Water Availability Task Force Meeting

June 23, 2010

May (June 1) SWSI Report

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Colorado Division of Water Resources

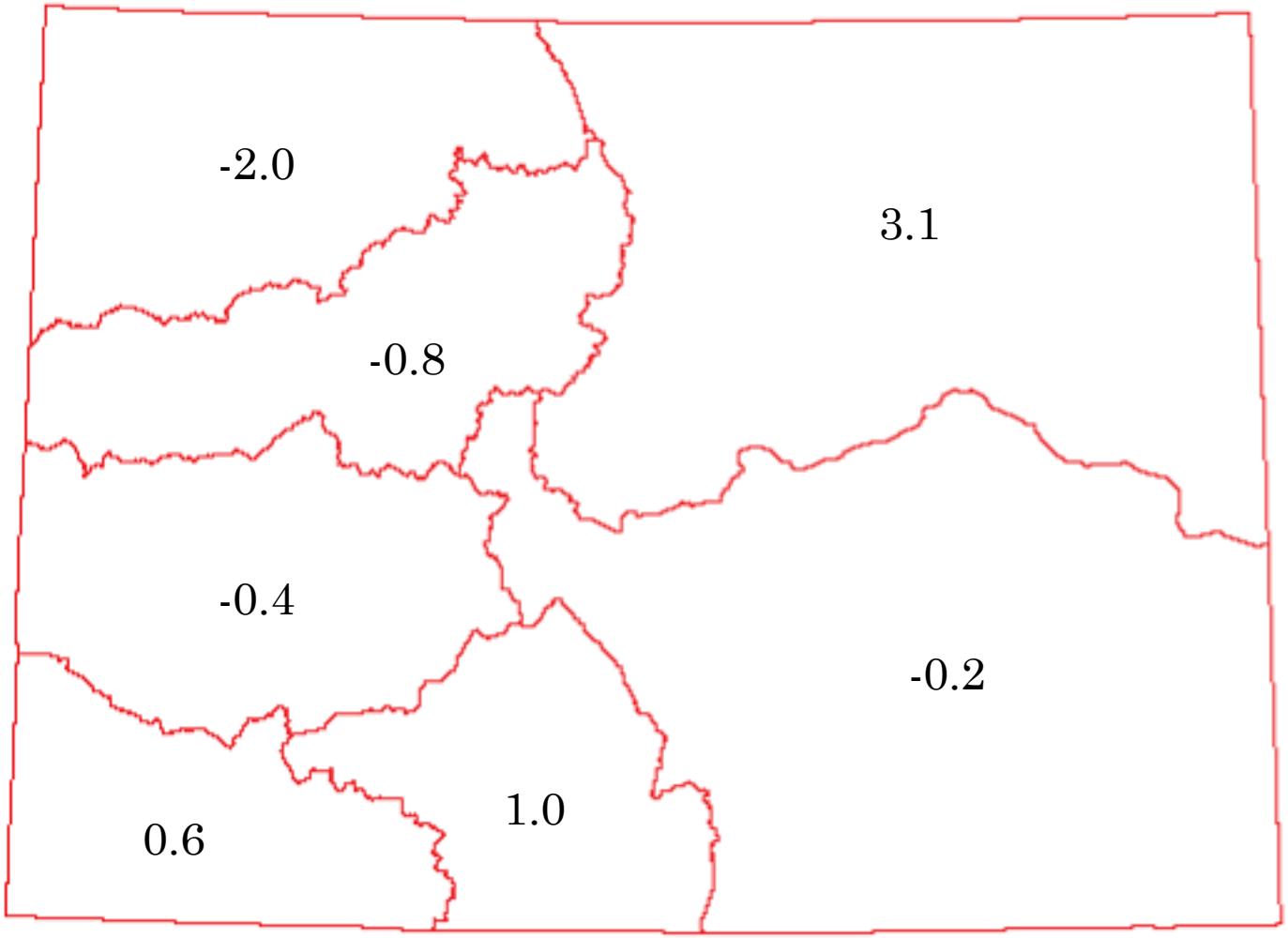
COLORADO DIVISION OF WATER RESOURCES
DEPARTMENT OF NATURAL RESOURCES

SWSI Primer

$$SWSI = \frac{(a \times PN_{RS}) + (b \times PN_{SF}) + (c \times PN_{PCP}) + 50}{12}$$

- PNx = probability of non-exceedance
  - RS = reservoir storage
  - SF = streamflow (snowpack in winter months)
  - PCP = precipitation
- Each basin has unique weighting factors (a, b, c) which add up to 1
- Subtraction of 50 centers the PN scale around zero
- Division by 12 compresses the scale to a range of +4 (abundant supply) to -4 (extreme drought)

Surface Water Supply Index for Colorado

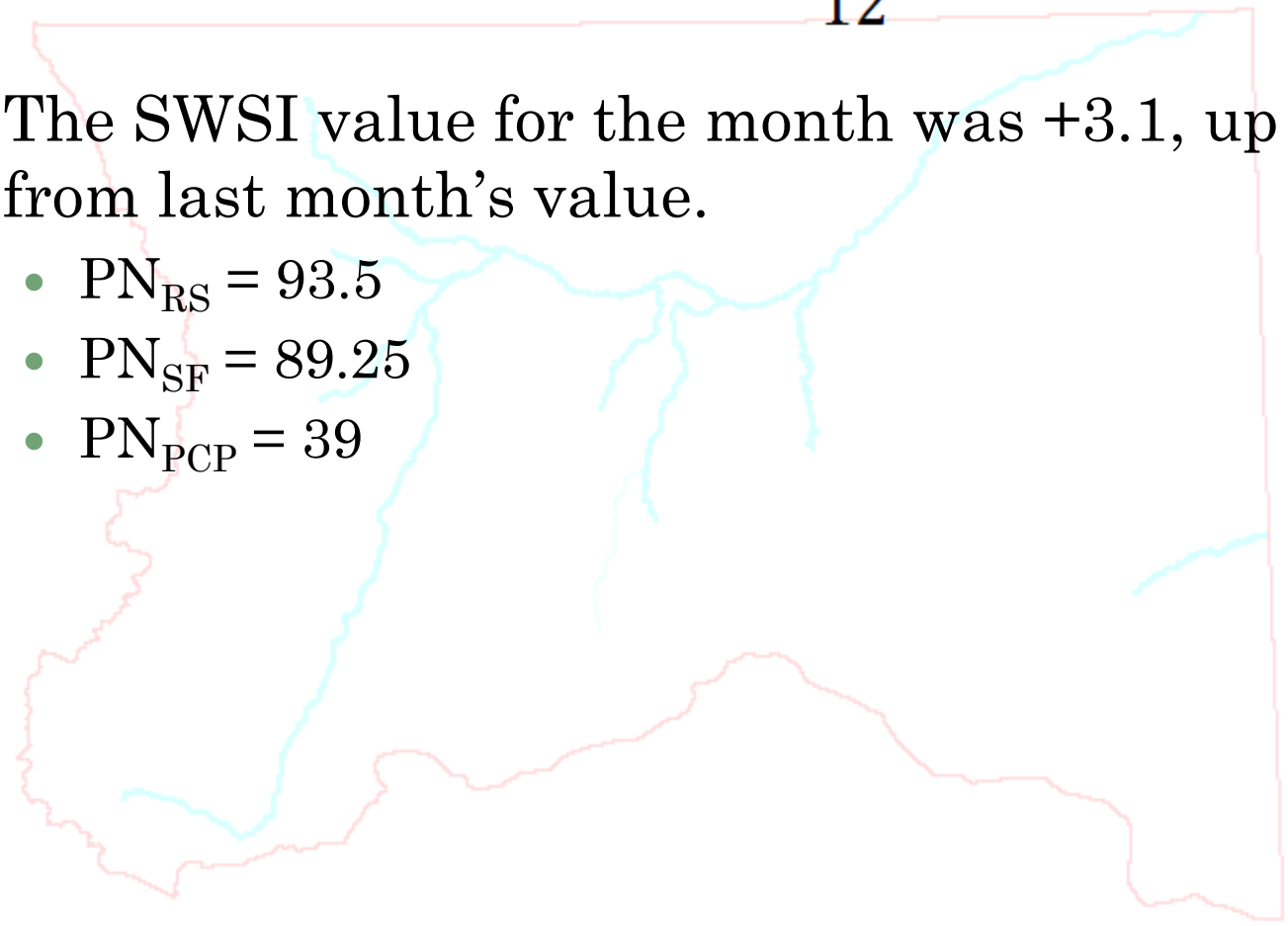


June 1, 2010

Division 1 – South Platte Basin

$$SWSI = \frac{(0.65 \times PN_{RS}) + (0.25 \times PN_{SF}) + (0.10 \times PN_{PCP}) + 50}{12}$$

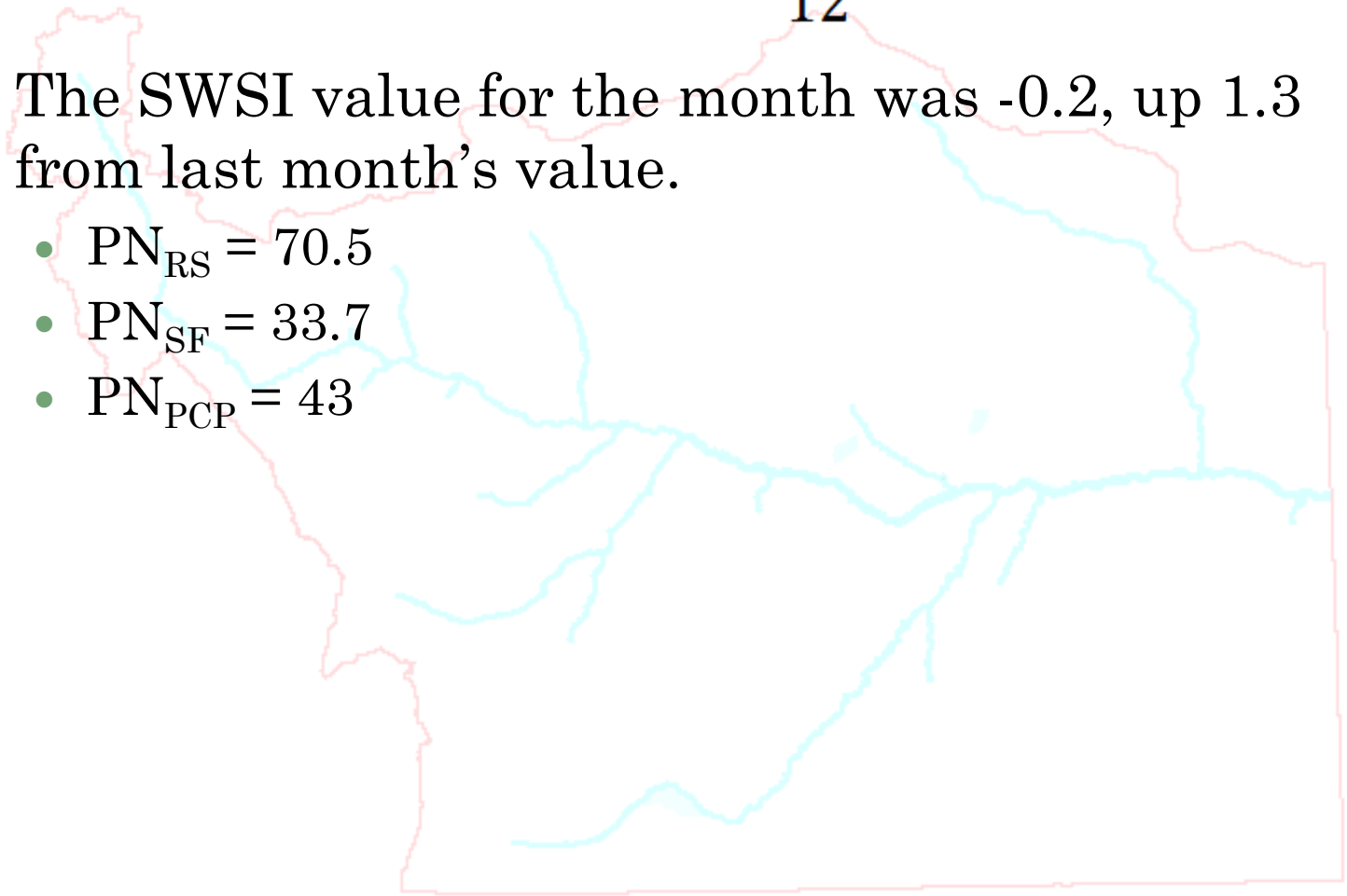
- The SWSI value for the month was +3.1, up 1.3 from last month's value.
  - $PN_{RS} = 93.5$
  - $PN_{SF} = 89.25$
  - $PN_{PCP} = 39$



Division 2 – Arkansas Basin

$$SWSI = \frac{(0.35 \times PN_{RS}) + (0.55 \times PN_{SF}) + (0.10 \times PN_{PCP}) + 50}{12}$$

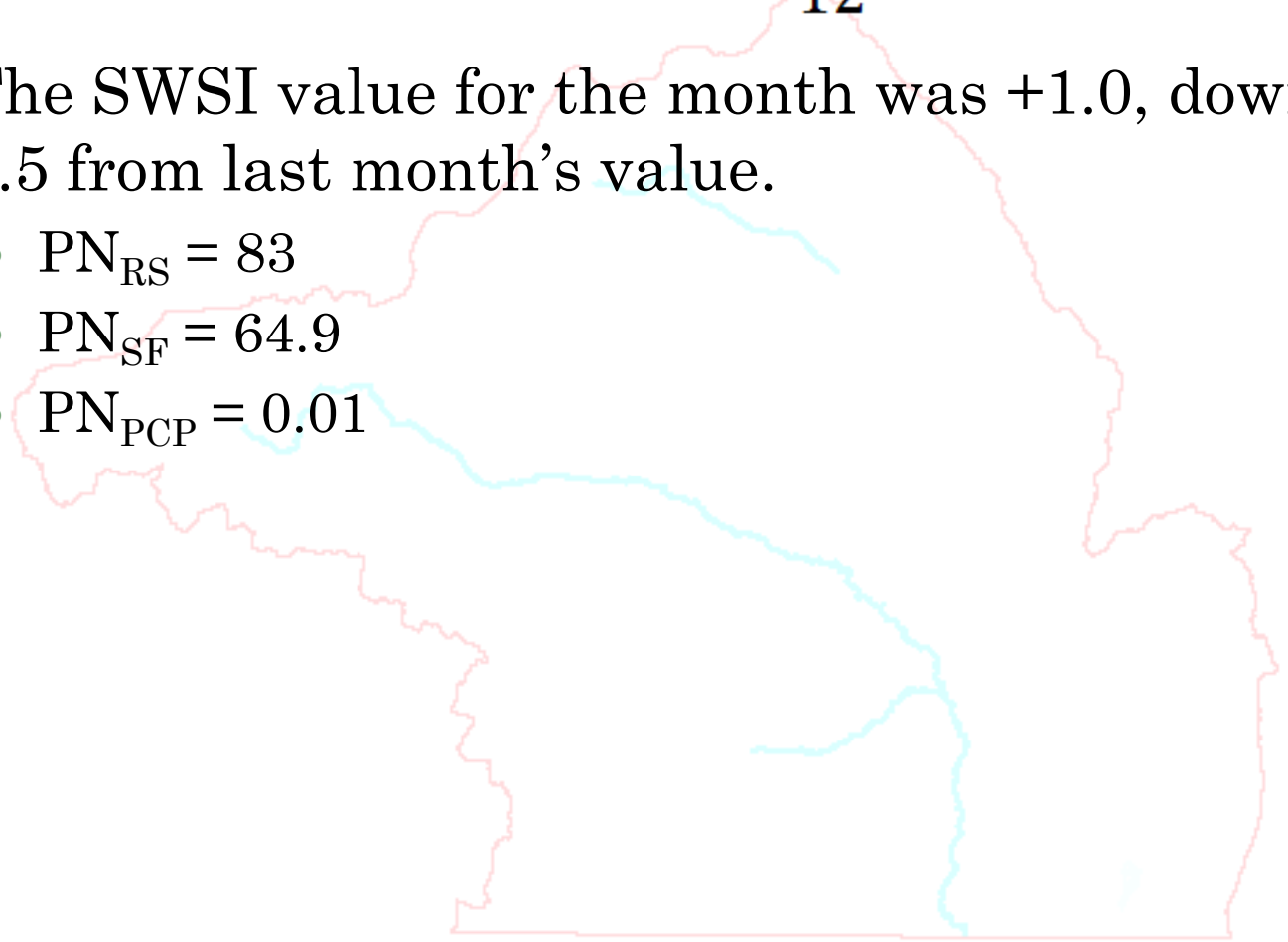
- The SWSI value for the month was -0.2, up 1.3 from last month's value.
  - $PN_{RS} = 70.5$
  - $PN_{SF} = 33.7$
  - $PN_{PCP} = 43$



Division 3 – Rio Grande Basin

$$SWSI = \frac{(0.05 \times PN_{RS}) + (0.90 \times PN_{SF}) + (0.05 \times PN_{PCP}) + 50}{12}$$

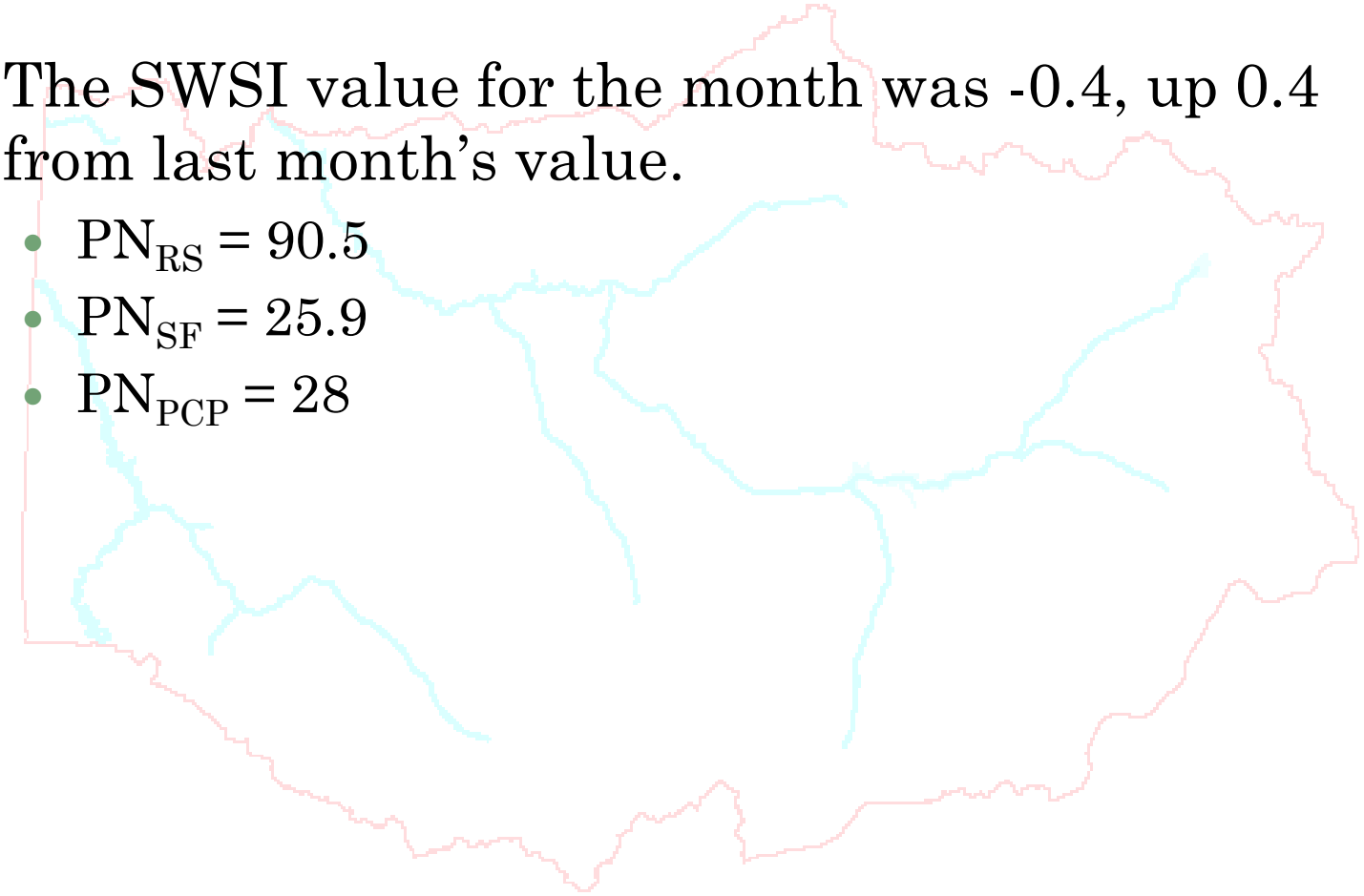
- The SWSI value for the month was +1.0, down 0.5 from last month's value.
  - $PN_{RS} = 83$
  - $PN_{SF} = 64.9$
  - $PN_{PCP} = 0.01$



Division 4 – Gunnison Basin

$$SWSI = \frac{(0.30 \times PN_{RS}) + (0.60 \times PN_{SF}) + (0.10 \times PN_{PCP}) + 50}{12}$$

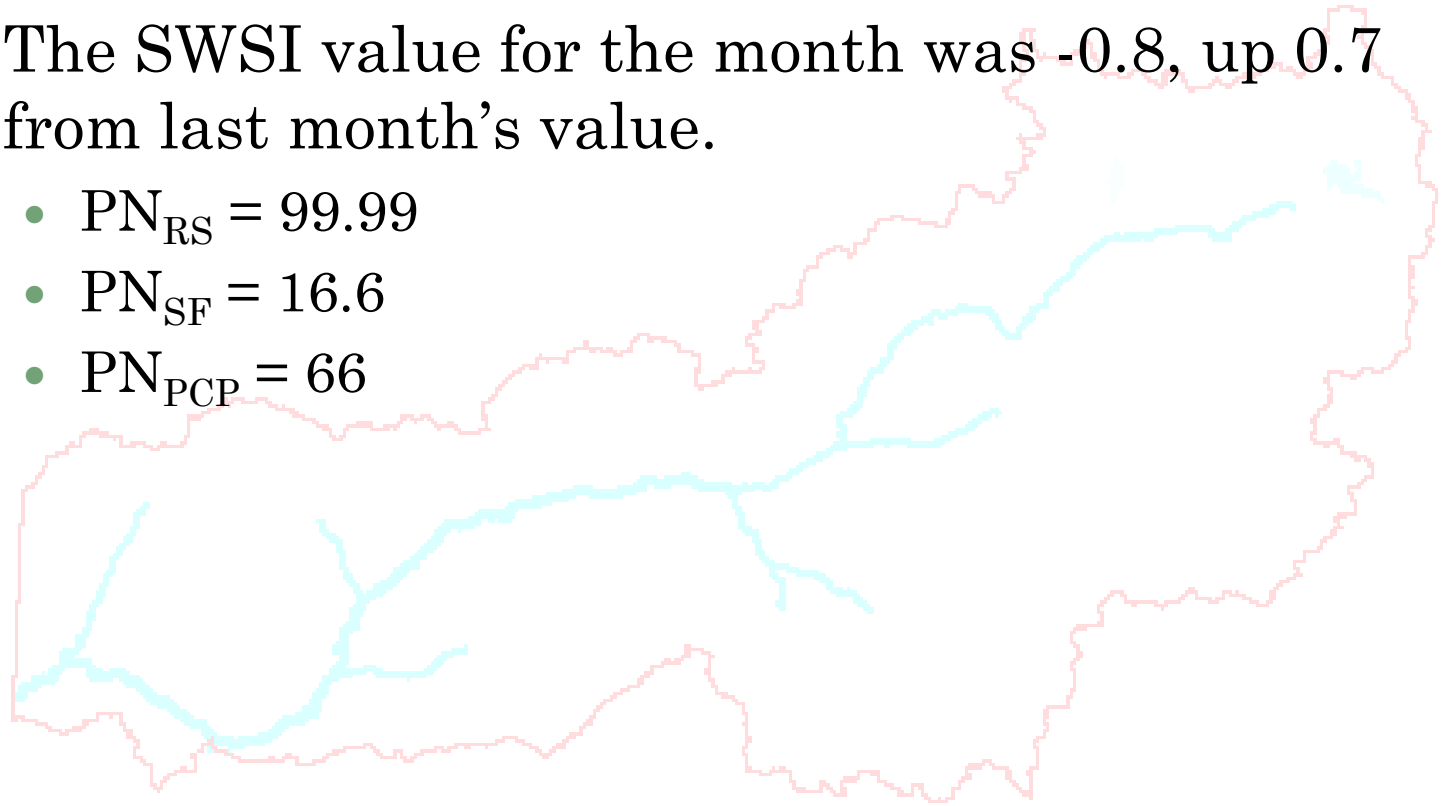
- The SWSI value for the month was -0.4, up 0.4 from last month's value.
  - $PN_{RS} = 90.5$
  - $PN_{SF} = 25.9$
  - $PN_{PCP} = 28$



Division 5 – Colorado Basin

$$SWSI = \frac{(0.25 \times PN_{RS}) + (0.70 \times PN_{SF}) + (0.05 \times PN_{PCP}) + 50}{12}$$

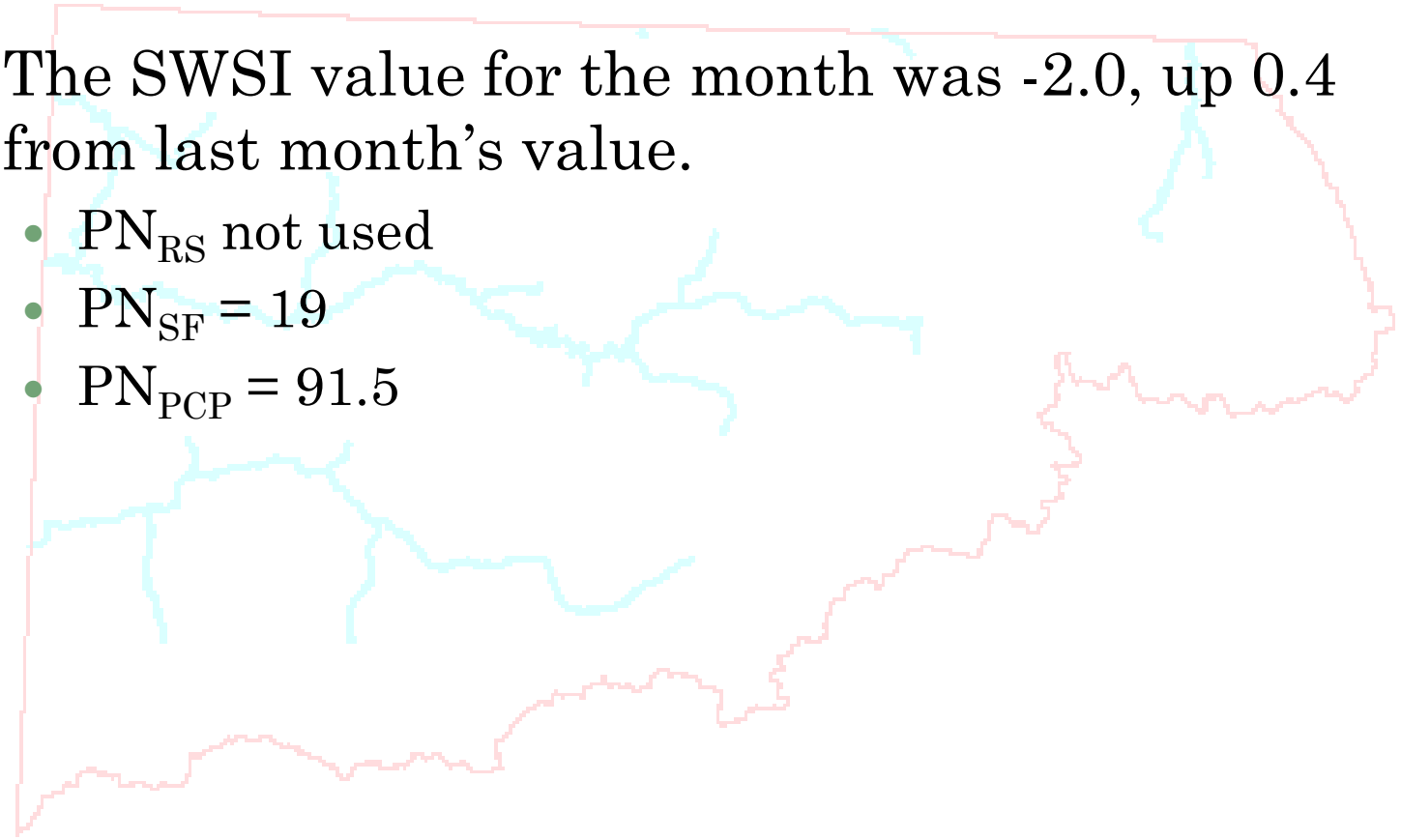
- The SWSI value for the month was -0.8, up 0.7 from last month's value.
  - $PN_{RS} = 99.99$
  - $PN_{SF} = 16.6$
  - $PN_{PCP} = 66$



Division 6 – Yampa/White Basin

$$SWSI = \frac{(0 \times PN_{RS}) + (0.90 \times PN_{SF}) + (0.10 \times PN_{PCP}) + 50}{12}$$

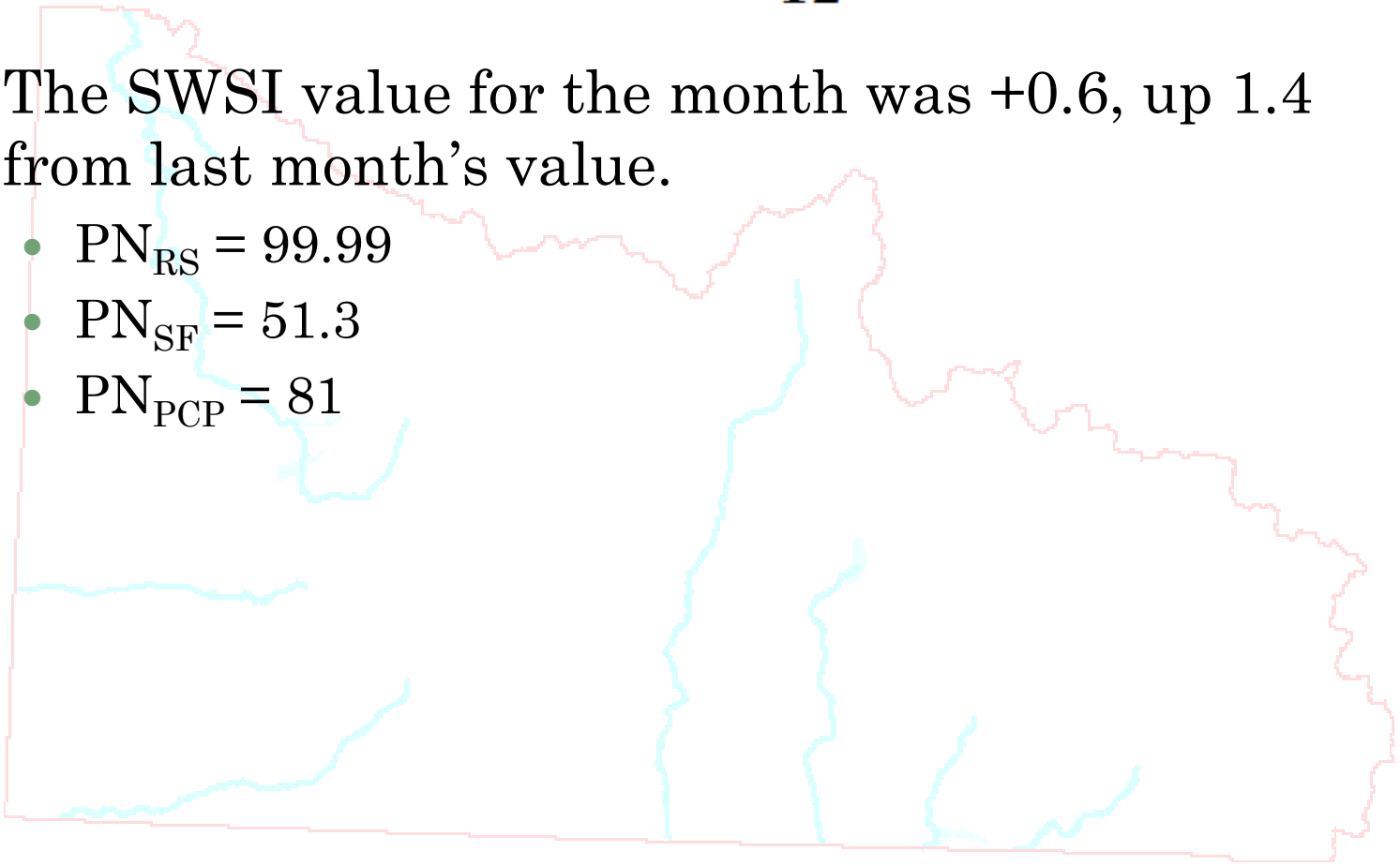
- The SWSI value for the month was -2.0, up 0.4 from last month's value.
  - PN_{RS} not used
  - $PN_{SF} = 19$
  - $PN_{PCP} = 91.5$



Division 7 – San Juan/Dolores Basin

$$SWSI = \frac{(0.10 \times PN_{RS}) + (0.85 \times PN_{SF}) + (0.05 \times PN_{PCP}) + 50}{12}$$

- The SWSI value for the month was +0.6, up 1.4 from last month's value.
  - PN_{RS} = 99.99
  - PN_{SF} = 51.3
  - PN_{PCP} = 81



Questions?

COLORADO
WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES
ROOM 818, 1313 SHERMAN ST., DENVER, CO 80203
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June 2010

The Surface Water Supply Index (SWSI) developed by this office and the U.S.D.A. Natural Resources Conservation Service is used as an indicator of mountain-based water supply conditions in the major river basins of the state. It is based on stream flow, reservoir storage, and precipitation for the summer period (May through October). During the summer period, stream flow is the primary component in all basins except the South Platte basin where reservoir storage is given the most weight.

The statewide SWSI values for May (June 1) range from a high value of +3.1 in the South Platte Basin to a low value of -2.0 in the Yampa/White Basin. Six of the basins (South Platte, Arkansas, Gunnison, Colorado, Yampa/White, and San Juan/Dolores) experienced a gain from the previous month's value and one of the basins (Rio Grande) experienced a loss from the previous month's value.

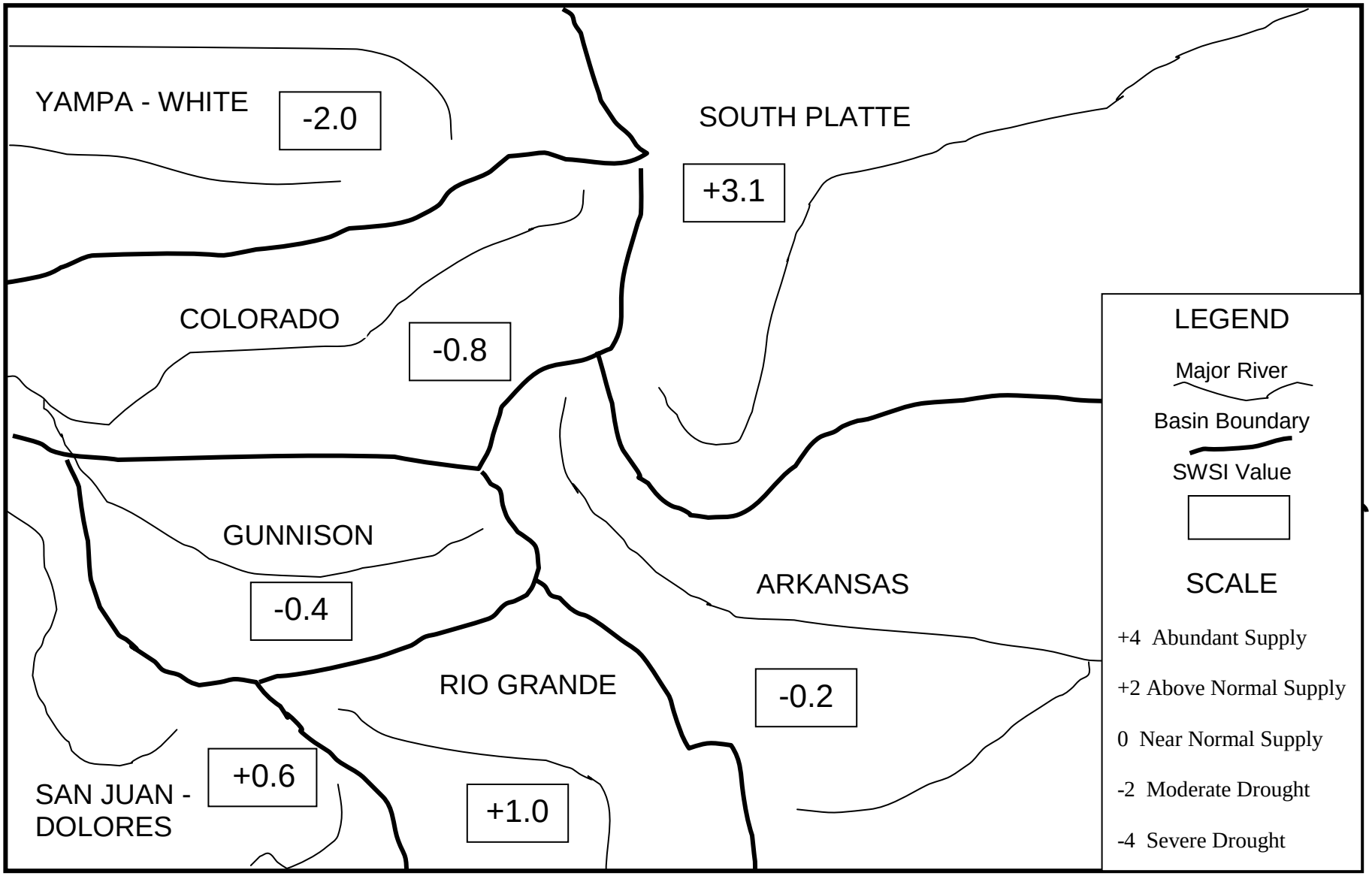
The following SWSI values were computed for each of the seven major basins for June 1, 2010, and reflect the conditions during the month of May.

Basin	June 1, 2010 SWSI Value	Change From Previous Month	Change From Previous Year
South Platte	+3.1	+1.3	+0.6
Arkansas	- 0.2	+1.3	- 1.8
Rio Grande	+1.0	- 0.5	- 2.1
Gunnison	- 0.4	+0.4	- 1.7
Colorado	- 0.8	+0.7	- 4.0
Yampa/White	- 2.0	+0.4	- 4.7
San Juan/Dolores	+0.6	+1.4	- 2.6

Scale

-4	-3	-2	-1	0	1	2	3	4
Severe Drought		Moderate Drought		Near Normal Supply		Above Normal Supply		Abundant Supply

SURFACE WATER SUPPLY INDEX FOR COLORADO



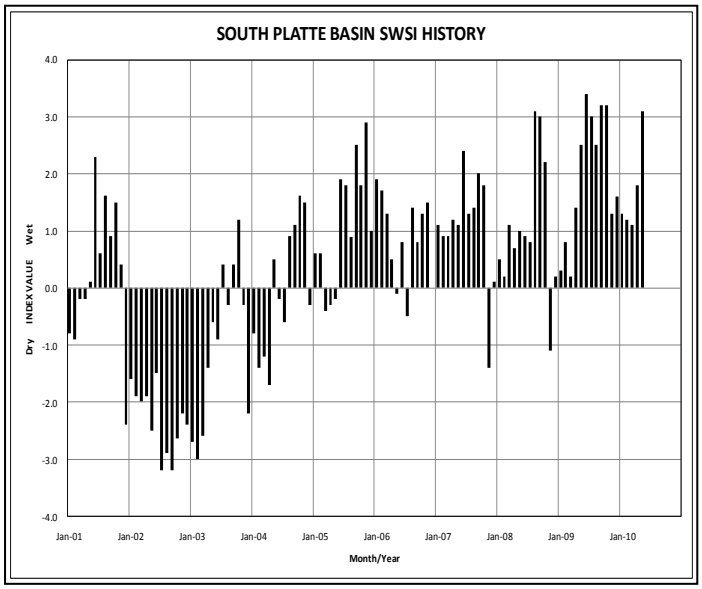
June 1, 2010

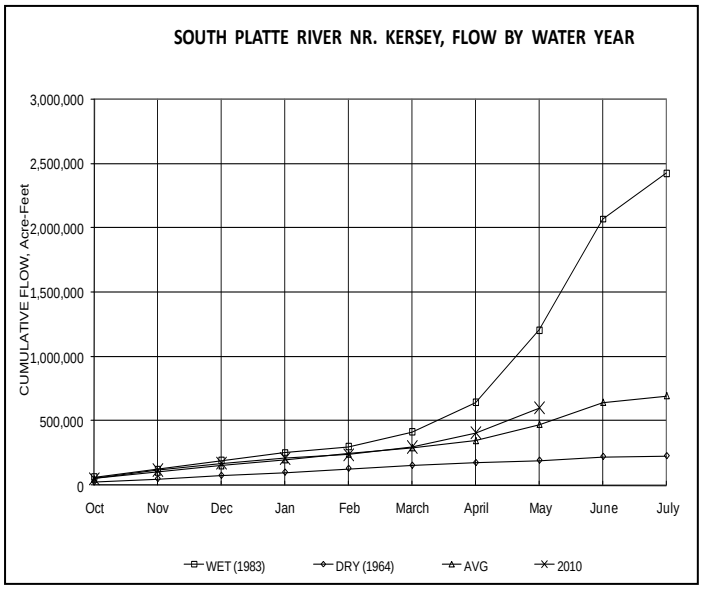
Basinwide Conditions Assessment

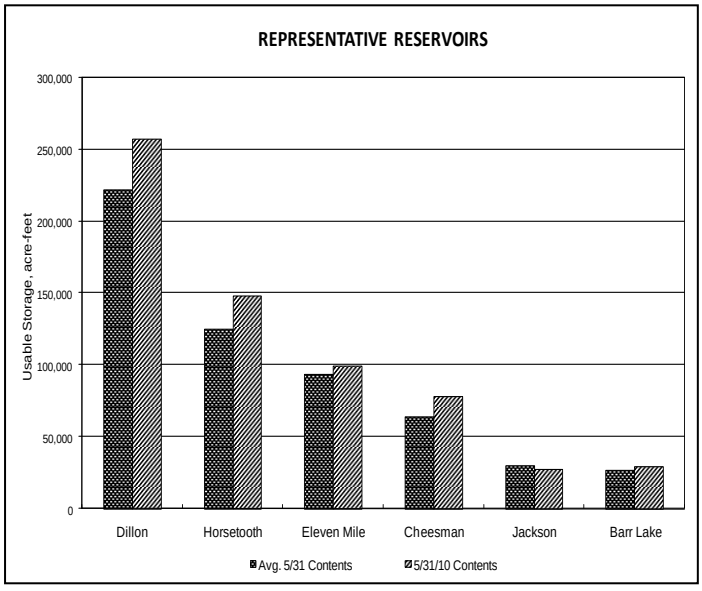
The SWSI value for the month was +3.1. Reservoir storage in Dillon, Horsetooth, Eleven Mile, Cheesman, Jackson, and Barr Lake, the major component in this basin in computing the SWSI value, was 114% of normal as of the end of May. Cumulative storage in the major plains reservoirs (Julesburg, North Sterling, and Prewitt) is at 96% of capacity. Cumulative storage in the major upper-basin reservoirs (Cheesman, Eleven Mile, Spinney, and Antero) is at 98% of capacity. Flow at the gaging station South Platte River near Kersey was 3,154 cfs, as compared to the long-term average of 1,746 cfs. Flow at the Colorado/Nebraska state line averaged 2,274 cfs.

Outlook

Conditions on the South Platte remain very positive. Spring rain storms on the plains severely reduced any early demand for irrigation and created adequate flows to meet those limited demands during most of the month on the main stem and most tributaries. Storage conditions also remain extremely positive as major reservoirs on the main stem and tributaries are full or near full. With all the large reservoirs full or near full and the with the considerable late snowfall in May, it is possible there will be significant above average flows and free river on the South Platte in June, especially if there is rainfall in early June.







Basinwide Conditions Assessment

The SWSI value for the month was -0.2. Flow at the gaging station Arkansas River near Portland was 914 cfs, as compared to the long-term average of 1,181 cfs. Storage in Turquoise, Twin Lakes, Pueblo, and John Martin reservoirs totaled 118% of normal as of the end of May.

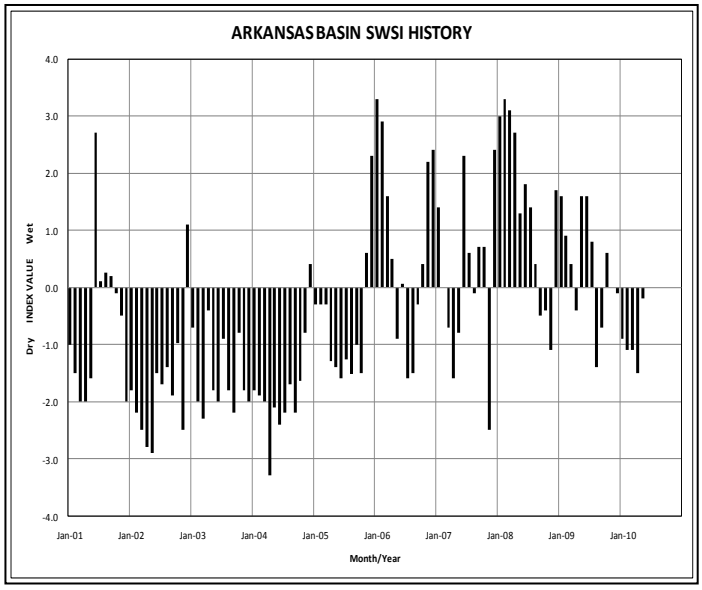
Outlook

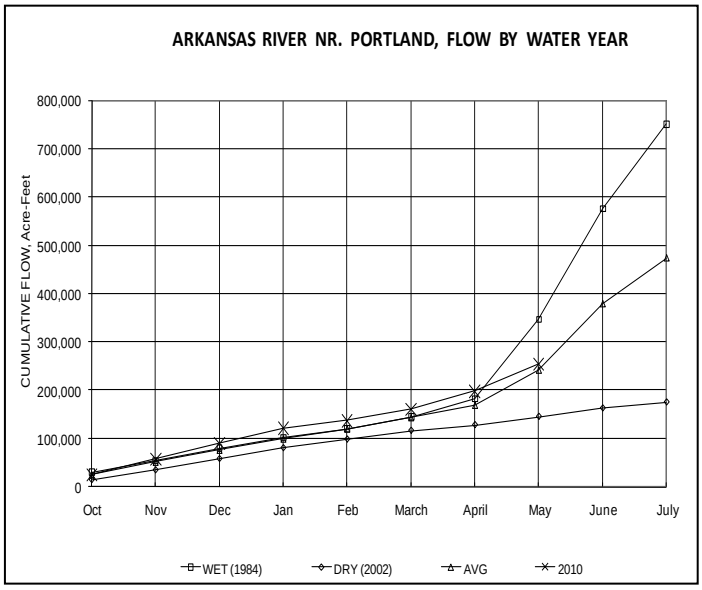
Snow melt runoff appeared to have peaked on the Arkansas River during the last few days in May. The Arkansas River at Portland peaked at just below 4,000 cfs.

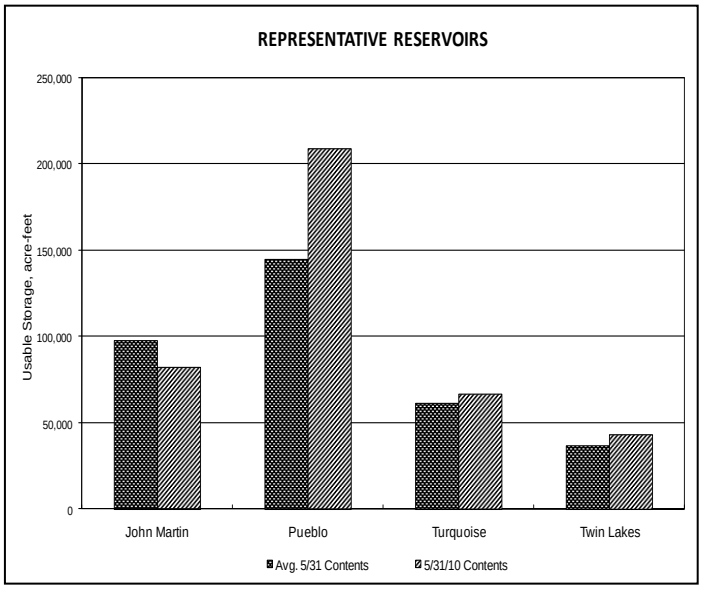
The river call at the beginning of the month was a split call with Bessemer Ditch 5/1/1887 being the call above Pueblo Reservoir and the Holbrook Canal 9/25/1889. The river call became more senior (up to the Amity #1 2/21/1887 water right) during the month and then more junior as runoff began and ended with a Colorado Canal 1/6/1890 call on the last few days of the month.

Administrative/Management Concerns

Work on the Arkansas River Decision Support System (DSS) continued in May with Brown and Caldwell, the consulting firm hired by CWCB to prepare the Feasibility Study Report, conducting numerous user interviews and meetings. This decision support system study prepares the way to implement a decision support system in the last major river basin in Colorado where no DSS exists.







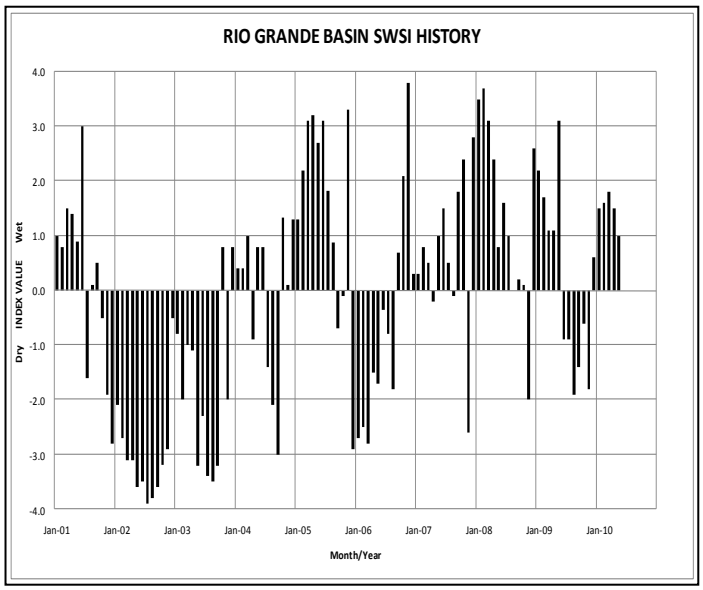
Basinwide Conditions Assessment

The SWSI value for the month was +1.0. Flow at the gaging station Rio Grande near Del Norte averaged 2,810 cfs (112% of normal). The Conejos River near Mogote had a mean flow of 1,030 cfs (93% of normal). Storage in Platoro, Rio Grande, and Santa Maria reservoirs totaled 105% of normal as of the end of May.

Precipitation in Alamosa was a paltry 0.09 inches, 0.61 inches below normal. Temperatures ranged from 16° to 84° in Alamosa where the average monthly temperature was 50.8°, 0.4° above normal.

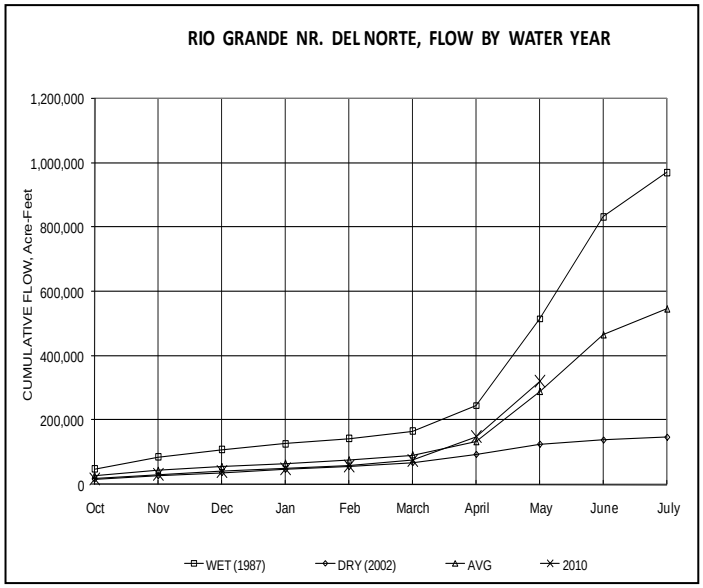
Cold and windy conditions hampered the farming and ranching operations during May in the San Luis Valley. High winds scoured young plants and even forced many grain fields to be re-planted.

Stream flow in the basin was generally near average with the exception of the northwest part of the San Luis Valley. La Garita, Carnero and Saguache Creeks flowed well below average during May. Flooding should not be a concern this season unless a major rainstorm occurs.



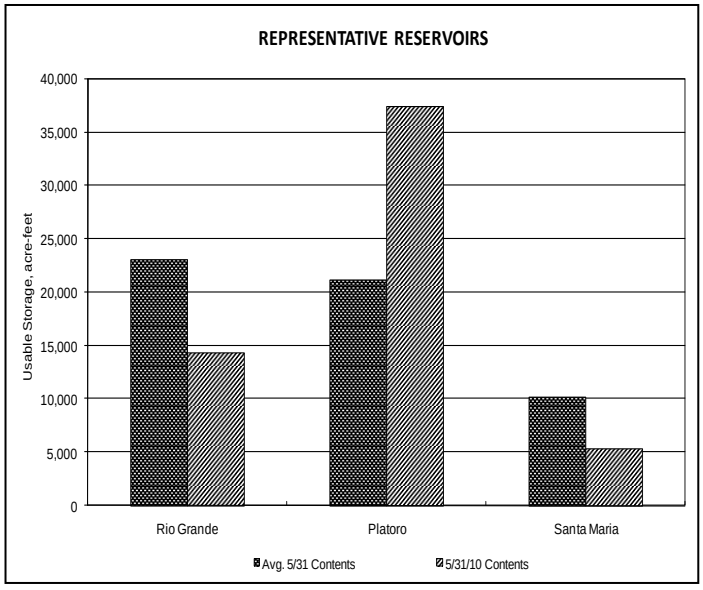
Outlook

Natural Resources Conservation Service stream flow forecasts issued in early June were predicting a near-average runoff in most of the upper Rio Grande basin. The June 1st forecast ranges from a low of 85% of normal runoff flow for Saguache Creek to a high of 144% for La Jara Creek. Most of the runoff was finished by the end of May/early June as all but the highest elevation snowpack was melted out. A big drop in streamflow is expected during June. Without good rainfall, area streams will be well below normal levels throughout the rest of the summer.



Administrative/Management Concerns

The long-awaited decision in Case No. 07CW52 (06CV64) Rio Grande Water Conservation District and the State Engineer's approval of the management plan for groundwater management Subdistrict No. 1 was entered by Judge Kuenhold on May 27, 2010. This 136-page decision followed two lengthy trials, the most recent held during the Fall, 2009. The Judge's decision to approve the plan of Subdistrict No. 1 with some modification provides the framework for other groundwater management subdistricts in the San Luis Valley.



Public Use Impacts

Normal farming and ranching operations were in full swing during May. Wind and cool temperatures were a frequent hindrance to agricultural and recreational activities.

Basinwide Conditions Assessment

The SWSI value for the month was -0.4. Flow at the gaging station Uncompahgre River near Ridgway was 415 cfs, as compared to the long-term average of 343 cfs. Storage in Taylor Park, Crawford, and Fruitland reservoirs totaled 109% of normal as of the end of May.

Although spring runoff began in April with much higher than average flows during the third week of April, it slowed down during early May. Hot weather during the last week of May and over nine dust-on-snow layers, however, quickly melted much of the snowpack and caused most streams to register well above average flows on May 29th and 30th. The actual peak from snowmelt on most streams in the Gunnison basin appears to have occurred on June 7th at slightly higher flows than the previous week. Snowpack in the Gunnison basin generally melted out two weeks earlier than average with most SNOTEL stations registering no snowpack by mid May. Snowpack in the San Miguel basin melted out even earlier at an average of three weeks prior to the average. On average, the snow lasted about a week longer than in 2009 where the snowpack was gone three to four weeks earlier than normal.

May precipitation in the Gunnison and San Miguel basins was well below normal at between 50% and 80% of average according to the Colorado Basin River Forecast Center (CBRFC).

Outlook

With runoff occurring earlier than average again this year and snowpack mostly gone by the end of the first week of June, natural flows are expected to drop off quickly this year. A majority of reservoirs are all full or expected to fill this year with the exception of Blue Mesa, which is projected to fall slightly short of filling in 2010. The Climate Prediction Center of the National Weather Service is predicting above average temperatures and equal chances of average precipitation for the Gunnison and San Miguel basins during the summer (next 90-days). Hopefully we will see at least average monsoon season rainfall this year as the past two years have been below normal. Runoff volume is still forecast to be around 80% of average during 2010.

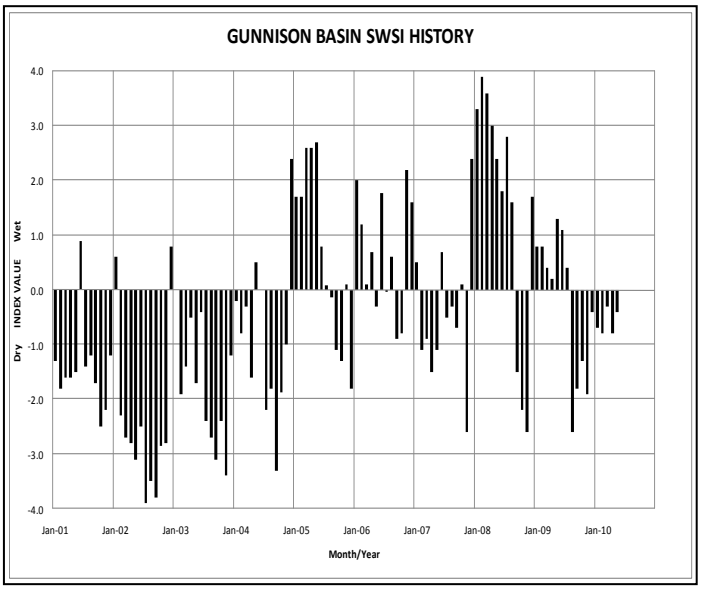
Administrative/Management Concerns

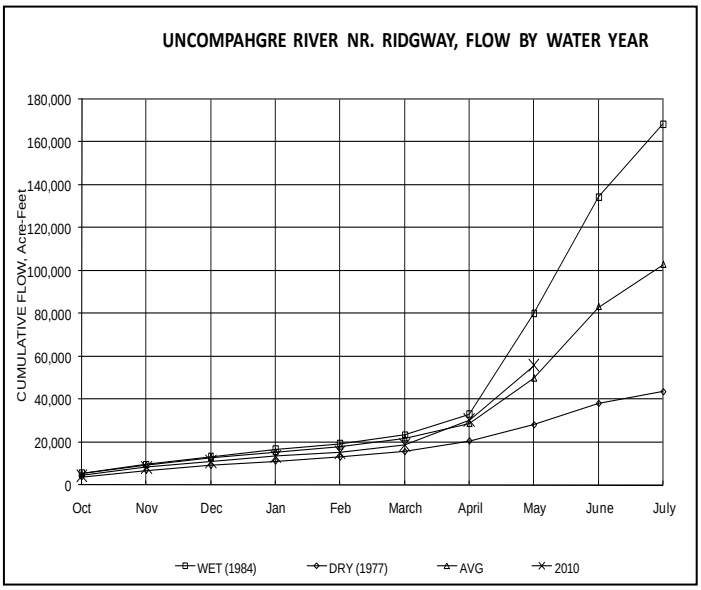
Some early runoff occurred and made water available for irrigators in April, but cooler temperatures meant that even at lower elevations fields were not green and irrigators were unable to take advantage of this runoff. Rapid and earlier than average runoff this year will require irrigators to rely on storage for a longer period this season. However, since most reservoirs are full it should not be a problem in 2010 unless precipitation is significantly below normal this summer.

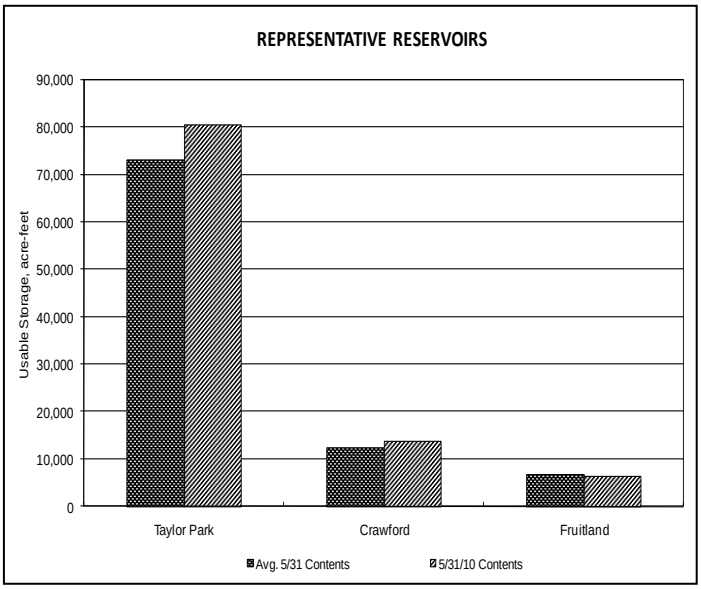
Reservoirs filled early again this year with Silverjack, Ridgway, Paonia, and Crystal Reservoirs spilling at the end of May. Managers attempted to operate most of these reservoirs to prevent spills, but the snowmelt occurred more rapidly at the end of May than projected. Streamflow through the Black Canyon peaked at 4,490 cfs on May 18, exceeding the 3,883 cfs flow required by the Black Canyon Water Right. Flows in the Black Canyon were reduced to approximately 650 cfs by the end of May.

Public Use Impacts

Streamflows may drop off more rapidly and earlier than average due to the rapid snowmelt this season, which could produce lower water levels for a longer period in some streams this summer. This would particularly be true for streams with smaller drainage areas.







Basinwide Conditions Assessment

The SWSI value for the month was -0.8. Flow at the gaging station Colorado River near Dotsero was 3,368 cfs, as compared to the long-term average of 4,464 cfs. Storage in Green Mountain, Ruedi, and Williams Fork reservoirs totaled 141% of normal as of the end of May.

Outlook

Average to above average temperatures in early June will increase Colorado River flows. Similarly, Crystal and Roaring Fork River flows will increase in June as well, with potential to increase significantly. Ruedi and Green Mountain Reservoir releases should increase throughout June with increasing runoff. Calls from the Grand Valley Irrigators and Shoshone Power Plant could come into play depending on the extent of warming and run-off in June and July.

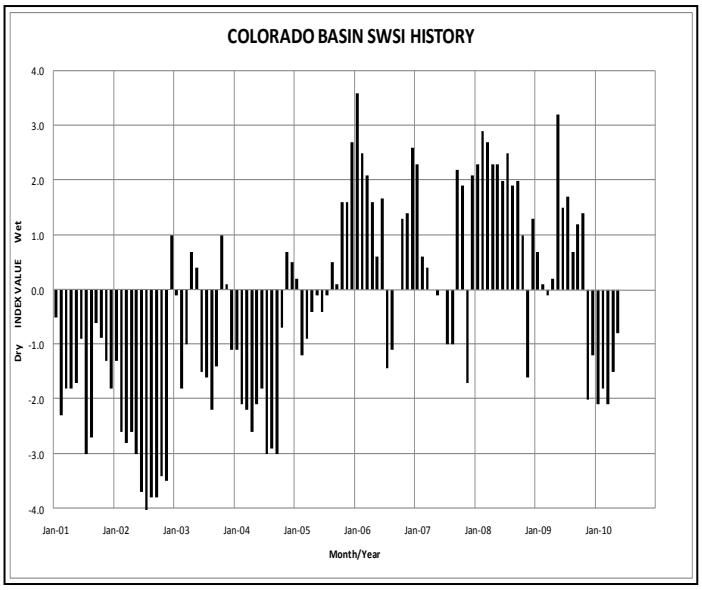
Administrative/Management Concerns

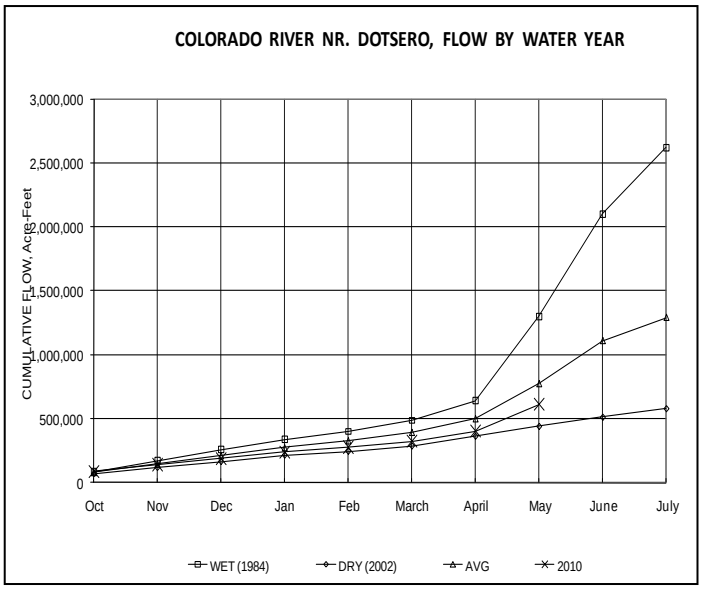
Dillon Reservoir began spilling around May 25th, with no diversion anticipated through Roberts Tunnel until early June. The resulting increase for potential spilling of Green Mountain Reservoir this year will increase the release rate in early June. Coordinated Reservoir Operation will warrant additional release increases, which, combined with potential high run-off, could lead to above average releases from Green Mountain Reservoir. Shoshone Power Plant turbine operations remain sporadic, with both turbines scheduled to be removed from service for maintenance in early June. Grand Valley Irrigators currently have sufficient water to satisfy their needs.

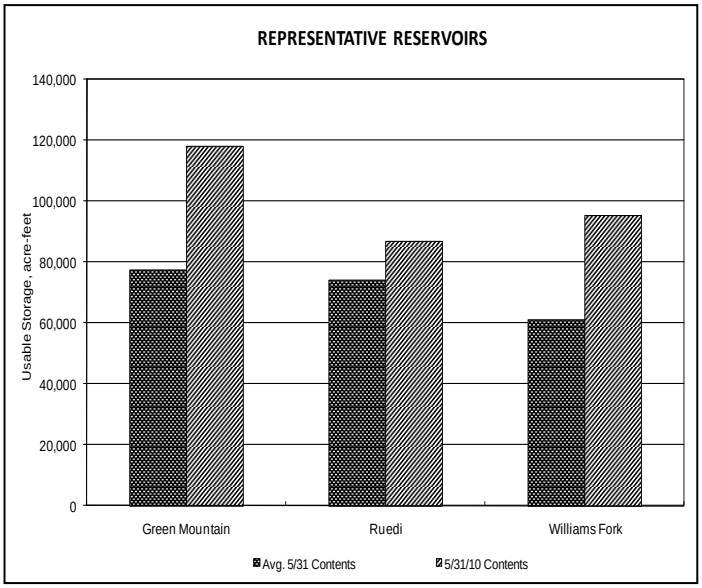
Public Use Impacts

Although not anticipated, minor flooding could pose a problem depending on the rate of run-off. Ruedi Reservoir releases in excess of 300 cfs will continue to draw criticism from the local fishing industry which experiences a drop in fishing activity at higher flows. Higher releases are typically associated with increasing Fryingpan drainage run-off in late spring.

Additional work on the Glenwood Whitewater Park is nearing completion, including spectator seating and observation decks, along with specific take outs on both banks of the river. Although the park improvements are not formally scheduled for opening until June 10th, the Whitewater Stand Up paddling Championship was held on Memorial Day.







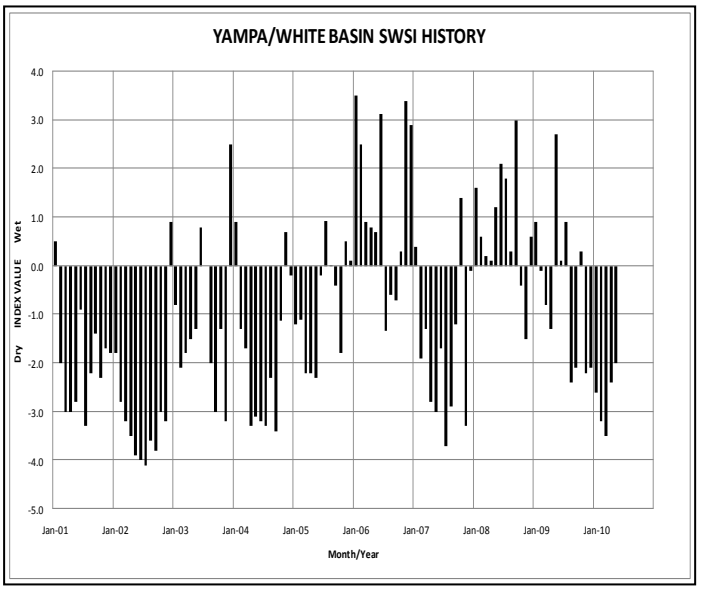
Basinwide Conditions Assessment

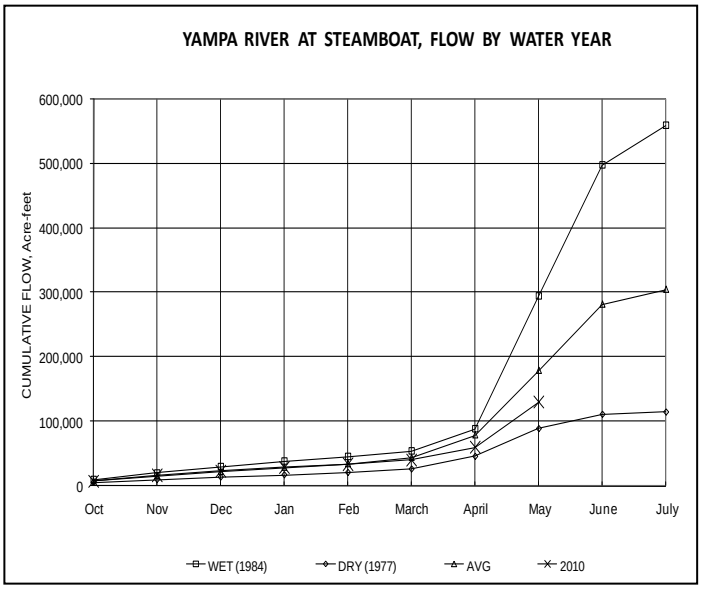
The SWSI value for the month was -2.0. Flow at the gaging station Yampa River at Steamboat was 1,137 cfs, as compared to the long-term average of 1,625 cfs.

May precipitation was well above average in the Yampa, White, and North Platte River basins. Precipitation for the month, as measured at the SNOTEL sites operated by NRCS, was reported at approximately 135% of average for the Yampa/White River basin and 130% of average for the North Platte River basin. Precipitation for the combined Yampa, White, and North Platte River basins is up to 95% of average for the water year to-date.

The snow water equivalent (SWE) as of May 31, 2010 was 90% of average for the North Platte River basin, 67% of average for the Yampa River basin, and 75% of average for the White River basin.

In spite of increased precipitation during the past couple months, NRCS continues to predict below average runoff this spring and summer in the Yampa and White River basins, with the exception of the Little Snake watershed, which is projected to experience above average runoff in June and July. Above average to well above average runoff is predicted for the North Platte River basin. The latest runoff forecasts from NRCS for the June through July period are 102% of average for the North Platte River near Northgate, 80% of average for the Yampa River near Maybell, 115% of average for the Little Snake River near Lily, and 67% of average for the White River near Meeker. The lowest runoff forecast is for the Upper Yampa River basin. Streamflow volume is projected to be 51% of average for the Yampa River above Stagecoach for the June through July runoff period.





Outlook

Fish Creek Reservoir storage level continued to increase in May and was reported at approximately 83% of capacity at the end of the month. Yamcolo Reservoir continued to spill throughout the month. Elkhead Creek Reservoir was operated to maintain the reservoir at or near capacity, with some periods of spilling reported in May. Water stored in Fish Creek Reservoir is used primarily for municipal purposes, Yamcolo Reservoir for irrigation purposes, and Elkhead Creek Reservoir for municipal, industrial, and recreational purposes, as well as fish recovery releases.

Administrative/Management Concerns

Although precipitation increased dramatically in April and May, precipitation and snowpack levels remain below average for the water year. In general, below average runoff is projected and it is anticipated that many Division 6 streams will go under administration this irrigation year. A call was placed on Talamantes Creek on March 30 and it remains under administration. Calls have also been placed on Pot Creek on May 19 and Middle Hunt Creek on May 27.

Public Use Impacts

Many anglers and kayakers have returned to the Yampa River to enjoy the snowmelt season and peak river flow. High mountain lakes and parks are opening and recreationists are enjoying boating and fishing opportunities.

Basinwide Conditions Assessment

The SWSI value for the month was +0.6. Flows at the Animas River at Durango averaged 2,133 cfs (92% of average). The flow at the Dolores River at Dolores averaged 1,571 cfs (91% of average). The La Plata River at Hesperus averaged 145 cfs (86% of average).

The month of May in Durango was the driest since 2004 with only 0.02 inches of rain, 1.8% of the 30-year average of 1.09 inches. However, precipitation to date in Durango, for the 2010 water year, is 13.96 inches, compared to the average of 12.52 inches.

The average high and low temperatures for the month of May in Durango were 71° and 36°. In comparison, the 30-year average high and low for the month is 72° and 39°.

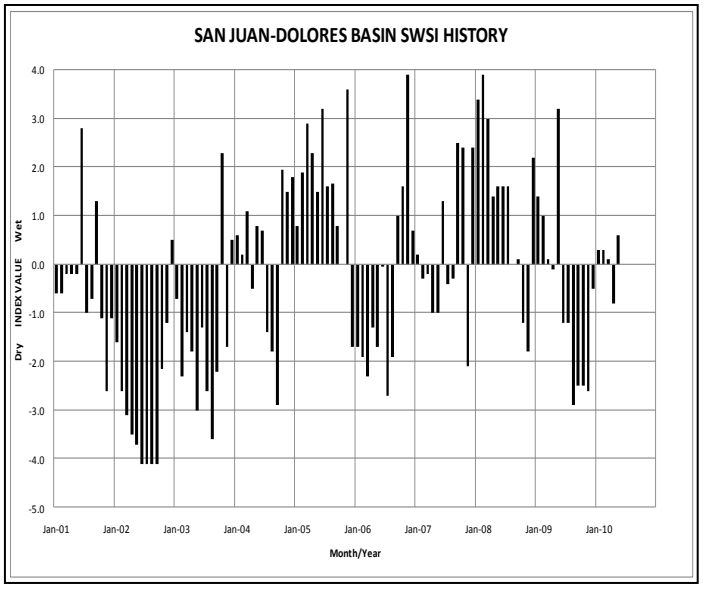
At the end of the month Vallecito Reservoir contained 112,940 acre-feet compared to its average content of 88,166 acre-feet (128% of average). McPhee Reservoir was up to 381,429 acre-feet compared to its average content of 325,289 (117% of average), while Lemon Reservoir was up to 31,810 acre-feet as compared to its average content of 30,816 acre-feet (105% of average).

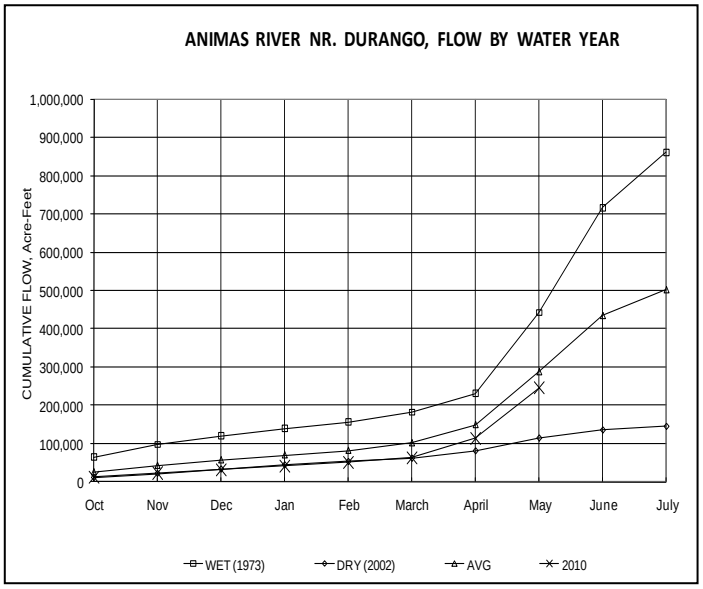
Outlook

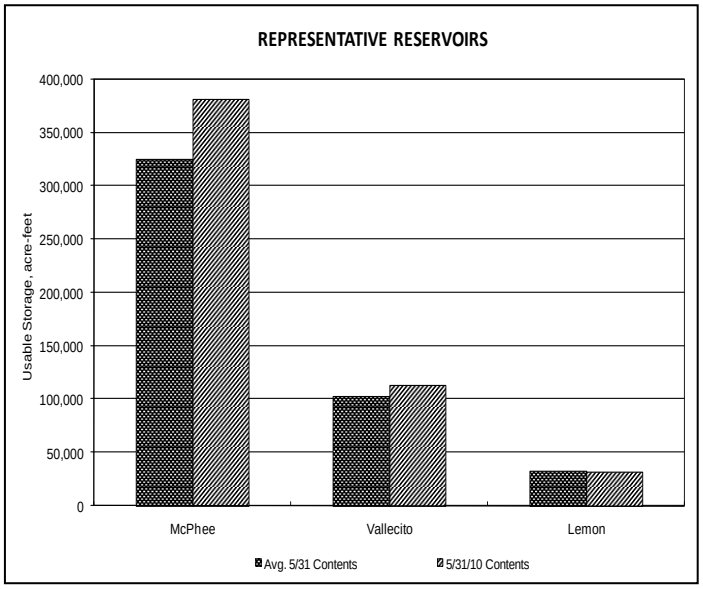
Data for the month of May shows area basin snowpack is 20% of average. The first week of June has been unseasonable warm, and the less-than-average snowpack has been melting quickly. If warm, dry weather persists, summer stream flows can be expected to be below their average historical average.

Administrative/Management Concerns

The La Plata River compact between Colorado and New Mexico went on call May 5th and continues to remain on call. The compact requires that half the flow at the upper index gages (Hesperus and above) must be delivered across the Stateline the following day.







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