United States Department of Agriculture

NRCS
Natural Resources Conservation Service
Alamosa Area Office
101 South Craft Dr., Suite B
Alamosa, CO 81101

SUBJECT: Vallejos Ditch Diversion Structure **DATE:** May 28, 2015

TO: Andy Manzanares **FILE CODE:** 210

The purpose of this letter is to validate the role of NRCS in regards to the diversion structure recently completed by the Vallejos Ditch.

NRCS completed an engineering design of a reinforced concrete structure to replace an aging structure of the same scope and function. Construction drawings, Specifications, and a Bid sheet were provided to the Vallejos Ditch. All engineering was completed according to NRCS policy and Conservation Practice Standards. NRCS personnel were also involved in the construction site showing by addressing technical questions. During construction activities, NRCS occasionally conducted site visits and notified the Ditch Company of concerns regarding the structure. The Ditch Company provided full-time construction inspection duties.

Rodney D. Clark, PE, NRCS Area Engineer, Alamosa CO

CC: Tracy Miller, NRCS District Conservationist, Alamosa CO
Joseph Lobato, NRCS Soil Conservation Technician, San Luis CO

VALLEJOS DITCH HEADGATE REPLACEMENT PROJECT

Final Report

The Vallejos Ditch was established in 1854 being the fifth Surface Water Priority in the State of Colorado. The completion of this project increased functionality, significantly reduced the risk of flooding, improved downstream water quality, and increased this historic acequias' carrying capacity back to 100%.

Sangre de Cristo Acequia Association

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Colorado Water Conservation Board Project

In Collaboration with:

Costilla County Conservancy District

Natural Resources Conservation Services

Sangre de Cristo Acequia Association

Costilla County Board of Commissioners

Ruybals Construction, LLC

Sangre de Cristo Acequia Association

PROJECT NAME:

Rio Grande River Basin, Culebra Watershed, - Vallejos Ditch Head-gate Replacement Project

APPLICANT INFORMATION:

Sangre de Cristo Acequia Association
P.O. Box 721
San Luis, Colorado 81152

GRANT CONTRACT/PO No.: **#OE PDA 14IBC000022**
Substantial Completion Date: **June 30, 2015**
Project Latitude & Longitude: **E 466644 / N 4109643**

Final Report

PROJECT EXECUTIVE SUMMARY

The Vallejos Ditch Head-gate Replacement Project is on the Vallejos Creek located in the Culebra Watershed of the Rio Grande Basin. The project began on September 30, 2014 with a pre-construction meeting at the project site location. Representatives at this meeting included; the local Natural Resources Conservation Services (NRCS) Division 3 Engineer, the Vallejos Ditch Head-gate Replacement Project Manager – Andy Manazares; the Sangre de Cristo Acequia Association (SCAA) Vice President &– Joseph C. Gallegos: Costilla County Commissioner, Mel Ruybal: contractor- Ruybal's Construction. Dan Quintana: Engineer advisor and technical assistance to the project team. Mr. Quintana is a chemical engineer and the President of the Vallejos Acequia Association. The project manager, Mr. Manzanares, held frequent tailgate safety meetings that were not required, but were insisted upon being Mr. Manazares is a certified MSHA/OSHA Trainer. Andy was diligent in keeping all partner entities and stake holders updated on the project progress which meant attending monthly board meetings and sending out many emails.

Due to extreme weather conditions, all necessary equipment needed for the project was not mobilized until October 14, 2014. Throughout the duration of the Vallejos Project, the project team encountered various unpredicted situations. On November 14, 2015 the project team discovered an additional not anticipated concrete structure that required additional concrete removal which was not included in the original scope of work. This hidden concrete structure was beneath the old head-gate and was not visible until demolition of the old head-gate occurred.

PROJECT EXECUTIVE SUMMARY *Continued*

The entire project team anticipated the depth of the old concrete footers/wing walls to be 18 inches but with exposure of the unanticipated structure, the footers were 4 feet in depth. The discovery of the additional concrete placed the project on hold as the Contractor had to bring in additional equipment, including a wrecking/breaking ball to completely demolish the 80 Cubic yard concrete structure.

The Costilla County Road & Bridge Department provided in-kind services to remove and haul debris. The concrete which is used as fill for road base and other road projects was hauled to a nearby gravel pit. The other unforeseen events that caused the project schedule to be set back by three months were; the original scope of work (SOW) requested that the De-Watering process be Task 4, once the project team was on site, it was discussed and approved to move the De-Watering Task 4 to being immediately after completing Task 1 – Mobilization & Demobilization. The Task jump was required because it was anticipated that required de-water of the project work area would take longer than predicted. Another oversite that required more was included as Task 3 and not included in the original SOW was the constructing of the temporary water diversion on Vallejos Creek.

On January 26, 2015 the contractor poured the 60 cubic yard concrete structure, due to the terrain of the project site, it was required to have a pumper concrete truck come in and deliver the concrete. Upon completion of the concrete structure being poured, on March 3, 2015, the project team came across a dilemma when they were testing the newly installed concrete head-gate. Downstream there was another undersized concrete culvert that was impeding the water flow from the new head-gate. The undersized culvert belonged to a private property owner; therefore the project team was required to get permission to remove the concrete culvert. The project team removed the downstream concrete culvert and reinstalled it to allow adequate flow through the culvert.

Despite all the obstacles that the Vallejos Project Team encountered they persevered and the project was successfully completed and the newly constructed head-gate is presently being utilized. Throughout the duration of the project the parciantes (irrigators) were able to obtain their decreed irrigating water when in priority.

Completing this project increased the overall functionality, significantly reduced the risk of flooding, improved downstream water quality, and upgraded the water control efficiency throughout the entire Vallejos Ditch including the North & South lateral ditches. This project increased the historic acequias carrying capacity back to 100% and has substantially reduced maintenance costs.

The Culebra Watershed is comprised of numerous riparian acequias with elevations ranging from 14,000 ft. to 8,000 ft. MSL (Mean Sea Level). There is a total of eighty-three (83) acequias currently being utilized in Water District 24 of Division 3 in the State of Colorado and of those 83 over 30% of the acequias were appropriated in the 1850's. The Vallejos Ditch Head-gate Replacement Project will be recognized as a successful project for the Sangre de Cristo Acequia Association who sponsored the project utilizing funds from the Water Supply reserve Account (WSRA) and technical support from the local Natural Resources Conservation Service. The Division 3 Engineer of Natural Resources (NRCS) approved the final structural concrete head-gate and all other required inspections.

TASK 1 – Mobilization & Demobilization

Description of Task: *This task includes all costs to mobilize equipment, tools, safety and sanitary equipment, and consumable supplies to the site. At the end of the project all Contractor owned equipment, tools, safety and sanitary equipment and supplies will be removed from the site.*

Method/Procedure: Due to various extreme weather conditions, the above task was not completed until October 14, 2015 by the Contractor – Ruybal's Construction, LLC.

Deliverables: All equipment and supplies required to conduct the work set forth in the contract were available at the worksite on the above date.

TASK 2 – De-Watering

Description of Task: *Remove all water from work site, diverting Vallejos Creek if necessary.*

Method/Procedure: Isolated work area and removed all water from work area. Vallejos Creek was diverted as requested in Task 2.

Deliverables: The work area was sufficiently dry prior to work commencing, as displayed in the picture below.

TASK 3 – Construction of Temporary Water Diversion of Vallejos Creek

Description of Task: *Construct temporary water diverting, Vallejos Creek in accordance with the objectives that have been identified for this project in Exhibit A-1.*

Method/Procedure: The Contractor diverted the existing irrigation water flow, to provide adequate irrigation water to North & South lateral ditches without interruption to water flow for irrigators during the construction phase. The Contractor constructed temporary water diversion gate upstream from existing head-gate. Material used – a dirt berm was placed next to the structure and water was diverted along other smaller acequias (ditches).

Deliverables: Temporary Diversion Structure was put in place and operated accordingly throughout the duration of the project.

TASK 4 – Demolish Existing Head gate

Description of Task: *This task will include all work required to demolish and remove the current head-gate structure.*

Method/Procure: The Contractor utilized a track-hoe hammer along with torch cutting to remove the steel railing from the old structure.

Deliverables: The Contractor removed the former head-gate and diversion structure. The project team discovered a 4' concrete footer while removing the old head-gate. Therefore, Task 5a was required to be added to the original Scope of Work.

TASK 5a – Unknown Concrete Removal – Out of Scope

Description of Task: *Removal of additional concrete – Out of Scope of Work*

Method/Procedures: The Contractor, along with everyone else, anticipated the depth of the old concrete footers/wing walls to be 18", unpredictably, the footer ended up being 4' in depth, and this caused the project to be placed on hold as the Contractor needed to bring in additional equipment – wrecking/breaking ball was required to demolish the old 80 cubic yard structure. There were two county tandems available that removed the debris and hauled it to an approved county facility.

Deliverables: All debris from old structure removed and hauled to county approved facility. This was an in-kind service provided by the Costilla County Board of Commissioners.

TASK 5 – Earthwork

Description of Task: *Prepare the site to construct the diversion structure.*

Method/Procedures: Kept the natural shape of the creek and restored to ensure stability of new structure, rip rap needed to protect inlet/outlet of the new structure, additional structure access, and catwalk, cleared & grubbed to access weir.

Deliverables: The natural shape of Vallejos creek restored to ensure stability of new structure, seeded with native vegetation, meeting specifications of NRCS engineers and regulatory authorities. Picture below shows the creek bed.

TASK 6 – Forms

Description of Task: *Set concrete forms for new diversion structure.*

Method/Procedures: Costilla County Concrete Crew set concrete forms and re-bar reinforcements were put in place in accordance to the structural design and in compliance with NRSC Specifications.

Deliverables: Ruybal's Construction, LLC had all operatives available to set concrete forms for pouring of the new diversion structure. The project team set the forms, ready for pour, in accordance with structural design and in compliance with NRCS specifications.

TASK 6a – Concrete

Description of Task: *Pour Concrete; remove forms; seal and finish off new concrete structure.*

Method/Procedure: Utilized concrete trucks as well as pumper trucks to deliver and pour concrete that was within specifications of the NRCS guidelines. The forms were removed and concrete was sealed with NRCS-approved sealant.

Deliverables: The project team poured 60 cubic yards of concrete into forms, then removed the forms, sealed and finished the newly completed concrete structure and it is ready for installation of gates.

TASK 6b – Gates & Rails

Description of Task: *Install 2 sluice gates and 2 turnout gates and install catwalk rails.*

Method/Procedure: Purchased and installed hardware into the concrete structure according to all manufacturer's guidelines and were in compliance with all NRCS and regulatory requirements.

Deliverables: The installation of the gates & rails greatly improved control of irrigation releases; protective rails on catwalk significantly reduced the risk of accident or injury.

TASK 6c – Concrete Culvert Structure

Description of Task: *Concrete Culvert Structure that was discovered needs to be re-directed below newly built structure.*

Method/Procedure: Equipment will be needed along with labor to reinstall concrete culvert belonging to James Sanchez.

Deliverables: The project team removed concrete culvert and reinstalled to allow adequate flow through the pipe. The picture on the next page displays work that was completed.

Concrete Culvert Structure before Picture– was impeding the water flow downstream from the newly built structure.

THE NEWLY INSTALLED CONCRETE STRUCTURE

TASK 7a – De-commission/Remove Temporary Diversion Structure

Description of Task: *Remove dirt berm from the temporary diversion structure and return natural shape of creek.*

Method/Procedure: Removed dirt berm from the temporary diversion structure, returned the creek to its natural shape, restored to its pre-existing condition, seeded with native vegetation, meeting specifications of the NRCS Engineer.

Deliverables: The project team removed the temporary Diversion Structure (dirt berm), Vallejos creek was returned to its pre-existing condition and seeded with native vegetation meeting the specifications of the NRCS Engineer. Please see Exhibit A – NRCS engineering report.

TASK 7 – Reporting and Final Deliverable

Description of Task: *Report at completion of project.*

Method/Procedure: SCAA submits final report describing the completion (or partial completion) of the tasks identified in the statement of work, including any major issues that have occurred and any corrective action taken to address these issues.

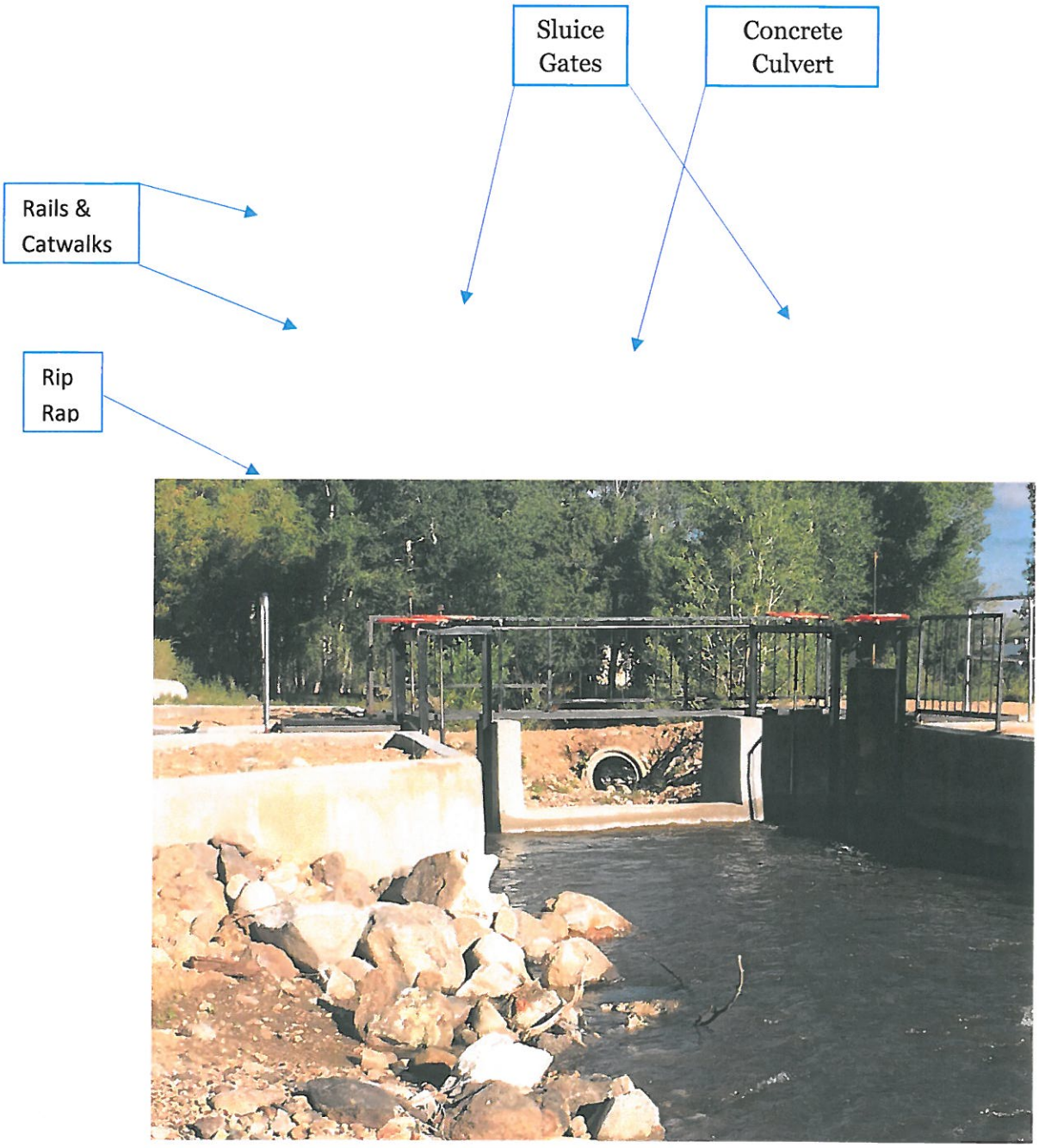
Deliverables: SCAA shall provide CWCB a final report summarizing the project and documenting how the project was completed. The report may contain photographs, summaries of meetings and engineering reports and designs.

North & South Laterals

Top Picture shows the North Lateral Sluice Gate that will supply water to the Upper Vallejos Ditch Irrigators.

Bottom Picture shows the South Lateral Sluice Gate that will provide the Lower Vallejos Ditch Irrigators.

Picture on Next Page shows the completed head-gate identifying various components of the Head-gate.


Sluice Gates
Concrete Culvert
Rails & Catwalks
Rip Rap