

Colorado

# Stream Lines

QUARTERLY NEWSLETTER OF THE OFFICE OF THE STATE ENGINEER  
COLORADO DIVISION OF WATER RESOURCES

1313 Sherman St. Room 818, Denver, CO 80203 (303) 866-3581

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## *Study of the Denver Basin and South Platte Basin*

Senate Bill 74, in the 1996 Legislative session, specified that the State Engineer and Director of the Colorado Water Conservation Board would direct a study of the Denver Basin, the South Platte Basin, and their interaction. This study was undertaken by Hydrosphere in conjunction with HRS Water Engineers, and the draft report on this study was delivered to the State in August and has now been forwarded to the peer review committee. Some of the issues studied and addressed in this report are:

1. Long-term depletions of the South Platte River caused by the withdrawal of water from the Denver Basin.
2. Effects of runoff from impervious surfaces, due to land development, on flows in the South Platte River.
3. Effect of water reuse, conjunctive use, and non-tributary groundwater use on future water supplies and water rights in the South Platte River.
4. Possible funding mechanisms and water augmentation mechanisms that can serve Colorado's participation in the three-state Platte River Endangered Species Recovery Program.
5. The economic life of the Denver Basin aquifers.

The peer review process is expected to be completed in October, and the final report will be submitted to the Special Water Committee. In preparation for digesting this report, the Special Water Committee made a two-day tour of the Denver Basin and the South Platte Basin area in late August.

*Visit the Colorado Division of Water Resources' web site. You can find us at <http://water.state.co.us>*

## Water Decision Support Systems

by Will Burt, Deputy State Engineer

*The system operates using a graphical user interface for maximum ease of use.*

The Colorado River Decision Support System (CRDSS) was developed to provide state and local officials, water engineers, and water users the best possible analysis of the effects of water development proposals on existing water users. CRDSS is now in its final development year, with a central data base, planning models, and consumptive use models all incorporated into a unified system. The system operates using a graphical user interface for maximum ease of use. The final phase of development is for water administration tools that will assist day-to-day decision makers (water commissioners, water users) with real-time data and display capabilities that will allow for improved maximization of utilization of the resource on a nearly hourly basis, rather than daily. The tools will be operational in Spring 1998 in the four west slope water divisions for the 1998 water administration season.

With CRDSS nearing completion, the Colorado Water Conservation Board and Division of Water Resources are continuing the development envisioned by both agencies' long range plans; namely, the extension of decision support system technology into the state's other major basins. The basin now being studied for feasibility of a DSS is the Rio Grande. Many of the software, hardware, data communications, and data base components developed in CRDSS will transfer with little effort into the Rio Grande "RGDSS". A citizens advisory group in the San Luis Valley has helped state officials identify several additional components needed for the Rio Grande, including an integrated ground water model, an improved snowmelt and rainfall runoff model and several additional data needs. By the time of this newsletter, we expect to have selected a contractor to perform a feasibility study for development of the RGDSS. We expect to present the results of the study to the Colorado Water Conservation Board for consideration of incorporating the development of the RGDSS into the CWCB's FY 98-99 Construction Fund Bill.

Once CRDSS and RGDSS are complete, we expect to further extend these technologies into the Platte and Arkansas River Basins as well, ultimately providing a statewide Colorado Water Decision Support System.

### **CITIZEN SATISFACTION AWARD**

Congratulations to the Division of Water Resources Denver office Records Section staff on their nomination for the Citizen Satisfaction Award. This award is part of a new category under the Governor's Peak Performance Award to recognize outstanding customer service by a team. The criteria for this award is based on customer feedback of appreciation.

The Records staff must use their knowledge to explain and interpret historical documents, technical records, and computer reports to the public. Citizen comments have been collected regarding the level of service received by our Records staff. The evaluation showed that 95% of comments collected rated the unit excellent in the areas of reception, courtesy, quality, competence and space/equipment.

The State Engineer and his staff are proud of the effort these employees put forth each and every day to provide the citizens of this state with the customer service they deserve.

## **Platte River Endangered Species Recovery Effort Under Way**

The multi-state/federal effort to recover endangered species in the Central Platte River Valley in Nebraska is set up and running.

On Friday Sept. 12, the U.S. Department of the Interior and states of Nebraska, Colorado and Wyoming convened the first meeting of the committee that will oversee a wide range of activities designed to conserve and protect the habitat of four species listed as in danger of extinction under the federal Endangered Species Act.

The multi-jurisdictional partnership was established by an agreement signed on July 1, 1997, governors Roy Romer (CO), Ben Nelson (NE) and Jim Geringer (WY), and U.S. Interior Secretary Bruce Babbitt. Under the Platte River Cooperative Agreement, the state and Department of the Interior made a commitment to develop and implement a recovery plan for four species. They are three bird species--interior least tern, whooping crane, piping plover--and the pallid sturgeon, a fish species.

A major goal of the program is to protect existing water flows and allow for future water development activities throughout the Platte River basin, which encompasses parts of all three states. The program proposes a basin-wide approach to achieve compliance with federal environmental regulations as an alternative to conducting individual federal regulatory reviews of the potential effects on the habitat of the thousands of individual water facilities within the basin.

The agreement created the 10-member Governance Committee that includes one representative from each of the three states, two federal agency representative, two environmental organization representative and one water user representative from each state.

The agreement outlines an environmental restoration plan that is estimated to cost \$75 million over approximately 15 years to offset the impacts of existing water facilities on the species and their habitat. Contributions by program participants would be 15 million each from Nebraska and Colorado, \$7.5 million from Wyoming and \$37.5 million from federal sources. Each state will incur additional costs to offset the effects of future water development.

Under the agreement, each signatory has assumed responsibility for meeting specific milestones during the next three years while the proposed plan undergoes the public review process required by the National Environmental Policy Act (NEPA). The review will be co-lead by the U.S. Fish and Wildlife Service (USFWS) and U.S. Bureau of Reclamation through a special office to be established in Denver by the bureau's Great Plains Regional Office. The review will begin with a public scoping process later this fall.

During the review period, program participants will focus their efforts on resolving a number of policy and technical issues and on gathering information and data. These activities are necessary to move forward with the recovery plan once it has been approved through the federal review process. In exchange for the states' commitment to meeting milestones outlined in the agreement during this three-year period, the USFWS has agreed to streamline its review of existing and some new water projects pursuant to its authorities under the Endangered Species Act.

A major activity to be implemented during the next three years is a water conservation and supply study to identify sources of water in the three states to meet the program's water management goals. These goals include delivery of an additional 130,000 to 150,000 acre-feet of water to the habitat each year over and above existing flows. Through the agreement, the states have already committed to deliver on average 70,000 acre-feet annually

from three existing re-regulations projects: the Tamarack Project in Colorado, an environmental storage account in Lake McConaughy in Nebraska and a storage account in an enlarge Pathfinder Reservoir in Wyoming. The water conservation supply study will identify sources for the remaining 60,000 to 80,000 acre feet of additional water.

Another major goal of the program will be to protect and restore at least 10,000 acres of land along the river to supplement the in-channel habitat benefits the additional flows will provide.

At Friday's meeting, the Governance Committee agreed to seek extensive input by inviting the public to attend all of it's meetings, rotating meeting locations among the three states and issuing regular news releases and updates concerning recovery program activities.

The committee plans to hire a program director within the next several months.

The Governance Committee also appointed standing committees that will start working to implement milestone activities in the agreement, which include analyzing water and land issues related to recovering the species, and conducting biological monitoring and research.

Additionally, the committee has asked the U.S. Geological Survey, Bureau of Reclamation and USFWS to coordinate information and data management efforts, so that the recovery effort can take full advantage of the USGS' Platte River Initiative. This independent initiative is designed to provide objective, scientific information to improve natural resource management decisions in the Platte River Basin.

The Governance Committee's next meeting is scheduled for Nov. 4 in Cheyenne.

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### *Streamlines Via Internet*

Reminder: This newsletter will be provided free of charge on the Division's home page at <http://www.dnr.state.co.us/water/strmlne.htm> The newsletter will continue to be updated quarterly and hard copy will still be provided to subscribers for a \$10.00 per year.

It is hoped that many of our subscribers who have access to the internet will take advantage of the free subscription as opposed to the hard copy. The cost associated with producing the newsletter is not off-set by subscriptions and the human resources used to fold, sort and mail the document use valuable resources that can be used in other areas. Therefore, by providing the service on line, the information is still provided and available to the customer in a much more timely manner, while concurrently saving resources for the organization.

If you would like to cancel your hard copy subscription and receive notification via E-mail as to when each new issue is available on-line, E-mail us with your current E-mail address at [joseph.grantham@state.co.us](mailto:joseph.grantham@state.co.us) We will then notify you quarterly as to the availability of the newsletter.

## Who Are You Going To Call? Dam Busters

By Michael Graber, P.E.

What do you do when you have a remote dam above timberline that has been overtopped and severely eroded by runoff from a rain on top of a large snowpack, extensive seepage throughout the eroded embankment, no operable outlet, an unresponsive dam owner, and houses and a stream full of fishermen some 1500 vertical feet directly below in a steep narrow stream channel? You call "dam busters", otherwise known as inmates from Buena Vista Correctional Facility. After some discussion concerning the relative difficulty in getting heavy equipment to the dam site, and the significant environmental damage which would ensue, it was suggested that maybe it would not take all that much effort to perform a controlled breach using good old manual labor. But where could one get a large labor force on short notice? Prison inmates had been used to perform routine maintenance on dams, such as tree and brush removal, in the past. Why not to breach a dam? A phone call late in the afternoon to the Buena Vista Correctional Facility found them very willing to provide eight young men, equipped with picks and shovels and as it turns out, a very positive can-do attitude, and a guard first thing the following morning.

After transporting the inmates and the guard to near the dam site via four wheel drive vehicles, a plan was devised and explained to the inmates. We would start the breach excavation at the downstream toe, slope it gently upwards, until we were only one foot from completing the breach through the upstream slope, line the excavated breach with rock which had to be hauled in by hand, and then make the final cut through the embankment, allowing the reservoir to be drained in a controlled manner. With only minimal explanation and direction, the inmates went directly to work and, in a number of hours, had excavated and lined the bottom and sides of the breach with a graded rock riprap. It was now time to make the final cut and let the water flow. A few well aimed pick swings and the dam was breached and the water flowing. Only one problem, the control section, where the flow transitions from sub-critical to super critical velocity, was located in the breach channel where back-cutting could occur and cause a large uncontrolled release. When I explained that the reservoir basin upstream of the breach would have to be excavated in order to move the control section back into the reservoir, the inmates willingly donned hip waders and began the arduous task of excavating under water and after an hour's effort, the control section was safely located several feet back into the reservoir. Empire Dam was breached and the reservoir drained in a very efficient and cost effective manner.

The inmate labor force may be an often overlooked resource that can prove to be very helpful and valuable. I feel very fortunate to have been able to work with this particular group of young men in that they were very well mannered, very hard working, highly motivated and followed directions well. If not for their orange prisons coveralls, one would never have known they were not from a highly skilled trade union.

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## CALENDAR OF EVENTS

- November 10 Colorado Water Congress Workshop on the Nine Interstate Compacts. 1390 Logan St. Suite.312, Denver, CO. Contact Dick MacRavey, at (303) 837-0812 for more information.
- November 14 Ground Water Commission Meeting. Centennial Bldg.,1313 Sherman St., Room 318, Denver, CO. Contact Marta Ahrens, DWR at (303) 866-3581 for more information.
- November 24-25 CWCB Board Meeting; Centennial Bldg.,1313 Sherman St. Room 318 Denver, CO. Contact Susan Maul (303) 866-3441 for more information.
- December 2 Board of Examiners Meeting; Centennial Bldg.,1313 Sherman St. Room 615 Denver, CO. Contact Gina Antonio (303) 866-3581 for more information.
- January 9-11 Colorado Water Well Contractors Association Annual Conference. Double Tree (formerly Red Lion Inn) Colorado Springs, Colorado. Contact Carol Brooks at (303) 759-1756 for more information.
- January 29-30 Colorado Water Congress Annual Meeting. Holiday Inn Northglenn, 120th and I-25. Contact Dick MacRavey, at (303) 837-0812 for more information.
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