

COLORADO'S DECISION SUPPORT SYSTEMS

2004 ANNUAL REPORT

February 2005

This annual report for CDSS, the water management system developed by the Colorado Water Conservation Board (CWCB) and the Colorado Division of Water Resources (DWR) covers the following topics:

- Purpose and Components of Colorado's Decision Support Systems (CDSS)
- 2004 Legislative Actions and Funding
- Accomplishments of CDSS in the past year
- Goals for 2005

The 2004 goals listed in last year's annual report were a challenge to achieve in many ways, and in some cases were not completely realized. However, in trying to reach these goals, the efforts surrounding them were strengthened. As an example, the schedule for completing the RGDSS surface water model in 2004 was delayed. The delay was due to the completion of the groundwater model, which provides important data to the surface water model. This delay aided in obtaining better data for the surface water model and prevented the need to update and recalibrate the model.

The goal of using the tools and database for the Statewide Water Supply Initiative (SWSI) was achieved. The CDSS tools and models developed for the Western Slope are being used extensively on this project.

CDSS Purpose

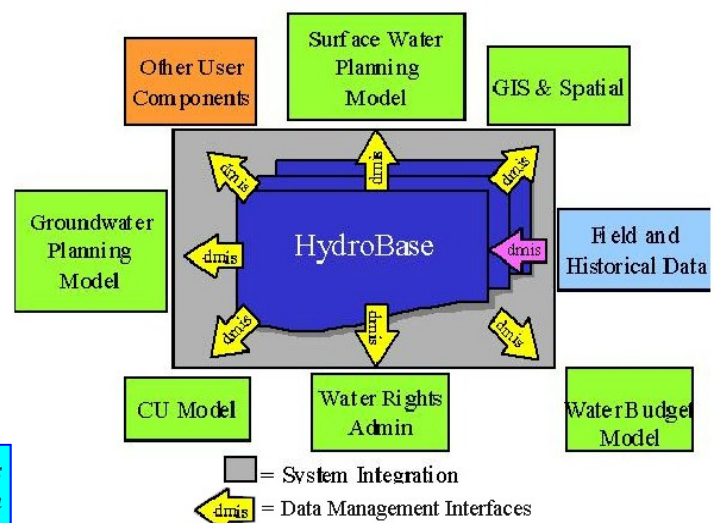
The purpose of the CDSS water management system is to assist water users and managers to

CDSS provides a key component to the planning process associated with future water construction projects in Colorado. Currently, before any CWCB construction loans can be given, applicants must complete the water supply component of a feasibility report. The CDSS system allows CWCB staff to quickly and accurately evaluate the feasibility of future water projects. The net result is less startup cost, time savings, and a consistent approach to water supply studies.

make timely, informed decisions regarding historic and future use of water. CDSS has achieved the following goals:

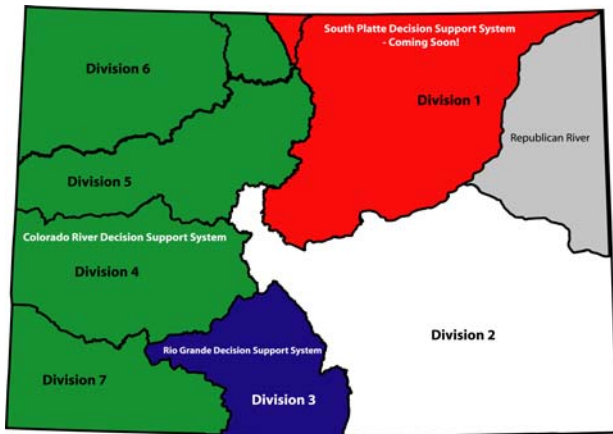
- Develop accurate, user-friendly databases that are helpful in the administration and allocation of the water resources of the State of Colorado
- Provide data and models to evaluate alternative water administration strategies, which can maximize utilization of available resources in all types of hydrologic conditions
- Be a functional system that can be used by decision-makers and others and be maintained and upgraded by the State
- Have the capability to accurately represent current and potential federal and state administrative and operating policies and laws.
- Promote information sharing among government agencies and water users

CDSS Components



CDSS Coverage

Portions of the CDSS database cover the entire state. Currently there are complete systems,



including data, tools and models, for the Colorado (green) and Rio Grande (blue) basins. Work continues on the South Platte basin (red) system. Long range plans of both the CWCB and DWR are to eventually complete a DSS system for the entire state (Republican River basin (gray), and the Arkansas River basin (white)).

2004 CDSS Legislative Actions, Decision Items, and Funding

SPDSS Legislative History

2004 saw the passage of the CWCB Construction Fund Bill, House Bill 04-1221, which included

Bill Title	Section	DSS System	Amount	Notes
SB 01-212		RGDSS	\$180,458/ 1.0 FTE	DWR
SB 01-157	8	SPDSS	\$2,000,000	Data collection & Design
HB 02-1152	12	SPDSS	\$2,000,000	Development
HB 04-1221	12	SPDSS	\$2,500,000	Development

additional funding for SPDSS. The additional \$2.5 million will be used to implement Phase 3 of SPDSS.

2004 Accomplishments

Statewide

This past year's emphasis has been on completion of the groundwater modeling effort in the Rio Grande basin and the collection, compilation and analysis of data for SPDSS. Work associated with the original CRDSS effort centered around the continuation of the ongoing maintenance and operation of this effort, which includes modeling updates, GIS mapping, and refinement of modeling tools.

Riverside Technology, Inc. was selected as the

contractor to implement the InStream Flow DSS. The ISFDSS is another set of tools that build on the existing datasets and GIS coverages of the DSS, but focuses on tools that will help the Stream and Lake Protection Section of the CWCB more efficiently process and analyze information for instream flow protection efforts.

Rio Grande Basin

Development on RGDSS components is complete, with the exception of the surface water model.

The surface water contract is close to completion; the only tasks remaining include updating modeling and documentation with revised unit response functions, which will be obtained from the final groundwater model.

The RGDSS surface water model is in the final phase of calibration and will be completed by the end of 2005.

During 2004, the Division of Water Resources completed the RGDSS groundwater model. It was used by the State Engineer in drafting the proposed rules and regulations for the Confined Aquifer in the San Luis Valley.

The CWCB, in cooperation with various entities in the San Luis Valley, participated in updating the irrigated land coverage in the San Luis Valley for 2002, which is available online at our CDSS website.

Colorado River Basin

As with last year, there have been numerous activities using the CDSS tools. The State Water Supply Initiative (SWSI) was completed in 2004. The CWCB undertook an 18-month study to explore basin-by-basin, existing water supplies and existing and projected demands through the year 2030. Within the Colorado River Basin, SWSI relied extensively on the work that was done under the CRDSS, which provided the data and tools needed to carry out SWSI objectives and goals.

The San Juan River basin water resource planning model continues to be used in conjunction with the USBR's RiverWare model to help better understand the impacts of the re-operation of Navajo Reservoir.

South Platte River Basin

Extensive data collection was continued in 2004.

The work effort on the SPDSS is going full steam ahead. Data collection under Phase 1 has been completed and loaded into HydroBase for access by existing CDSS tools. Technical memoranda associated with those Phase 1 data collection efforts are available for download at our CDSS website. Phase 2 is also winding down with that effort being completed by all contractors by early 2005. The following are the Phase 1 and 2 products available on the CDSS website.

- Water District Administration Memoranda for WD's 1,2,3, 5 & 64
- Division 1 Ditch Operation Memoranda for several major ditch systems
- Technical Task Memorandum on the Denver Basin Bedrock Aquifer configuration
- Technical Task Memorandum on the Denver Basin Bedrock Aquifer properties
- Technical Task Memorandum on the South Platte Alluvial Aquifer configuration
- Technical Task Memorandum on the South Platte Alluvial Aquifer properties
- GIS coverage of the Denver Basin Bedrock Aquifer configuration
- GIS coverage of the Denver Basin Bedrock Aquifer properties
- GIS coverage of the South Platte Alluvial Aquifer configuration
- GIS coverage of the South Platte Alluvial Aquifer properties
- Historical water level data for Denver Bedrock and South Platte Alluvium
- GIS coverage for irrigated lands in Water Districts, 1, 2,3 & 64
- Standard GIS coverages for all of Division 1

Phase 3 contracts will be finalized in the early part of 2005, which will wrap up the data collection phase of SPDSS and start the modeling process for both the Denver Bedrock and South Platte Alluvial Aquifers.

We have had success in obtaining cooperative agreements with farmers to conduct well pump tests and collect water level data. We also had a cooperative agreement with the USGS for the

drilling and testing of several wells. This provided a cost savings to SPDSS and provided the USGS with data they were not otherwise able to obtain.

The consumptive use contractor continues to meet with water commissioners to better understand the administration of the river in their particular water districts.

2005 Goals

This coming year, 2005, will be devoted to getting all West Slope river basin models updated using the new StateDMI input generating tool as well as using the latest version of StateMod. As part of this update, all documentation will be modified to reflect any changes made.

It has been 5 years since the last irrigated refresh for the Western Slope was done. In 2005, ground truthing of certain irrigated parcels will be performed to obtain the actual crop type irrigated. This will be used to assign correct crop types to other irrigated parcels, using Landsat imagery. The same techniques used in the SPDSS will be implemented with this update.

Groundwater modeling will be started in mid to late 2005 for both the Denver Basin Bedrock and the South Platte Alluvium. The Denver Basin Bedrock modeling will be done in cooperation with the USGS, with the USGS being the lead agency. The South Platte Alluvial model will be done by our groundwater contractor, CDM and will encompass the alluvial systems of the mainstem of the South Platte, and those areas overlying the Denver Basin. This will be a multi-year effort.

It is envisioned that the ISFDSS will be implemented and completed by the end of 2005 or very early 2006, depending on when the contract is finalized. The CDSS team will also continue to support the SWSI effort, as well as other interagency activities where CDSS can be of assistance.

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<http://cdss.state.co.us>