Rio Grande State Wildlife Area Design Project

Final Report prepared for CWCB - November 2018

Colorado Rio Grande Restoration Foundation
Rio Grande Headwaters Restoration Project

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, agricultural water use, riparian health, wildlife and aquatic species habitat, recreation, and community safety while meeting the requirements of the Rio Grande Compact

Final Report Executive Summary
Project Title: Rio Grande State Wildlife Area Design Project
CWCB WSRA Grant Contract Number: POGG1 2017-1000

Project Start Date: May 24, 2017
Project Completion Date: November 26, 2018

FUNDING

Total CWCB WSRA - Cash	$90,000
CPW Wetlands Program - Cash	$24,500
North American Wetland Conservation Act - Cash	$60,000
GOCO Habitat Restoration Grant - Cash	$25,000
In-kind Contributions	$14,000
Subtotal In-kind	$14,000
TOTAL FUNDING	**$213,990**

EXPENDITURES

Expenditures of CWCB WSRA Funds	$90,000
Other Expenditures	$123,990
TOTAL EXPENDITURES	**$213,990**

Summary Accomplishments
The Rio Grande State Wildlife Area (RGSWA) Design Project was a partnership project with the Rio Grande Headwaters Restoration Project (RGHRP), Colorado Parks and Wildlife, the San Luis Valley Canal Company, the Centennial Ditch Company, and the Rio Grande 2 shareholders. The goal of the project was to stabilize eroding streambanks through the RGSWA and complete designs needed for the implementation of three diversion infrastructure improvement projects. The project included the survey, design and permitting for improvements to the Centennial Ditch diversion, the San Luis Valley Canal headgate, and the Rio Grande 2 diversion. The project also includes the stabilization of streambanks on the RGSWA, which will be completed by Colorado Parks and Wildlife between December 2018 and February 2019. Throughout project implementation the RGHRP gave tours, developed outreach materials, and provided updates to community groups as part of outreach and education. The RGHRP will continue to give tours and complete long-term monitoring to ensure that the project objectives stand the test of time. The project resulted in three shovel ready diversion improvement projects as well as designs for streambank stabilization and riparian restoration on the RGSWA. Implementation of these designs began in Fall 2017 and will be complete in Spring 2019. When the designs are implemented, the benefits of the project include protected wetland habitat, improved aquatic and wildlife habitat, improved riparian condition, improved diversion efficiency and reduced maintenance, enhanced water quality, increased capacity for sediment transport, improved public safety and recreation opportunity, and increased public involvement in water improvement activities.

INTRODUCTION and BACKGROUND

The Colorado Rio Grande Restoration Foundation (Foundation) is the fiscal agent for the Rio Grande Headwaters Restoration Project (RGHRP). The RGHRP was formed to implement the recommendations of the 2001 Study. The 2001 Study was prompted by a group of citizens who were concerned that the Rio Grande had been impaired. The 2001 Study, sponsored by the San Luis Valley Water Conservancy District and funded by the Colorado Water Conservation Board, analyzed 91 miles of the Rio Grande from South Fork to the Alamosa/Costilla County line. This reach was identified as the portion of the Rio Grande in Colorado that has been most impacted by human intervention over the past 100 years. The 2001 Study analyzed the vegetation, human impact, agricultural disturbance, geomorphology, hydrology, wildlife habitat, condition of structures, and aquatic habitat within the 91-mile study reach.

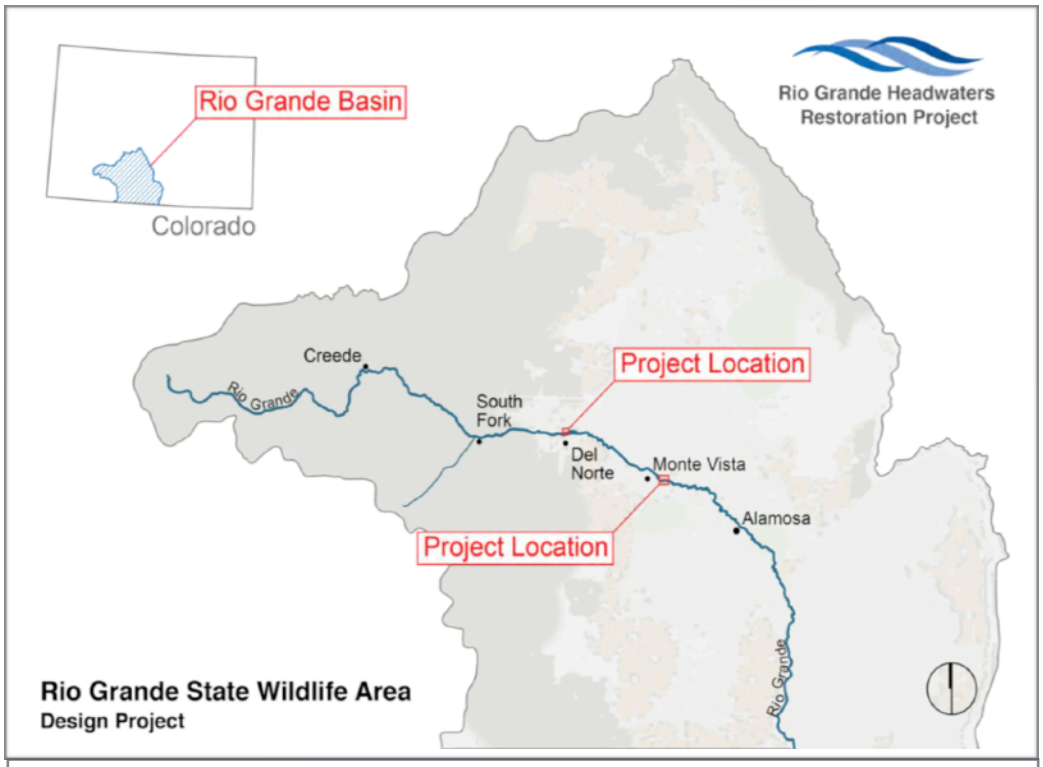

Figure 1: Location of Rio Grande State Wildlife Area Design Project

Since 2001, the RGHRP has accrued a successful record of working with landowners, and local, state, and federal entities to improve the condition and function of the Rio Grande. To date the RGHRP has completed 10 cost-share restoration projects on 62 sites to improve the condition of over 11 miles of streambanks on the Rio Grande. These projects reduce sediment loading by stabilizing the streambanks, improve the riparian and upland habitat by increasing willow and riparian vegetation cover, enhance the fishery, increase the capacity of the Rio Grande to transport sediment, and recover the condition of wetlands located throughout the riparian area. In 2010, the RGHRP began 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. Phase 1 was administered by a partnership between the McDonald Ditch Company and the RGHRP. 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. Following creation of the Plaza Plan, the RGHRP partnered with the McDonald Ditch Company to implement the McDonald Ditch Implementation Project (The Plaza Project - Phase 2) and the Prairie Ditch Company to implement the Prairie Ditch Implementation Project (The Plaza Project - Phase 3).

The RGSWA Design Project continues these efforts at other locations along the Rio Grande. The Rio Grande flowing through the Rio Grande State Wildlife Area (RGSWA) is increasingly unstable, threatening water deliver to the San Luis Valley Canal, the Centennial Ditch as well as the Colorado Parks and Wildlife (CPW) siphon. In addition, the San Luis Valley Canal and Centennial Ditch adjacent to the RGSWA and the Rio Grande 2 Ditch further upstream are all aging and in need of repair. This resulted in the development of designs needed for the implementation of streambank stabilization and three diversion infrastructure improvement projects. Implementation of these designs is currently underway and will significantly improve river health and water quality for the fisheries and other beneficiaries, support a safer river for recreation, increase agricultural diversion efficiency, and protect the water supply to the complex wetland system on the RGSWA.

PROJECT OBJECTIVES, TASKS, and ACTIVITIES

The proposed objectives of the Project were to:

1. Protect over 100 acres of critical wetland habitat through the stabilization of 1000 feet of streambank, protecting CWP water control infrastructure;
2. Restore 1 acre of riparian habitat along the Rio Grande in the project area;
3. Enhanced aquatic habitat through the construction of rock barbs and root wads for increased resting and feeding areas;
4. Improved water quality and river function through reduced sediment loading and improved floodplain connectivity;
5. Complete designs needed to implement 3 diversion infrastructure improvement projects;
6. Protect local recreation opportunities through the maintenance of high quality waterfowl habitat on the RGSWA;
7. Promote public involvement in water improvement activities through public outreach and education.

The following passages detail how these objectives were met and modified through the completion and planned completion of Project Tasks.

Task 1: Design of Streambank Stabilization on RGSWA
Description of Task: Complete survey, design, and permitting for the streambank stabilization and riparian restoration on the RGSWA.

Activities: Project partners planned to hire Riverbend Engineering to complete the designs for the streambank stabilization and riparian restoration on the RGSWA. However, after further discussion with Colorado Parks and Wildlife, it was decided that CPW would design the streambank stabilization on the RGSWA using their engineers. CPW engineers completed the survey and designs for the streambank stabilization and riparian restoration in Spring 2018. Because of this, funding remained for project design, which was used to hire Riverbend Engineering to design additional streambank stabilization on private land adjacent to the RGSWA and the SLV Canal.

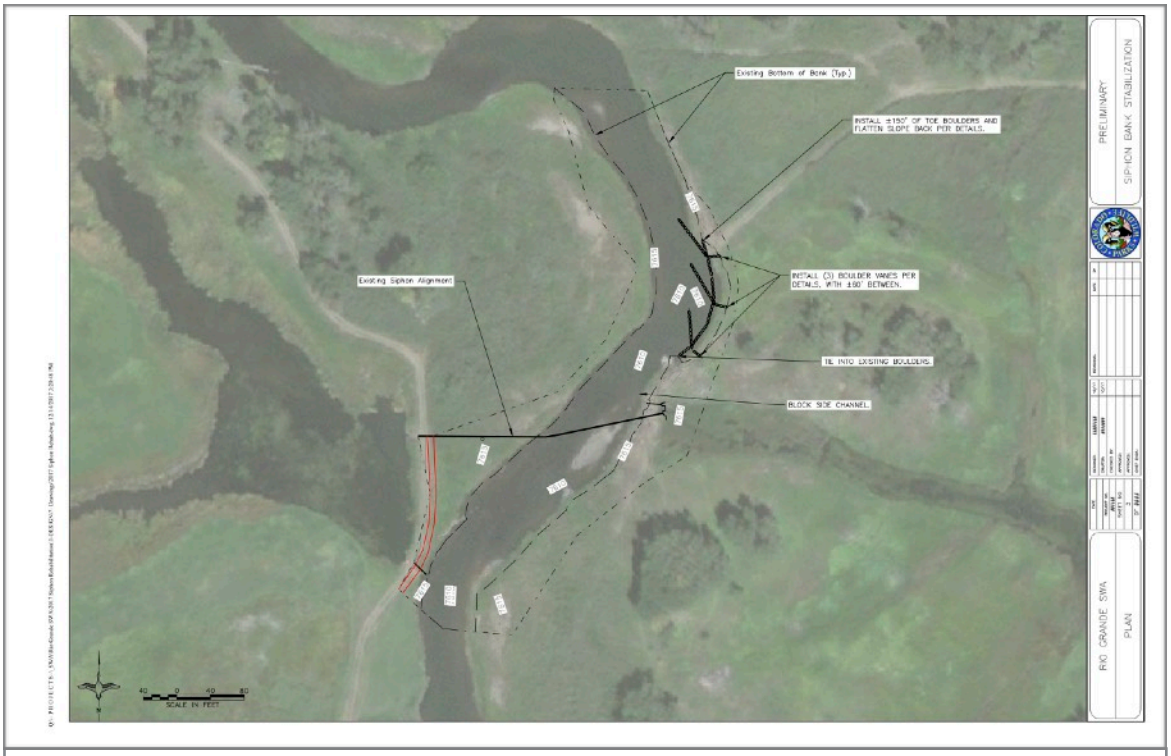

Figure 2: Concept plan for streambank stabilization on RGSWA completed by Colorado Parks and Wildlife

Task 2: Construction of Streambank Stabilization

Description of Task: Implement channel shaping, streambanks stabilization, aquatic habitat enhancement and riparian revegetation techniques along the Rio Grande through the RGSWA.

Activities: Materials for the construction of Task 2 were purchased and delivered to the site throughout Fall 2018. Colorado Parks and Wildlife will use their heavy equipment operator and engineer to construct the project elements including channel shaping, streambank stabilization, and aquatic habitat enhancement and riparian habitat revegetation, designed by CPW in Task 1. Construction will begin December 2018. This task was delayed due to the availability of CPW engineers and heavy equipment operators, but will be completed in Spring 2019.

TASK 3: Design of Centennial Ditch Diversion Improvement

Description of Task: Complete survey, design, and permitting for the Centennial Ditch Diversion Improvement.

Activities: Riverbend Engineering, LLC was hired to complete the survey, design and engineering for the Centennial Ditch diversion replacement. Riverbend Engineering completed a site assessment and detailed topographic survey for the project site in June 2017. In consultation with the Centennial Ditch Company board and RGHRP, Riverbend Engineering created a concept plan and cost estimate for the diversion replacement and completed the project design and engineering. Designs were completed in October 2017. The designs included the construction of a new grouted rock diversion dam with an Obermeyer gate and associated streambank stabilization and riparian restoration. Riverbend Engineering worked with USACE to complete permitting requirements. Because the Centennial Ditch diversion replacement occurred in the existing diversion footprint using like materials, the project received an agricultural exemption letter from the USACE. Riverbend Engineering completed the project specifications and bid documents for project.

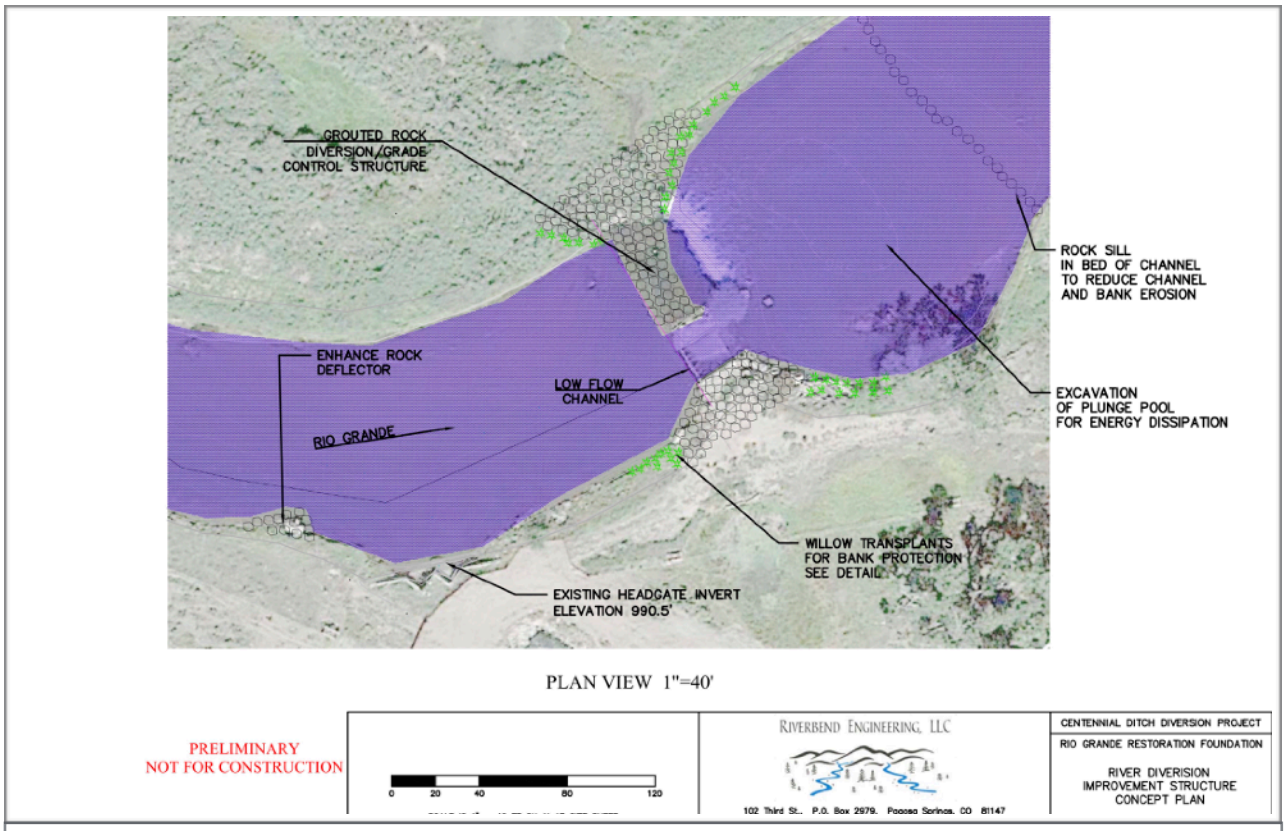

Figure 3: Concept plans for the Centennial Ditch diversion replacement project, completed by Riverbend Engineering

TASK 4: – Design of San Luis Valley Canal Headgate Improvement

Description of Task: Complete survey, design, and permitting for the San Luis Valley Canal headgate improvement project.

Activities: Riverbend Engineering, LLC was hired to complete the survey, design and engineering for the San Luis Valley Canal headgate improvement project. Riverbend Engineering completed a site assessment and detailed topographic survey for the project site in June 2017. In consultation with the SLV Canal Company board and RGHRP, Riverbend Engineering created a concept plan and cost estimate for the headgate replacement and completed the project design and engineering. Designs were completed in September 2018. The designs include the construction of a new concrete headgate with an automated gate and associated streambank stabilization and riparian restoration. Riverbend Engineering worked with USACE to complete permitting requirements. Because the SLV Canal headgate replacement will occur in the existing structure footprint using like materials, the project received an agricultural exemption letter from the USACE. Riverbend Engineering completed the project specifications and bid documents for project.

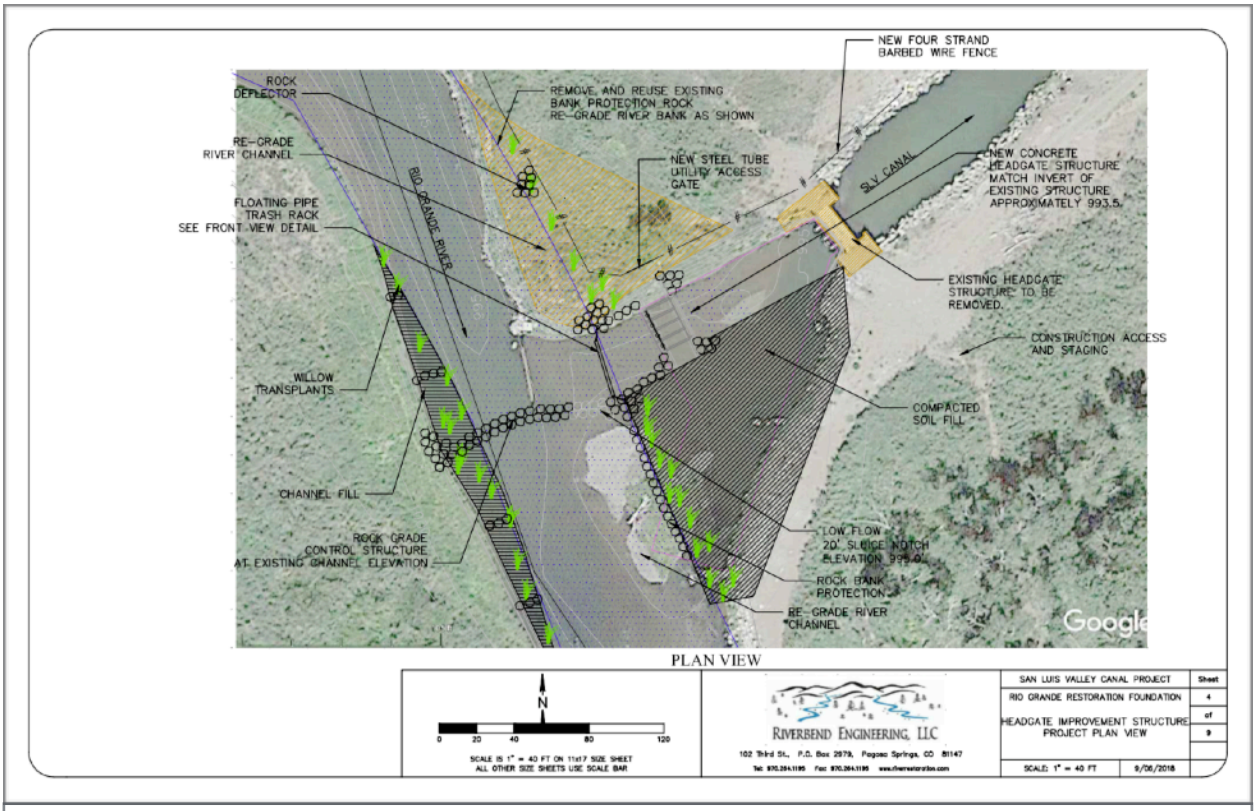

Figure 4: Plan view of the San Luis Valley Canal headgate replacement project, completed by Riverbend Engineering

TASK 5 – Design of Rio Grande 2 Diversion Improvement

Description of Task: Complete survey, design, and permitting for the Rio Grande 2 Ditch diversion improvement.

Activities: Riverbend Engineering, LLC was hired to complete the survey, design and engineering for the Rio Grande 2 diversion improvement project. Riverbend Engineering completed a site assessment and detailed topographic survey for the project site in June 2017. In consultation with the Rio Grande 2 ditch shareholders and the RGHRP, Riverbend Engineering created a concept plan and cost estimate for the diversion replacement and completed the project design and engineering. Designs were completed in October 2017. The designs include the construction of a new stacked rock diversion, steel diversion box, and associated streambank stabilization and riparian restoration. Riverbend Engineering worked with USACE to complete permitting requirements. Because the SLV Canal headgate replacement will occur in the existing structure footprint using like materials, the project received an agricultural exemption letter from the USACE. Riverbend Engineering completed the project specifications and bid documents for project.

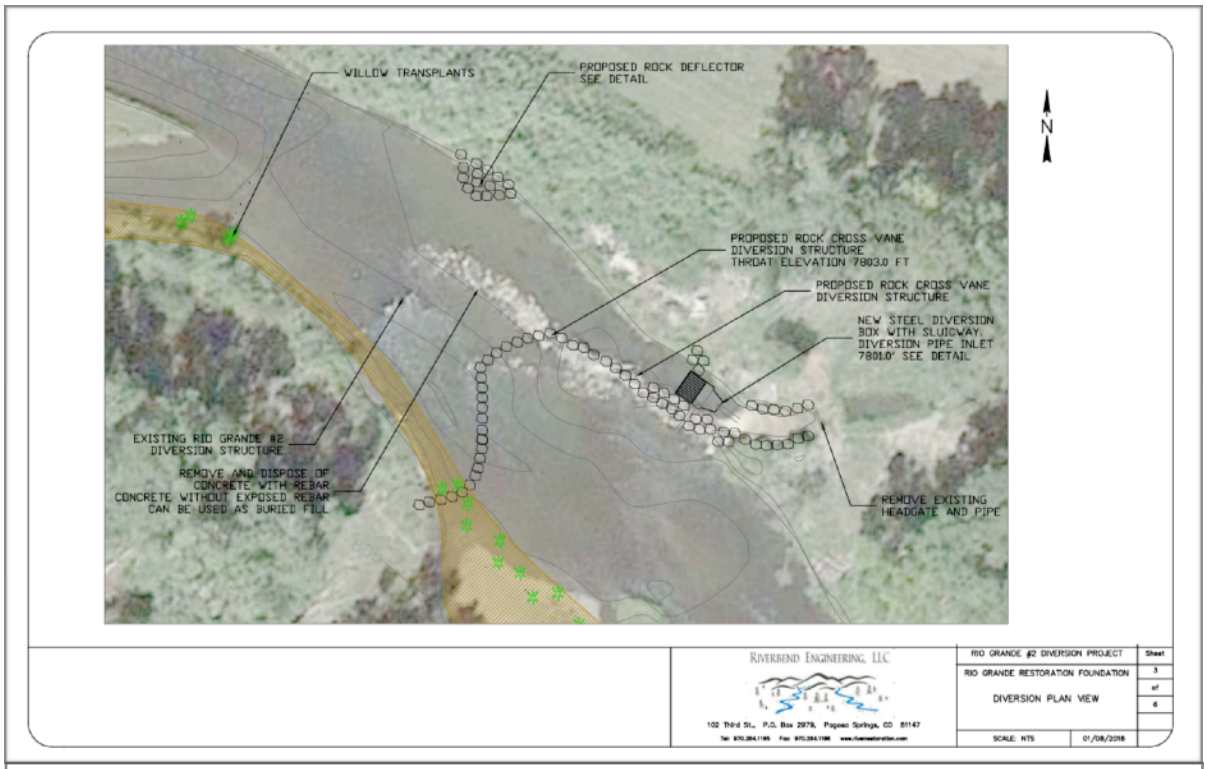

Figure 5: Plan view of the Rio Grande 2 diversion replacement project, completed by Riverbend Engineering

TASK 6 – Monitoring

Description of Task: Monitor the site following construction using the RGHRP Sampling and Analysis Plan (SAP) and CPW sampling methods

Activities: Colorado Parks and Wildlife staff completed pre construction surveys on the RGSWA. Construction of the streambank stabilization and riparian restoration on the RGSWA is planned for December 2018 - February 2019. Upon completion of construction, CPW and RGHRP staff will monitor the project area regularly to ensure the success of project methods and the maintenance of quality wetland habitat on the RGSWA. Photo points and river cross sections will be used to track the condition of riparian plant communities, bank stabilization, an overall visual condition of the project area before and after construction.

TASK 7 – Project Management, Outreach and Education

Description of Task: Complete project oversight, management, and partner coordination. Conduct public outreach and education program to raise awareness of the RGSWA Project activities and the RGHRP, and encourage other landowners and agencies to participate in future projects.

Activities: The RGHRP developed visual aids and written materials showing the specific sites and proposed work. These materials were used during tours of the site, which were given throughout the duration of the project. Tour groups included Water Education Colorado's Rio Grande Basin Tour, middle school classes from Monte Vista High School, Colorado Division of Water Resources, community groups and others. Presentations and project updates were made at meetings of the Rio Grande Water Conservation District, San Luis Valley Water Conservancy District, the Rio Grande Water Users, and other public meetings. The RGHRP also shared project updates in newsletters and social media. These outreach efforts met the objective of promoting public involvement in water improvement activities.

Figure 6: Pictures from project tours of the RGSWA Design Project

TASK 8 – Project Administration

Description of Task: Complete all necessary grant contracts and status reports. Ensure Tasks are completed within approved costs and timelines.

Activities: The RGHRP administered the RGSWA Design Project. This included completing contracts with the CWCB, project partners, landowners, and contractors; obtaining the necessary permits; managing budgets and reimbursement requests; and completing semi-annual and final reports. Additionally, the RGHRP performed Project oversight, making certain project implementation was timely and accurate. The RGHRP organized outreach and education efforts and will complete long-term site monitoring following project construction.

PROJECT BUDGET

Project Budget: Rio Grande State Wildlife Area Design Project

Task	WSRF Rio Grande Basin Account	Matching Funds			In-Kind Match		TOTAL
		CPW- Wetlands Program	NAWCA	GOCO Habitat Restoration Grant	CPW	CRGRF	
Task 1: Survey and Design of streambank stabilization	$ -	$ -	$ 20,000.00	$ -	$ -	$ -	**$ 20,000.00**
Task 2: Construction and materials streambank stabilization	$ -	$ 24,990.00	$ 40,000.00	$ 25,000.00	$ -	$ -	**$ 89,990.00**
Task 3: Survey, design, and permitting for Centennial Ditch Diversion Improvement	$ 28,000.00	$ -	$ -	$ -	$ -	$ -	**$ 28,000.00**
Task 4: Survey, design, and permitting for SLV Canal Headgate Improvement	$ 32,000.00	$ -	$ -	$ -	$ -	$ -	**$ 32,000.00**
Task 5: Survey and Design for Rio Grande #2 Diversion Improvement	$ 16,000.00	$ -	$ -	$ -	$ -	$ -	**$ 16,000.00**
Task 6: Monitoring	$ -	$ -	$ -	$ -	$ 10,000.00	$ -	**$ 10,000.00**
Task 7: Project Management, Outreach and Education	$ 12,000.00	$ -	$ -	$ -	$ -	$ 4,000.00	**$ 16,000.00**
Task 8: Project Administration	$2,000	$ -	$ -	$ -	$ -	$ -	**$ 2,000.00**
TOTAL	**$ 90,000.00**	**$ 24,990.00**	**$ 60,000.00**	**$ 25,000.00**	**$ 10,000.00**	**$ 4,000.00**	**$ 213,990.00**

LESSONS LEARNED & FUTURE PROJECT RECOMMENDATIONS

RGHRP is continuing to implement the recommendations of the 2001 Study and the 2007 Watershed Strategic Plan by administering additional projects in the project area and in other reaches of the Rio Grande. The RGSWA Project brought diverse partners together to develop projects that address both agricultural and environmental needs. Lessons learned from this project include:

- Communication between partners is critical to project success. Maintaining clear communication with project engineers, contractors, and partners throughout all stages of project implementation allows partners to address any unforeseen challenges or delays before they impact the project objectives, budget, and timelines.
- There is not a “one size fits all” solution for irrigation improvement projects. The Centennial Ditch, Rio Grande #2, and SLV Canal faced unique challenges relating to their structure and the surrounding streambank instability. The design process for each of these structures required creativity and a thorough understanding of the hydrology and geomorphology of the river at each site. These efforts resulted in designs that addressed the needs of each ditch company as well as the surrounding streambank stabilization and riparian restoration.
- There are additional restrictions and requirements for project design and implementation when working in partnership with Colorado Parks and Wildlife on State Wildlife Areas. Using CPW engineers and staff for project design and implementation allowed us to find solutions to these challenges, but it did result in a delay in the project timeline.
- Working on a contiguous stretch of a river allows for a more wholistic approach to addressing streambank stabilization and irrigation infrastructure needs.
- Track all project timelines and complete needed reports in advance of deadlines.

Additional ditch companies and private landowners have been working with the RGHRP to coordinate structural and riparian restoration plans. Lessons learned throughout this project will be applied to future projects implemented by the RGHRP.

ACKNOWLEDGMENTS

The successful completion of the RGSWA Design Project is a testament to hard work, collaboration, and coordination with landowners, project partners, stakeholders and funders. Project partners include the Centennial Ditch Company, the San Luis Valley Canal Company, the Rio Grande #2 shareholders, Colorado Parks and Wildlife, Riverbend Engineering, the Rio Grande Inter-Basin Roundtable, Colorado Water Conservation Board, and others.

Special thanks to the Colorado Water Conservation Board for providing grant funds for the continued efforts to improve the overall condition of the Rio Grande. This great project would not have been possible without your support!

For More Information, Contact
Emma Reesor, Executive Director
Colorado Rio Grande Restoration Foundation
Rio Grande Headwaters Restoration Project
623 Fourth Street
Alamosa, CO 81101
(719) 589-2230