Rio Grande Inter-Basin Roundtable
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July 12, 2012

Mr. Michael King, Executive Director
Colorado Department of Natural Resources

Mr. Todd Doherty, Intrastate Water Management & Development
Colorado Water Conservation Board

Reference: SANCHEZ RESERVOIR PHASE II - OUTLET REHABILIATION & GATE TOWER REPLACMENT

Gentlemen:

The Rio Grande Inter-Basin Roundtable (R.G.R.T) has determined that the single, most critical water issue confronting the Rio Grande Basin (Basin) is the current unsustainable management of surface and ground water. The R.G.R.T. has made the decision that water activities that address this issue be favorably considered for funding from the Water Supply Reserve Account, SB 2005 -179 (WSRA Funds), providing the proposed water activities meet the SWSI findings for the Basin and the CWCB & IBCC Criteria and Guidelines for funding.

The **Sanchez Reservoir Phase II – Outlet Rehabilitation & Gate Tower Replacement** (Project) will provide the long term ability for the Sanchez Ditch & Reservoir Company to effectively provide water storage and irrigation of 22,400 acres in the south eastern part of the San Luis Valley, in the Costilla County, Colorado.

The applicant for the subject WSRA funds is the Sanchez Ditch and Reservoir Company (SDRC) which is a Colorado Mutual Ditch Company, incorporated in 1956. The company's facilities, built between 1910 and 1915, are in Costilla County, south and west of the town of San Luis. They consist of Sanchez Reservoir (capacity 104,000 acre feet), Stabilization Reservoir (capacity 300 acre feet), approximately 38 miles of concrete lined ditch, approximately 15 miles of earthen ditch, approximately 23 miles of canal, and a diversion at the inlet of Culebra Sanchez Canal.

The SDRC administers an irrigation system with approximately 227 contracts to supply water, serving an area of 22,414 acres which are capable of being irrigated in Costilla County, Colorado. The service area includes 13,424 acres of irrigated crop land and

18,392 acres of farm land which, due to lack of water, are either not irrigated or irrigated in rotation. Sanchez Reservoir serves 34 corporate and individual shareholders with a total of 21,802.716 shares. Irrigated crops include potatoes, wheat, barley, oats, alfalfa, and hay mixtures.

The Sanchez Reservoir is impounded by two separate earth fill dams: a Main Dam and an East Dike, with a total of 104,000 acre feet of water. The Main Dam, 135 feet in height and 1170 feet in length, is constructed across the channel of Ventero Creek, and contains the reservoir outlet works. This dam is classified as a Large, High Hazard structure. Both dams were constructed during the period of 1910-1911.

The outlet structure is a 150-foot high, free-standing concrete Gate Tower in the reservoir at the upstream end of the outlet conduit. An octagonal room at the top of the tower houses the gate controls. With construction completed in 1915, this Gate Tower controls discharges utilizing a combination of gates and valves located at various elevations.

The present outlet system consists of an inverted U-shaped cast-in-place concrete conduit, 8 feet wide, 10.5 feet high, and 576.6 feet long, through the base of the dam at its maximum section. At the downstream end of the conduit, flow is discharged through a concrete flume structure to Ventero Creek.

For more than 100 years, access to the top of the Gate Tower for operation and maintenance has required the use of a tramway and Gondola. The Gondola runs on a system of cables and is powered by a portable gasoline engine to winch the Gondola from the shore to the Tower.

The SDRC previously obtained WRSA funds to partially fund a Phase I Assessment and Upgrade analysis. This Phase I project included improving the safety and structural integrity of the Gondola/Tramway system; repaired a 30" intake control gate to increase reservoir discharge capacity; upgraded the hydraulic gate control system; and automated essential reservoir operations. The Gondola ride has been bypassed by a web-based SCADA system, enabling SDRC to efficiently manage its water from its office in San Acacio, about 10 miles away.

The Phase 1 project included a feasibility study by Smith Geotechnical Engineering, Inc. (SGE), to evaluate the long term viability of the control tower and outlet conduit and to develop potential alternatives to the current configuration of gates and operators in the Gate Control Tower. After assessing the alternatives developed by SGE in Phase I, SDRC has determined that the best alternative is to upgrade the outlet structure, to demolish a portion of the gate tower and to modify the remaining bottom portion of the tower to create a more conventional outlet.

At the regular Meeting of the Rio Grande Inter-Basin Roundtable on June 12, 2012 the Members unanimously recommended that this Project be funded as described below:

PROJECT AND AMOUNT REQUESTED	SOURCE SB 179
Sanchez Reservoir Phase II - BASIN FUNDS	$55,000
- STATE FUNDS	$859,400
TOTAL	$914,400

The Construction Project Costs of $2,032,000 plus a loan service fee of $11,176 equals Gross Total Cost of $2,043,176. SDRC is providing a 55% match of Construction Project Costs by securing a loan from CWCB for $1,117,600, plus the 1% service fee, for a total loan of $1,128,776. The remaining 45% of Total Project Costs or $914,400 is requested in this proposal from WSRA funds, with $859,400 from the Statewide Account and $55,000 from the Rio Grande Basin's WSRA Account. The SDRC is also providing $50,000 in in-kind Administrative oversight for the project.

Project Description:

The gate tower will be demolished above a predetermined elevation. The tower will be removed by sawing a notch on the reservoir side and setting explosive charges to topple the structure into the reservoir. The remaining stub of the tower will then be saw-cut at a pre-determined elevation to provide a uniform joint. A slab will then be placed over the top of the remaining portion of the tower to allow the installation of thimbles in the concrete slab for the installation of the two sloped gates. One will be a 5' x 6' gate and the other, used for normal operation, will be a 30" x 30" gate, for a total capacity of approximately 1,500 cfs. The two new slide gates will be operated by hydraulic cylinders located on the slab. An 18"x24" concrete grade beam from the gates to the dam crest will be constructed on the face of the dam to support the hydraulic lines and a gate vent pipe.

A precast concrete control house will be installed on the upstream face of the dam above the high water level to contain the operators and the controls for remote automated gate operation.

The right side of the outlet structure is in disrepair and portions of the concrete walls have failed. The outlet conduit will be rehabilitated, removing and replacing the deteriorated portions of the downstream outlet works. Measures may be included to collect and filter the seepage that exits into this structure. Rehabilitating the outlet conduit will increase the long term stability of the dam.

The Project provides the long term benefits to the local area and State:

- It enables SDRC to continue providing irrigation water to its shareholders for decades into the future. It improves water management efficiencies, protecting water rights for irrigation from high runoff from Culebra Creek, Ventero Creek, San Francisco Creek, Vallejos Creek, and Torcido Creek.
- It greatly reduces risk of injury or possible loss of life by replacing the 100 year old Gate Tower and eliminating dependence on the Gondola. Dam stability and longevity are improved by this project.
- Upgrading the outlet structure ensures structural integrity of the dam and promotes long term operational efficiencies, thereby helping to promote proper function of the Culebra floodplain.
- SDRC has a contract with the CDPR granting a perpetual easement for recreation and preserving a 2,500 AF conservation pool, providing fishing and boating opportunities at Sanchez Reservoir.
- Sanchez Reservoir is managed as a Colorado State Wildlife Area.
- Sanchez Reservoir supports tourism, attracting visitors from all over Colorado and northern New Mexico. Ice fishing is particularly popular in winter, when very little other economic activity is possible in this economically stressed and mostly agrarian community.
- This reservoir serves a historically important part of Colorado, where the state's first water right was adjudicated. Irrigation in many parts of this region relies on the traditional *acequia* system, a communal and culturally significant method of ditch maintenance involving the participation of many families.
- By eliminating wasteful and deteriorating structures and antiquated machinery, this project promotes appreciation for the spectacular beauty of Sanchez Reservoir with its wide horizons and views of the Sangre de Cristo range of the Rockies.

The R.G.R.T. appreciates the support of the Department of Natural Resources, the Colorado Water Conservation Board and the Interbasin Compact Commission in assisting in meeting the needs of all users of Colorado's water and in fostering intrabasin and interbasin communications and discussions. We believe that the above project will assist in this effort.

Sincerely,

Mike Gibson
Chair, Rio Grande Interbasin Roundtable

Enclosures (2)

cc: Sanchez Ditch and Reservoir Company