

I. Project Title: Colorado River Decision Support System (CRDSS)

II. Principal Investigators:

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III. Project Summary:

The CRDSS supports better decision making with respect to the utilization of Colorado River water resources. It provides computer databases and tools to make informed and timely decisions regarding the use and operation of Colorado's water resources in the Upper Colorado River Basin. The CRDSS operates in accordance with existing compacts and state laws governing the administration of water and water rights, and will allow planning for the optimal use and development of Colorado's water resources to occur.

In relation to the Recovery Program, CRDSS is being used to evaluate the physical and legal water availability at different locations along a stream and to determine the amount of water available for instream flow appropriations. It can also provide information to help determine the impacts of endangered fish flows on Colorado's ability to develop its full compact apportionment.

A large part of these CRDSS efforts have contributed to decision making on the 15-Mile Reach PBO and the accounting system. This accounting system requires significant work every five years. CRDSS has also been used extensively in the development of the Yampa River Management Plan and PBO and to evaluate flow recommendations for the Gunnison River. CRDSS was also used in the Aspinall EIS process and the PBO process for the Gunnison river basin. CRDSS will also be used in the PBO process for the White river basin.

IV. Study Schedule:

The project started in 1993. Phase IIIb (extension of basin models) was completed in July 2000. A funded maintenance program has been established to provide Colorado

state employees for ongoing maintenance and data updates. In addition to the regular maintenance of the CRDSS, in 2008 the CWCB began a water availability study for the Upper Colorado River basin within Colorado. Some of the funding and tasks for the study directly benefited the Recovery Program, as mentioned below.

V. Relationship to RIPRAP:

Assess legal and physical availability of water and compact considerations associated with the protection of instream flow water rights for endangered fish and their critical habitat in the Little Snake River, the Yampa River above and below the Little Snake River, the White River, the Colorado River (mainstem), and the Gunnison River. Provide hydrology support to develop and evaluate flow augmentation alternatives for the Yampa and Little Snake Rivers.

RIPRAP Activity Numbers:

Yampa and Little Snake Rivers: I.A.1.d., I.B.3., I.C.3., I.D.2.

White River: I.C., I.D.

Colorado mainstem: I.A.3., I.A.4., I.B.3

Gunnison River: I.B., I.C.

VI. Accomplishment of FY 2010 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

- The database to run the CRDSS tools and planning models is online and has been fully populated with data including structure diversion records, climate data, water rights information and streamflow data through water year 2009. This can be viewed on the Internet at *cdss.state.co.us*.
- The maintenance program and the water availability study provided the following improvements to the CRDSS model that will directly benefit the Recovery Program:
 1. The Colorado River mainstem, Yampa and White, Gunnison, and San Juan basin models were updated and enhanced.
 2. The Consumptive Use model was enhanced.
 3. Alternate natural hydrologies were constructed for western Colorado using historic hydrology, paleohydrology and hydrology based on climate model predictions. These were used to make multiple runs of the models to better assess flow variability and water availability in western Colorado.
 4. Irrigated acreage information for the 2005 irrigation season was obtained via satellite imagery, orthophotos, and ground investigation. The information was processed and added to the CRDSS database.
 5. The CRDSS tools continue to be updated and enhanced to provide improved usability and features.

VII. Recommendations:

No recommendations. CWCB will continue providing funding and staff for use and maintenance of the CRDSS. Under Colorado SB 07_122, the CWCB is conducting a water availability study for the upper Colorado River basin. Phase I of the study began in 2008 and will conclude in 2011. Hydrology and consumptive use estimates based on climate change data were added to the water availability study in FY 2010. Appropriated money for Phase I of this study is \$1,000,000.

Mention of changes to better model endangered fish target flows? Mention updating the Gunnison model after a ROD is in place for fish flows? Or put these in the 2011 SOW instead (with the Depletion Accounting for the Yampa and the 15-Mile Reach)?

VIII. Project Status:

The initial CRDSS project is complete. All other changes, improvements, and updates are part of the ongoing CRDSS maintenance program.

IX. FY 2019 Budget Status

A. Funds Provided:	\$881,000	State of Colorado funding + in-kind services
B. Funds Expended:	\$881,000	
C. Difference:	\$ 0	

D. % of FY 2010 work completed, projected costs to complete:

100% of the FY 2010 tasks were completed.

E. Recovery Program funds spent for publication charges: \$0

X. Status of Data Submission:

Not applicable, however, the CRDSS models and data can be viewed online at cdss.state.co.us.

XI. Signed: Ray Alvarado

Date: December 2010