon receipt of such report and ascertainment that a majority of the stock outstanding is represented, the transactions of business of annual meeting shall be taken up.

SECTION 8. The polls shall be opened as the last thing on the agenda of the meeting and nominations for office shall be received from the floor. Voting shall be by ballot and the candidate receiving the greatest number of votes for any office shall be declared elected. In the case of a tie, vote for the leading candidates for any office, additional ballots shall be taken until such question is determined. (Amended 2/7/1953)

ARTICLE IV

STOCK

SECTION 1. Certificates of stock shall be issued to every holder and shall be signed by the President and the Secretary-Treasurer and sealed with the seal of the Company. A record of each certificate shall be kept on the stub thereof and in the stock ledger or book of stockholders. No certificate of stock is to be issues for less than one (1) share or Eighty (80) acres. (Amended February 2, 2008).

SECTION 2. Transfer of stock shall be made and entered on the books of the corporation by the Secretary upon surrender of certificates properly assigned, and all surrendered certificates shall be canceled and attached to the corresponding stub of the stockholders' certificate book; provided all amounts due the Company thereon, including water assessments have been full paid.

SECTION 3. The Transfer books of the corporation may be closed for the period of ten (10) days previous to the annual or special meeting of the stockholders, and notice that the transfer books will be closed shall be given and published in the call for the meeting.

SECTION 4. The corporation shall be entitled to treat the holder of record of any share or shares of stock as the holder in fact thereof, and accordingly shall not be bound to recognize any equitable or other claim to or interest in such shares on the part of any other person, whether or not it shall have express of other notice thereof, save as may be expressly provided by the laws of the State of Colorado.

SECTION 5. Any person claiming a certificate of stock to be lost or destroyed shall make and affidavit of that fact and advertise the same in such a manner as the Board of Directors may require; and shall, if the Board of Directors so requires, give the corporation a bond of indemnity in form and with one or more sureties satisfactory to the Board, in at least double the market value of the stock represented by said certificate; whereupon a new certificate may be issued of the same tenor and for the same number of shares as the alleged to be lost or destroyed.

ARTICLE V

Duties of the Board of Directors

SECTION 1. It shall be the duty of the Board of Directors to exercise a general supervision over the affairs of the corporation, and direct and control the conduct of any officer of the corporation in his official capacity, and for cause, remove any officer, and control any book or paper of the corporation in the hands of any of its officers, and to

exercise general powers in connection with any and all of the business in which in the corporation may engage.

SECTION 2. In addition to the general powers, duties and functions incident and which usually appertain to their offices and positions, and such as they are severally authorized to perform under the law and the Articles of Incorporation of the Company as well as these Bylaws, the Board of Directors shall have the power and it is hereby enjoined upon them as a duty to do the following things:

- (a) To make, and as often as shall be necessary in the light of reason and experience, to change, such reasonable rules and regulations for the administration of its water distribution system and the delivery of water therefrom to the end that there may be effected an equitable distribution of such water among the shareholders of the Company, which rules and regulations shall be binding upon the shareholders and water users of the Company, their assigns and successors in interest.
- (b) To purchase, acquire, and employ improvements, devices and manpower for the measurement and delivery of water and the protection and maintenance of the Company's properties and water distribution system.
- (c) To compel the general and impartial collection of [assessments] levied upon the stock of the shareholders.
- (d) To levy assessments for the maintenance and repair of the Company's ditches and canals whenever the stockholders shall fail to do so before the first of April in each year.
- (e) To fill vacancies among the members of the Board of Directors caused by death, removal or incapacity until the next meeting of the stockholders.
- (f) To determine whether water shall be permitted to be used upon other land than that upon which water of the Company has been used in the past.
- (g) The Board of Directors shall have the power to borrow money upon credit of the Company in a total amount not to exceed Twenty Five-Thousand dollars (\$25,000.00) upon credit of the Company, and may, by resolution properly adopted, authorize the President and Secretary-Treasurer to make, execute, and deliver promissory notes and other written evidence of the indebtedness on behalf of the Company. And upon resolution properly adopted, the President and Secretary-Treasurer may be given authority to collect, discount, negotiate and endorse all checks, drafts, notes and negotiable instruments payable to the Company or in which the Company has an interest.

- (h) The Board of Directors shall prepare a budget jointly with the Superintendent and Secretary-Treasurer. Proposed budget shall be presented at the annual meeting.

SECTION 3. The Board of Directors shall make at least one inspection of the Company's ditches, canals, laterals and water distribution structures each year, in company with the Superintendent.

ARTICLE VI

Superintendent

SECTION 1. The Superintendent shall, under the direction of the Board of Directors, have control and supervision over the Company's water system and over the distribution of water among the stockholders.

SECTION 2. The Superintendent shall deliver water only to applicants who shall present the Secretary's order therefore showing the number of shares owned by the applicant and certifying that all assessments required to be paid upon each such stock have been paid to the Company.

SECTION 3. The Superintendent shall keep a book furnished by the Secretary, containing a list of the shareholders of the Company, and the amount of water delivered thereunder. He shall also retain all orders so presented to him by the applicants, which shall be transmitted to the Board of Directors with this annual report as herein after provided.

SECTION 4. After the close of the irrigation season and in any event before the 31st day of December of each year, the Superintendent shall prepare and submit to the Board of Directors a report in writing showing the details of water distribution during such years, the persons to whom it was delivered, and the acreage irrigated by each of such water users and of the nature of the crops watered.

SECTION 5. At the time of making his annual report and at all other times when the needs of the Company and its best interests may require, the Superintendent shall suggest needed repairs, improvements and other changes in the physical setup, operation and conduct of the Company's water distribution system.

ARTICLE VII

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ARTICLE VII

Assessment

SECTION 8. No water shall be delivered under the shares of stock, until all assessments have been paid, including any late charges. (As amended February 4, 1939).

SECTION 9. In the case of default in the payment of any assessment or any part thereof for a period of three (3) years after the same shall have been due, the Board of Directors shall order such stock sold, or so much thereof as may be necessary to pay the amount due to the Company, together with the cost and expenses of such sale, a thirty (30) day's notice of which sale shall have been given by publishing a notice thereof stating the name or names of the delinquent stockholders, the amount of the assessment, together with accrued interest, and the time and place of such sale in some newspaper of general circulation in Alamosa County, Colorado, and by posting a copy of such notice on the Prairie Ditch Company's office door.

The stock so sold shall be transferred on the books of the Company to the purchaser at said sale; and after deduction from the proceeds of such sale all assessments and accrued interest thereon, together with the costs of such sale, the surplus, if any, shall be paid to the delinquent shareholder upon the surrender of the original certificate representing the stock so sold, and if not surrendered within ninety (90) days, the funds become the property of the Prairie Ditch Company and the certificate becomes null and void.

Written demand for the payment of such delinquent assessment and accrued interest and notice that the Company intends and elects to declare said stock forfeited unless paid within thirty (30) days therefrom, shall be given by registered mail addressed to the stockholder at the address shown on the Company's books at least thirty (30) days prior to the publication of such notice of sale.

SECTION 10. At the option of the Board of Directors, suit may be brought against any stockholder to recover and assessment or any part thereof remaining unpaid with interest.

ARTICLE VIII

Use of Water

SECTION 1. Subject to the payment of assessments levied thereon and the reasonable rules and regulations adopted by the Board of Directors, each share of stock shall entitle the holder to the use each year of the pro rata share of water to which the Company is entitled which the Company is entitled which is in the Company's ditches and which is available for the purpose, such water shall be equitable distributed by the Ditch Superintendent.

SECTION 2. The Company shall have the right to alternate the distribution of the water among the stockholders upon different days so as to equitably distribute said water.

SECTION 3. The ownership or purchase of stock in the Company shall not entitle any person to delivery of water upon other land than that upon which the water of the Company has been used theretofore, except upon written application to and the written consent and approval of the Board of Directors. For purposes of this section, the lands upon which the water of the Company was being used as of November 2001, are depicted as the "Current Service Area" on the map attached as Exhibit A to the Decree in Case No. 96CW45. Any such changes in place of use, including adding or removing water, affecting land in the Current Service Area as shown on said Exhibit A must be approved in accordance with this Section 3. (Amended February 2, 2008). No conservation easement can be placed on water right represented by shares of stock in the Company except upon written application to the written consent and approval of the Board of Directors.

Whenever such a request has been filed with the Board of Directors, it shall cause all other stockholders who are entitled to delivery of water, at either the place or from which or the place to which the delivery is changed, or from the lateral ditch where water will be delivered under the conservation easement, to be notified in writing of the request.

In the event that the Board of Directors, in considering and acting upon the request, deems it advisable to obtain legal and/or engineering services for the purpose of making its determination, the costs of all such legal and engineering services, together with any out of pocket expenses incurred by the Company, shall be paid by the stockholder making the request. The Board may require the estimated costs associated with making the determination be paid to the Company prior to engaging such services by the Board. If the Board requires payment of estimated costs, the Board may, without penalty or liability, defer consideration of and such request until such payment has been made. In the event, the Board shall not deliver any water to the stockholder making the request until the actual costs have been paid.

If, in the opinion of the Board of Directors such a change or changes can be made, or conservation easement can be allowed, without injury to (1) The Prairie Ditch, (2) the Company, (3) Shareholders, then upon written order of the Board, such water shall then be delivered to such place or places, or by such means, as requested, unless however such delivery would contravene the laws of the State of Colorado, or such conservation easement shall be approved.

In considering the request, and in addition to any other consideration which may apply to the particular circumstances before it, the Board shall always take all appropriate steps to assure that the stock for which the determination is made shall continue to be liable for payment of all duly-levied assessments of the Company, and to the other provisions of the Articles of Incorporation, the Bylaws, and Rules and Regulations of this Company. The determination of the Board of Directors shall be final. (As amended February 8, 2004).

SECTION 4. The stockholders of the Company will be permitted to use the Company's ditches and canals for the carriage of reservoir water, without extra charges, provided that no reservoir water so purchased shall be carried in such ditch when it tends to endanger the Company's canal and ditches or prevents the carriage of direct flow right belonging to the Company therein.

SECTION 5. Any benefit received for diversions of water under the water rights of the Company shall be available for use only by stockholders and on lands within the Company's Current Service Area. Such benefits may include, but are not limited to, aquifer recharge credits quantified pursuant to the decree in Case No. 96CW45, District Court, Water Division No. 3, or any other credit for or offset against groundwater withdrawals received as a part of any Groundwater Management Plan or Plan for augmentation. Any change in place of use of water by a stockholder, including the place of use of any benefits resulting therefrom, shall be made only in accordance with Section 3 of the Article VII. (As amended February 2, 2008).

The aquifer recharge credits quantified pursuant to the decree in Case No. 96CW45, District Court, Water Division No. 3, shall only be available for use by stockholder pursuant to rules and regulations hereafter adopted for that purpose by the Board of Directors. In Adopting such rules and regulations, the Board shall ensure that the aquifer recharge credits (1) shall be used to sustain, in so far as possible, existing levels of withdrawals from the unconfined aquifer by stockholders, wells located in the Closed Basin portion of the Company's service area and (2) shall not be used to increase the withdrawal of groundwater by any well or to bring more land under irrigation with groundwater from the unconfined aquifer. Any change in place of use of aquifer recharge credits shall be made only in accordance with Section 3 of this Article VII. (As Amended February 8, 1998).

ARTICLE IX

Compensation of Officers

SECTION 1. The members of the Board of Directors and the Auditing Committee shall be paid as the stockholders set at the annual meeting per each meeting of the Board or such Committee which the shall attend, and any such committee as the Board shall appoint. (As amended February 1996).

SECTION 2. All employees' salaries are set by the Board of Directors.

ARTICLE X

Auditing Committee

SECTION 1. The Board of Directors shall appoint an auditing committee consisting of three (3) Stockholders who shall make a full and complete check of the books and records of the Company and of the Secretary-Treasurer prior to the annual meeting and at such times as may be authorized by the Board of Directors. And at the annual meeting such auditing committee shall present a report to the stockholders of their findings and the result of their examinations.

ARTICLE XI

Amendments to Bylaws

SECTION 1. The bylaws of the Company may be amended at any annual meeting of the stockholders, or at a special meeting of the stockholders called for such purpose when notice of the proposed changes shall have been given in writing by mailing a written or printed notice thereof to each stockholder at least thirty (30) days prior to the date which shall contain the proposed amendments.

SECTION 2. If, in the judgment of the Board of Directors, it is necessary to make an immediate amendment to the bylaws for the well being of the Prairie Ditch Company, or it stockholders, the Board of Directors may adopt a temporary bylaw which shall remain in full force and effect until the next meeting of the stockholders. The Board of Directors shall present the temporary bylaw to the stockholders at such meeting for the purpose of approving or repealing the bylaw. Notice of the meeting shall be given in the manner described in Section 1 of the Article XI.

ARTICLE XII

Repeal of Former Bylaws

SECTION 1. All other and former Bylaws of the Company are hereby repealed.