



# StreamLines

Quarterly Newsletter of the Office of the State Engineer

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**Much to our dismay, the April 1, 2002 statewide snow/water equivalent ranged from a low of 27 percent of average in the southwest, to a high of 65 percent of average in the northwest.**

## Drought Hits Colorado

Jack Byers, Assistant State Engineer

Water is life. At no time is that phrase more clearly understood than in the midst of record-setting drought conditions. The current drought began with a record-low snowpack, above normal temperatures, and drying winds. The effect of neither La Niña nor El Niño left Colorado, and much of the mountain west, struggling with low snowpack and from moderate to extreme drought conditions. Colorado began with comparing the 2002 snow conditions to 2001. Then, as conditions worsened, we looked at 1977 and now we are considering 2002 as the worst year on record.

The first indication of the impending 2002 drought occurred in January when the statewide snow/water equivalent was about 65 percent of average. Though the low snowpack caused some concern, optimism provided some comfort since the months ahead historically provided the snow we needed. Much to our dismay, the April 1 statewide snow/water equivalent ranged from a low of 27 percent of average in the southwest, to a high of 65 percent of average in the northwest. This trend continued to decline to a record-low snow/water equivalent on May 1. The record-low snowpack and early warm spring temperatures resulted in a runoff nearly one-tenth of normal

and earlier than normal. The impact of the drought will vary depending on the individual water user's situation. However, in some basins, even some very senior water rights will face curtailment of diversion.

The result of the drought varies within water divisions. In general, reservoirs will reach only 50 percent of normal fill, demand will require earlier than normal releases from storage, and reservoirs will be drawn down to near dead pool elevation before the end of the irrigation season. A few drought highlights (*drylights*) are provided below.

**South Platte River Basin:** Generally, reservoirs will not fill from surface runoff. Municipal water providers have reduced the amount of water leased to farmers. Some irrigation companies have advised farmers of the limited supply and recommend appropriate planting. The division is already administering water rights with priorities into the 1860's.

**Arkansas River Basin:** Reservoir storage is below 50 percent of average. The low water conditions will likely impact rafting and other water-based recreation. The senior water right call on the river is 1874.

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## Drought Hits Colorado (cont.)

**Rio Grande Basin:** The April snow/water equivalent for the upper basin was 10 percent of normal. Runoff peaked at near 1200 cfs, about one-fifth of normal.

**Gunnison River Basin:** Most of the Grand Mesa reservoirs are storing 20 to 25 percent of normal. Water administrative calls began in early April. The Gunnison Tunnel call occurred for the first time in 50 years. Some irrigators are using "block delivery" methods. Some ranchers are considering the viability of keeping cattle through the summer as water and feed supplies are projected to be short.

**Colorado River Basin:** The reservoir storage is generally better than most at near 90 percent. Streamflow across the basin ranged from 30 to 50 percent of average.

**Yampa/White and North Platte River Basins:** Generally, streamflow is 50 percent of average with most reservoir storage below average. Water administration is expected to occur earlier than normal.

**San Juan/Dolores River Basin:** The impact of the drought is very severe in the southwest. Some irrigation districts are considering options that include canceling deliveries.

Water administration during a drought will test everyone's skill. Unfortunately, the near-term outlook is not optimistic, but the Office of the State Engineer will strive to facilitate as many solutions as legally and physically possible throughout the drought. This includes supporting the Governor's Water Availability Task Force and associated impact task forces. Much coordination has already occurred with water users and will continue though the summer. Additional information is available on the Colorado Water Conservation Board website, <http://www.cwcb.state.co.us>.

## Drought Prompts Call for Measuring Devices in Ditches

Robert M. Plaska, Division 6 Engineer

Division 6, the Yampa/White and North Platte River Basins, has long had a reputation for having the best supply of water for its users in the state. Because of this, water users on many streams and rivers have seldom, if ever, been exposed to administration (regulation) of their water rights. With the drought conditions that exist statewide this year, that may change. Even Division 6, which, as of May 1, had the highest snowpack in the state (36 percent of average), is likely to see an increase in the number of streams and rivers that will see water administration this year. With that in mind, water users should be aware that, in order to receive their water during periods of administration, their ditches must have adequate headgates and measuring devices.

Section 37-84-112, of the Colorado

Revised Statutes, requires the owners of any irrigation ditch, canal, flume or reservoir to install and maintain a suitable and proper headgate and measuring device when deemed necessary by the State Engineer. During periods of administration, these structures are needed in order for the staff of the Division to properly allocate water in the system.

If administration of water rights becomes necessary on any stream or river in Division 6, properly installed headgates and measuring devices will be required before water is delivered to any ditch. This applies even if the water right for the ditch is in priority. Without such devices, it is impossible to accurately measure and control the amount of water being diverted. Any diversion structure that does not have a headgate and measuring

device approved by the Division Engineer's office will be ordered closed when a call for administration is placed on the stream system. Diversions will not be allowed in such structures until the necessary devices are installed or repaired, and water is available for the water right within the priority system.

The Division Engineer's office will provide information to any water user who requires help in determining the proper size and type of headgate or measuring device, or repairs that are needed for existing structures. Questions should be directed to the Division 6 office at 970-879-0272, or by contacting the local water commissioner. For those water users in other parts of the state, contact the local Division of Water Resources office.

## Drought in Southeast Colorado — Effects on Well Users

Keith Kepler, Assistant Division Engineer, Division 2

Drought in the Arkansas River Basin is having a major effect on ground water users. Prior to 1972, wells were used to supply any shortage in available water supply without restriction. While some restrictions on well usage existed from 1972 to 1996, individuals had only to subscribe to a minimal cost plan to enjoy unlimited pumping. Since 1996, rules have strictly limited pumping to the extent of participation in a replacement plan, but well users have enjoyed as much water as needed as long as they obtained the necessary replacement water, which has been readily available.

In 2002, as Colorado returns to the U.S. Supreme Court to demonstrate that it is currently in compliance with the Arkansas River Compact, the Arkansas River Basin is faced with one of the worst droughts in history. Limited water available for replacement plans will result in strict pumping limits for individual wells. Ground water associations and the Division are working together to maintain the integrity of the replacement plans, and to help individual water users to stay within the limited amount of pumping allowed by their participation in those plans.

### Rules Govern the Use of Wells in the Arkansas Basin

In *Kansas v. Colorado*, the U.S. Supreme Court has determined that the historic diversion of water from wells has resulted in a violation of the Arkansas River Compact. That compact, signed in 1948, provided that the native waters of the Arkansas River shall not be materially depleted in usable quantity or availability for the use to the water users in Colorado and Kansas under the compact by such future development or construction. Beginning in the 1950's, many wells were constructed

in response to the drought and other factors.

In response to the U.S. Supreme Court's determination, Colorado developed the "Amended Use Rules", which require non-exempt tributary wells to report diversions on a monthly basis and replace stream depletions. Those rules further allow for a new type of replacement plan. Replacement plans under Rule 14 of the "Amended Use Rules" are due to be submitted by March 1 of each year, and are reviewed and become effective on April 1 of each year.

Three major ground water associations, AGUA, CWPDA, and LAWMA, as well as several smaller groups, submit replacement plans each year. Of the three plans, AGUA and CWPDA serve the area upstream from John Martin Reservoir, while LAWMA serves the area downstream. The plans include estimates of monthly pumping for each well, an analysis of projected stream depletions, and an evaluation of the resources available to replace those depletions. The plans must demonstrate adequate replacement water, and subscribers to the plans are limited to pumping the amount of water to which they have subscribed on an annual basis.

The area upstream of John Martin Reservoir is largely within the Southeast District, and Fry-Ark Project water, which is imported from the west slope, can be used within district boundaries. Much of the first-use water delivered to irrigation ditches in the district results in return flow, and the quantity, location, and timing of return flow is determined by modeling of ditch deliveries performed by the Division. The Southeast District retains the rights to return flow, and, in turn, sells that water to ground water associations for replacement of well depletions. Fry-Ark Project

return flows have been used for 50 to 60 percent of the replacement water supporting the AGUA and CWPDA plans in recent years. Some smaller plans upstream of John Martin Reservoir rely entirely on Fry-Ark Project returns.

Under the rules, pumping must be reported on a monthly basis. Well-head depletions are determined from pumping. Monthly well-head depletions are then modeled to determine stream depletions, and available resources for replacement are assigned or delivered.

From 1996 through 2001, water availability on the mainstem of the Arkansas River had ranged from average to much better than average. There had always been sufficient replacement water available for purchase to meet the requirements of water users needing to replace depletions from pumping. Additionally, there had been no need to limit pumping as long as the individual well owners purchased enough replacement water.

### The Drought

The Fall of 2001 produced very little precipitation in the Arkansas River Basin, and it became apparent that, unless precipitation patterns changed significantly, we would have reduced water supplies in 2002. In early December 2001, representatives of AGUA, CWPDA, and staff from Division 2 met to discuss drought strategies. Those strategies have guided a cooperative effort to educate and inform the public about the limits on well pumping which would be needed in 2002.

As of the end of December, reservoir storage in the Arkansas River Basin was 70 percent of average, "winter water" storage was at 78 percent of the

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## Drought Southeast Colorado (cont.)

five-year average, and storage in John Martin Reservoir was 26 percent of the five-year average. Basin-wide snow/water equivalent from NRCS Snotel sites was 56 percent of average. The ground water associations and the Division again met to strategize drought planning in early January. A press release was sent to regional newspapers in mid-January to inform water users of the need for strict limits on well pumping. Since replacement water was limited, well users would not be able to subscribe in plans for as much pumping as they had in prior years.

Informational workshops for ground water users, sponsored by AGUA and CWPDA, were held on March 1-2 in La Junta and Pueblo. Those workshops focused on the concept that limited replacement water availability for 2002 would result in strict limits on the pumping that would be allowed for each well. Well users would need to monitor their pumping by reading their totalizing flow meter or electric meter in order to assure they did not exceed their allocation. Significant penalties exist for individual well users who exceed the pumping allowed for their wells under the plans.

As of March 1, the Arkansas River

Basin snow/water equivalent for Snotel sites was 63 percent of average. The Division's analysis indicated that native streamflow available for irrigation use would likely be about 60 percent of the 1984 to 1994 average.

April 1 snowpack measurements are considered by many to be the best indicator of surface water supplies for the growing season. This year, on April 1, snow/water equivalent for the Arkansas River Basin was 49 percent of average. The prediction of diversions into Division 2 from the west slope through the Fry-Ark Project was approximately 31,000 acre-feet.

In April, precipitation continued to be far below normal. As of May 1, basin-wide snow/water equivalent was 20 percent of normal. It is now predicted that only 20,000 acre-feet of west slope water will be imported through the Fry-Ark Project. After adding in resources on hand and subtracting allocations for municipalities and a reserve which may be used to assure previously made return flow allocations, the current amount of first use water available to agriculture is anticipated to be only 10,900 acre-feet. Final allocations of Fry-Ark Project water are expected to be made on May 16.

### Continued Drought Awareness

As of May 1, the ground water associations and Division 2 personnel have a working plan to maintain public awareness of the drought and how it effects each individual's ability to use their well. Because replacement water availability is now known to be lower than was estimated for development of the Rule 14 replacement plans, it is possible that each plan will have to be re-evaluated to revise the total pumping allowed under the plan, and that the pumping allowed for each well in the plans will have to be similarly reduced.

Continuing efforts to keep the public informed are being conducted through cooperative efforts of the ground water associations and the Division. Those continuing efforts include additional press releases as well as direct mailings to well users. Direct meter reading for users who are approaching pumping limits will be combined with an educational program to instruct well users to determine how much water they have pumped during the season. Continued coordination with the ground-water associations, and continued direct contact with well users will serve as the basis to regulate well use in the Arkansas River Basin this year.

## Rio Grande Compact Commission Meets

Steve Vandiver, Division 3 Engineer

The Rio Grande Compact Commission met on March 21, in Santa Fe, New Mexico, to review the annual accounting, and to discuss matters of concern for the Rio Grande above Ft. Quitman, Texas. The compact, which was initiated in 1939, allocates the water of the Rio Grande between the states of Colorado, New Mexico and Texas in the reach from the headwaters and Ft. Quitman, Texas, about 60 miles below El Paso. The Compact allocates a certain amount of water to the states, depending on the amount of water that flows at certain points along the river in each calendar year. The Commission meets at least once a year to review the accounting, and address

issues of concern about the river and the administration of the compact during the previous year.

It was determined by the Commission that the states of New Mexico and Colorado are in compliance with the terms of the compact, even though both states under-delivered during the year of 2001. This was possible because both states were in a credit status from the year before that could be drawn against in a very dry summer

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## Rio Grande Compact (cont.)

such as in 2001. Colorado will start 2002 with 10,100 acre-feet of credit, while New Mexico will start with 155,700 acre-feet of credit.

Other issues of concern included the impacts to water administration from the recovery efforts to save the Rio Grande Silvery Minnow, an endangered fish that resides in the Middle Valley in New Mexico, and the Southwestern Willow Flycatcher an endangered bird which inhabits a portion of the reach; issues concerning channel conditions and the inability to provide water delivery through the river system to various points between Cochiti Dam and Elephant Butte Reservoir, both on the Rio Grande in central New Mexico; and the extreme drought conditions that are developing on the Rio Grande Basin for the 2002 calendar year.

All of these issues combine to provide many challenges

to the water managers on the Rio Grande in the three states. Endangered Species Act issues that directly conflict with compact and water rights administration are in the forefront of the problems that exist in administering this 900-mile-long reach of the river. It remains to be seen how, in this extremely dry year, water can be provided to satisfy the Silvery Minnow and Flycatcher requirements and, at the same time, meet the needs of the public concerning water supply for agriculture and municipal demands. This, coupled with ever-deteriorating channel conditions, will create monumental problems for all concerned in this portion of the basin.

The compact Commission is working hard with the other local, state and federal agencies involved, as well as several Indian Pueblos, to insure that historical uses of water can continue while making every effort to recover the endangered species in the basin.

## Human Resources

### New Employees

**Mike Bender** began work on the Denver Basin Team on March 25 as a Professional Engineer. Mike will be working on non-exempt well permitting, subdivision and substitute supply plan review, and water court issues and determinations of facts. As part of the team, he will also work on exempt well permitting and other customer service-oriented tasks. Mike comes from McLaughlin Water Engineers and has a wealth of professional experience in water resources.

**John Redding** joined Team 456 on April 1 as a Professional Engineer. He will be working primarily with water court applications, subdivision reviews and well permitting. John previously worked for the City of Thornton as water resources engineer, and has experience as a software engineer and math teacher. When he's not protecting the state's water interests, John can often be found on a tennis court or hiking with his golden retriever.

### Retirements

**Tony Pantano** retired on March 30 after working 24 years as a permanent part-time Deputy Water Commissioner in Water District 19 (Trinidad area). At age 79, Tony plans to spend time with his grandsons, daughter, and son. He also plans to stay on his farm, stay healthy and active. Tony says, "I'll still help the Division and my supervisor if I'm needed".

**Joe Brown** retired on May 1 from the staff of Division 6 after 28 years of service. As a Water Commissioner, Joe was responsible for the upper drainage of the White River in District 44. Joe's territory included the mainstem and the tributaries of the White River upstream of the town of Meeker. When last seen, Joe was heading off to go roping, a sport at which he excels. All the staff in Division 6 wish Joe a long and happy retirement.

**Alan Pearson** will be retiring from the state on May 28 after 30+ years of service. Alan began working in the Dam Safety Program as an Inspecting Engineer in 1971. He transferred to the Design Review Unit in 1974 and became the Chief of the Design Review Unit in 1975. Alan was promoted to Principal Engineer of the Branch in 1980. He plans to continue consulting in the field of Dam Safety Engineering from his home in Cortez, Colorado.

**Jim McDanold** is retiring on May 30, just shy of 27 years. Jim started working for the Division in June of 1975 as a hydrographer in the Alamosa office. He was a hydrographer for nine years before moving to the Water Management Branch in 1984. He became Chief Hydrographer in 1991. Jim and his wife will retire in Knoxville, Tennessee.

**Mae Cuning** will retire on May 31. Mae began working for Division 1 as the Deputy Water Commissioner in Water District 1 on August 23, 1979. She was appointed as Senior Water Commissioner for Water District 1 on January 1, 1989. In this position, she has been responsible for the water administration of the South Platte River and its tributaries between Kersey and the Balzac Station, near Hillrose. This area has faced increasing complexity in water administration due to numerous wells and recharge plans, as well as senior surface rights. Mae will be missed for her dedication, knowledge, humor and her ability to effectively communicate water issues with her water users.



## CALENDAR OF EVENTS

- May 17** Colorado Ground Water Commission Meeting, Denver, Colorado; for more information, contact Marta Ahrens at 303-866-3581
- June 4** Colorado Board of Examiners of Water Well Construction and Pump Installation Contractors Meeting, Denver, Colorado; for more information, contact Gina Antonio at 303-866-3581
- July 22-23** Colorado Water Conservation Board Meeting, Colorado; for more information, contact Catherine Gonzales at 303-866-3441
- August 6** Colorado Board of Examiners of Water Well Construction and Pump Installation Contractors Meeting, Denver, Colorado; for more information, contact Gina Antonio at 303-866-3581
- August 16** Colorado Ground Water Commission Meeting (location to be determined); for more information, contact Marta Ahrens at 303-866-3581

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