Water Availability Task Force Meeting

April 14, 2011

March (April 1) SWSI Report

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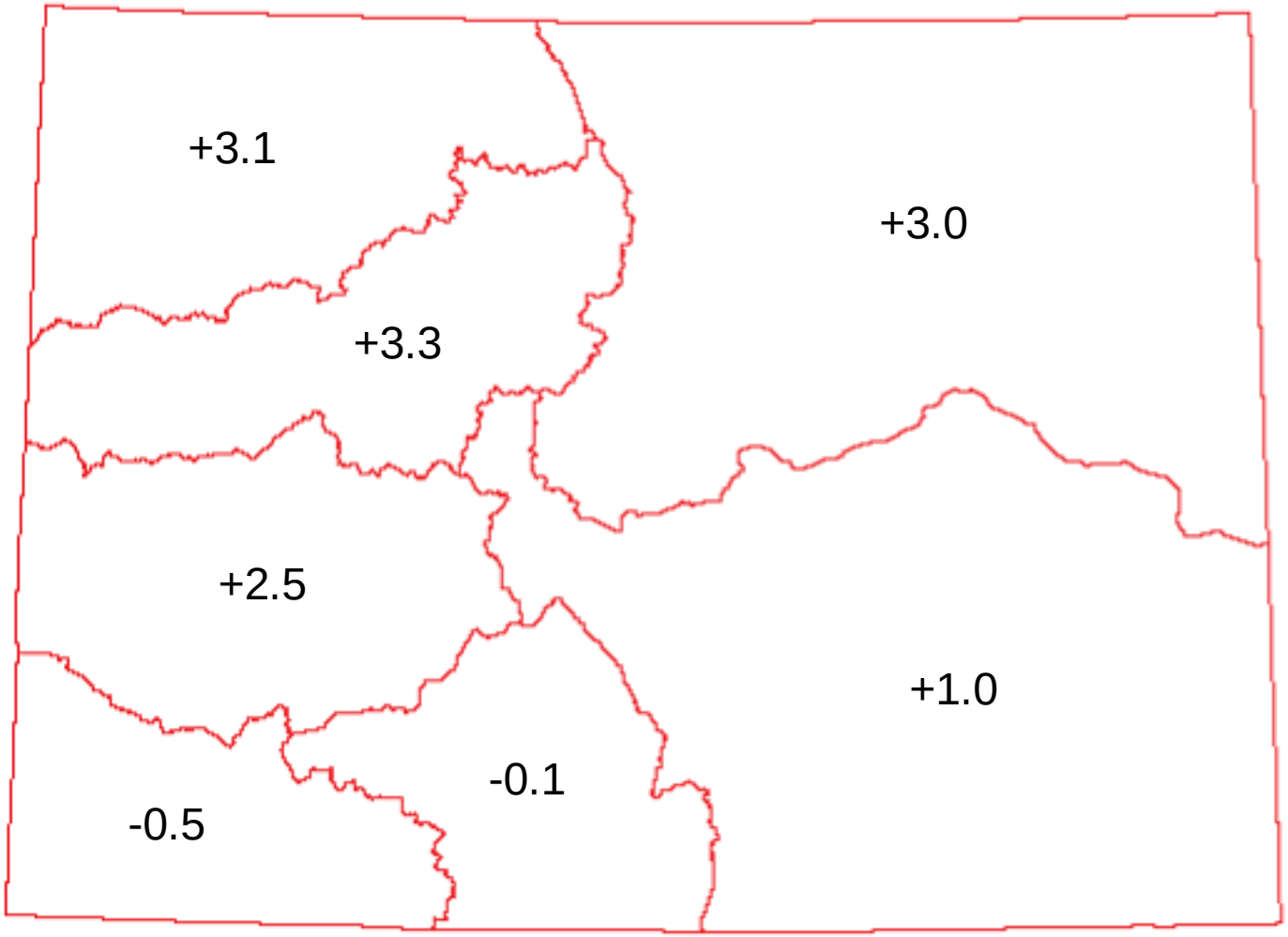
Colorado Division of Water Resources

Winter SWSI

- For the winter period of November – April, the SWSI value is calculated by the Natural Resources Conservation Service (NRCS)

- The components used are Snowpack (P_{SP}), Precipitation (P_{PCP}), and Reservoir Storage (P_{RS}), along with each basin's winter weighting factors

Surface Water Supply Index for Colorado



April 1, 2011

Division 1 – South Platte Basin

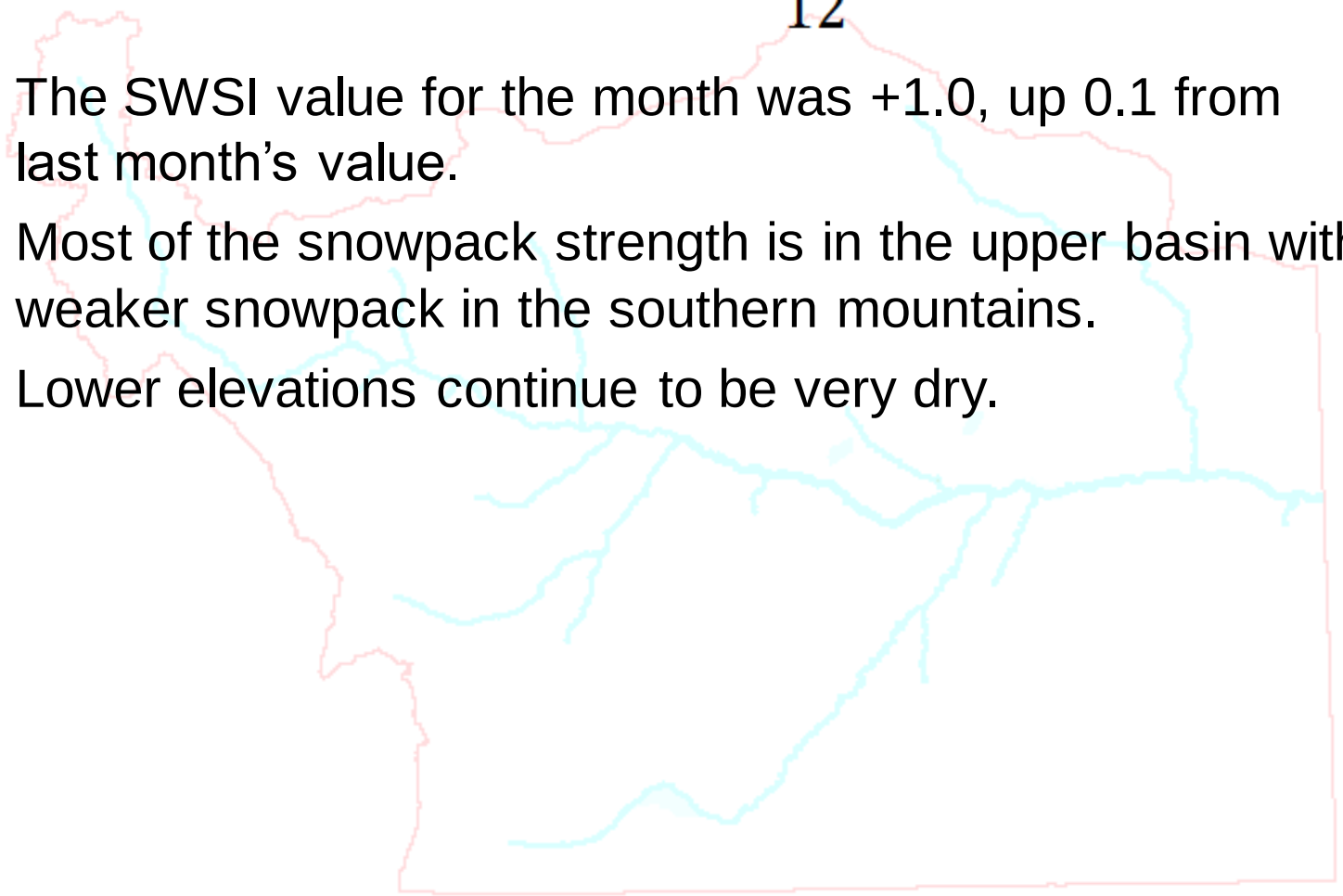
$$SWSI = \frac{(0.27 \times P_{SP}) + (0.18 \times P_{PCP}) + (0.55 \times P_{RS}) - 50}{12}$$

- The SWSI value for the month was +3.0, same as last month's value.
- Split pattern of snow in the mountains with little precipitation on the plains.
- Early significant wildfires in both the foothills and on the plains.
- Above average snowpack indicates Front Range water supply should be excellent.
- Eastern plains may have difficult water supply situation toward end of irrigation season as reservoir storage will likely be exhausted before crops are finished.

Division 2 – Arkansas Basin

$$SWSI = \frac{(0.51 \times P_{SP}) + (0.34 \times P_{PCP}) + (0.15 \times P_{RS}) - 50}{12}$$

- The SWSI value for the month was +1.0, up 0.1 from last month's value.
- Most of the snowpack strength is in the upper basin with weaker snowpack in the southern mountains.
- Lower elevations continue to be very dry.



Division 3 – Rio Grande Basin

$$SWSI = \frac{(0.63 \times P_{SP}) + (0.32 \times P_{PCP}) + (0.05 \times P_{RS}) - 50}{12}$$

- The SWSI value for the month was -0.1, down 0.5 from last month's value.
- Snowpack and streamflow are below average for the entire basin. Lower and mid-elevations have little or no snowpack.
- Sangre de Cristo mountains have especially poor snowpack. Runoff is predicted to be only 30 to 50% of normal.
- The San Luis Valley Well Rules Advisory Committee will re-convene on May 13, 2011 at 10:00 a.m. on the Adams State campus. More details are available by contacting the Division office.

Division 4 – Gunnison Basin

$$SWSI = \frac{(0.54 \times P_{SP}) + (0.36 \times P_{PCP}) + (0.10 \times P_{RS}) - 50}{12}$$

- The SWSI value for the month was +2.5, no change from last month's value.
- Northern areas (Grand Mesa) have above average snowpack, southern areas (Lake City and above Ridgeway Reservoir) are at average, and the southwest (San Miguel) portion is at below average snowpack.
- As of April 1, only a few minor dust on snow events Hoping trend continues to avoid a quick runoff.
- April is predicted to be hot and dry for the Gunnison basin.

Division 5 – Colorado Basin

$$SWSI = \frac{(0.51 \times P_{SP}) + (0.34 \times P_{PCP}) + (0.15 \times P_{RS}) - 50}{12}$$

- The SWSI value for the month was +3.3, up 0.7 from last month's value.
- Heavy precipitation in late March increased Upper Colorado basin snowpack to 128% of average.
- Basin wide river flows should be above average in April as runoff and reservoir releases begin to open storage capacity to collect anticipated higher than usual runoff.
- Lake Granby is likely to spill this season.
- Projected additional release of 3.13 million acre-feet into Lake Mead will likely avoid shortages on the lower Colorado River for up to 5 years.
- Spring skiing still open (through April 24th) at Aspen Highlands!

Division 6 – Yampa/White Basin

$$SWSI = \frac{(0.60 \times P_{SP}) + (0.40 \times P_{PCP}) - 50}{12}$$

- The SWSI value for the month was +3.1, up 0.5 from last month's value.
- March precipitation and total (water year) precipitation are above average.
- Above average to well above average spring and summer streamflows predicted for the Yampa, White, and North Platte River basins.

Division 7 – San Juan/Dolores Basin

$$SWSI = \frac{(0.54 \times P_{SP}) + (0.36 \times P_{PCP}) + (0.10 \times P_{RS}) - 50}{12}$$

- The SWSI value for the month was -0.5, down 0.5 from last month's value.
- March precipitation was on the low end (89th out of 117 years on record).
- Snowpack is below average, at 89%, which is lower than last month.
- Base flow in most, if not all rivers within the basin remained near average.
- Pine Ridge Ditch was able to operate and fill the reservoir that serves the Durango West subdivision.

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
303-866-3581; www.water.state.co.us

April 2011

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 snowpack, reservoir storage, and precipitation for the winter period of November through April (December 1 through May 1). During the winter period, snowpack 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 March (April 1) range from a high value of +3.3 in the Colorado Basin to a low value of -0.5 in the San Juan/Dolores Basin. Three of the basins (Arkansas, Colorado and Yampa/White) experienced a gain from the previous month's value, two of the basins (Rio Grande and San Juan/Dolores) experienced a loss from the previous month's value, and the remaining two basins (South Platte and Gunnison) experienced no change from the previous month's value.

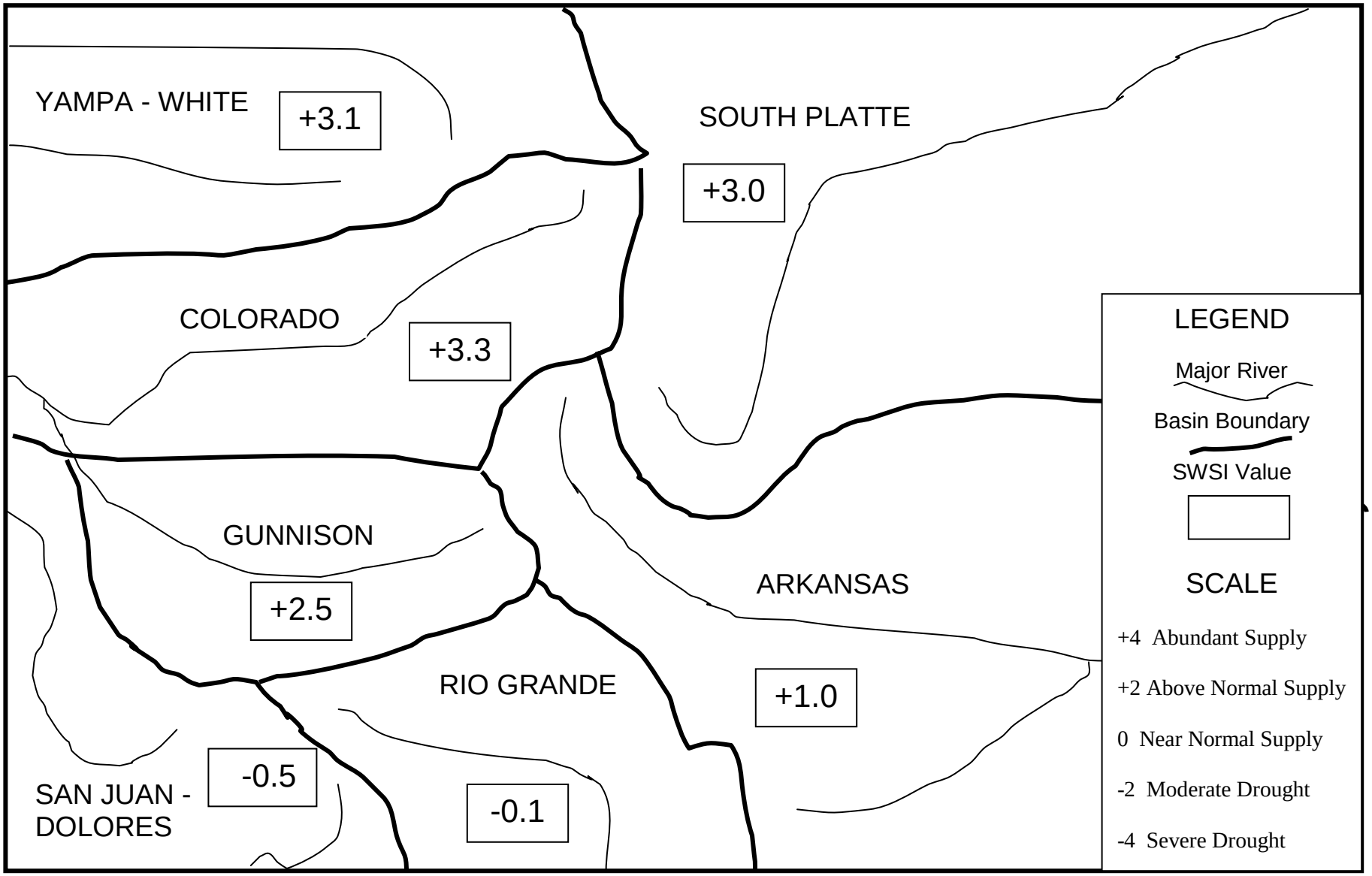
The following SWSI values were computed for each of the seven major basins for April 1, 2011, and reflect the conditions during the month of March.

Basin	April 1, 2011 SWSI Value	Change From Previous Month	Change From Previous Year
South Platte	+3.0	0.0	+1.9
Arkansas	+1.0	+0.1	+2.1
Rio Grande	- 0.1	- 0.5	- 1.9
Gunnison	+2.5	0.0	+2.8
Colorado	+3.3	+0.7	+5.4
Yampa/White	+3.1	+0.5	+6.6
San Juan/Dolores	- 0.5	- 0.5	- 0.6

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



April 1, 2011

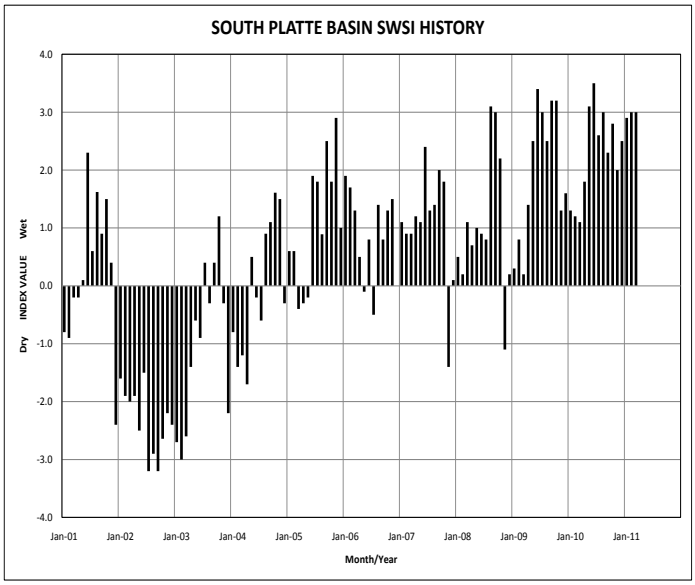
Basinwide Conditions Assessment

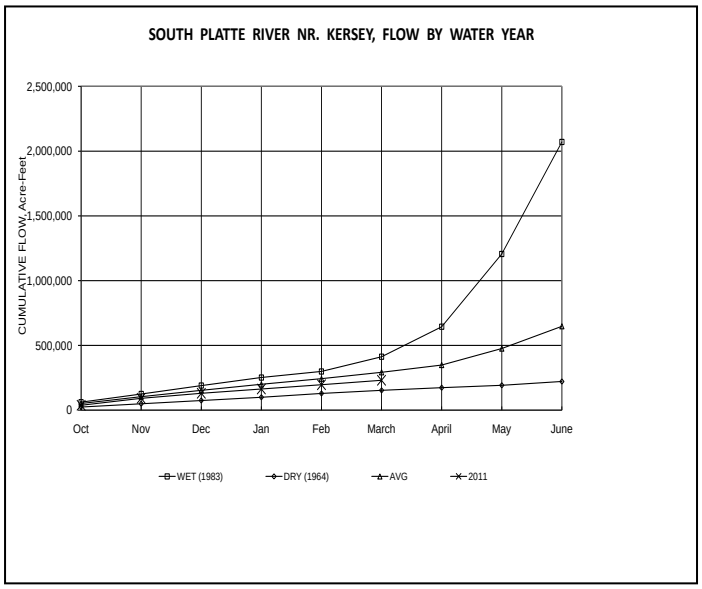
The SWSI value for the month was +3.0. The Natural Resources Conservation Service reports that April 1 snowpack is 123% of normal. Cumulative storage for the six reservoirs graphed on this page was 106% of normal as of the end of March. Cumulative storage in the major plains reservoirs (Julesberg, North Sterling, and Prewitt) is at 99% of capacity. Cumulative storage in the major upper-basin reservoirs (Cheesman, Eleven Mile, Spinney, and Antero) is at 94% of capacity. Flow at the gaging station South Platte River near Kersey was 558 cfs, as compared to the long-term average of 691 cfs. Flow at the Colorado/Nebraska state line averaged 205 cfs.

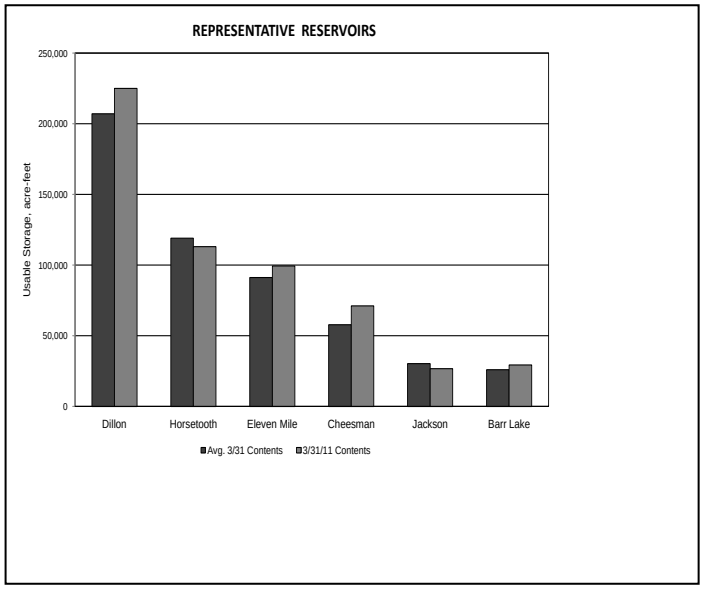
Outlook

The free river ride for most of the mainstem below metro Denver ended on March 16 and by March 31 the upper end of the mainstem had moved to a direct flow call. This was brought about by the very warm and dry conditions, as evidenced by the early significant wildfires in both the foothills and on the plains. The split pattern of snow in the mountains keeping the snowpack above average (122% on April 1) with little precipitation on the plains continued. Reservoir storage is the second bright spot in water availability with the end of March readings at 99% of average for the basin as a whole and the major reservoirs east of Kersey all full. This happened despite the 4th consecutive month of below average stream flow at the Kersey gage.

The April outlook is for a higher probability of continued warm and dry conditions for the lower elevations of the South Platte basin. However, with the water content of the snowpack now above the average high for the season, the Front Range water supply should be excellent. Without a change in the current precipitation pattern, the eastern plains may have a difficult water supply situation toward the end of the irrigation season as reservoir storage will likely be exhausted before the crops are finished.







Basinwide Conditions Assessment

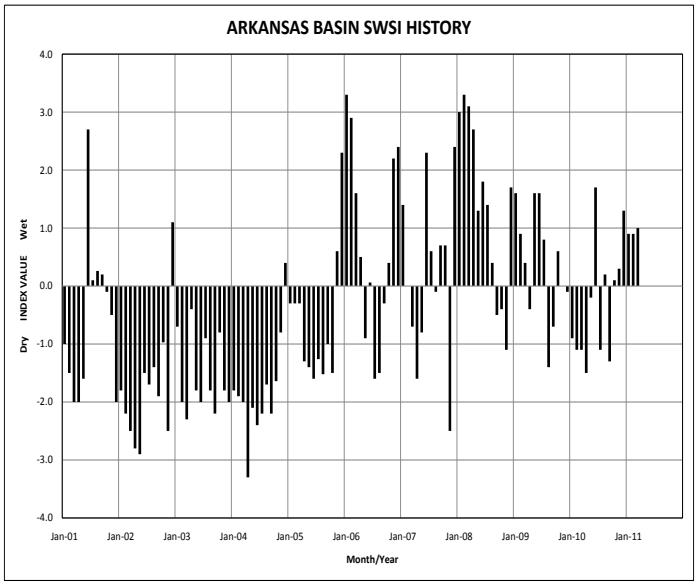
The SWSI value for the month was +1.0. The Natural Resources Conservation Service reports that April 1 snowpack is 96% of normal. Flow at the gaging station Arkansas River near Portland was 544 cfs, as compared to the long-term average of 381 cfs. Storage in Turquoise, Twin Lakes, Pueblo, and John Martin reservoirs totaled 98% of normal as of the end of March.

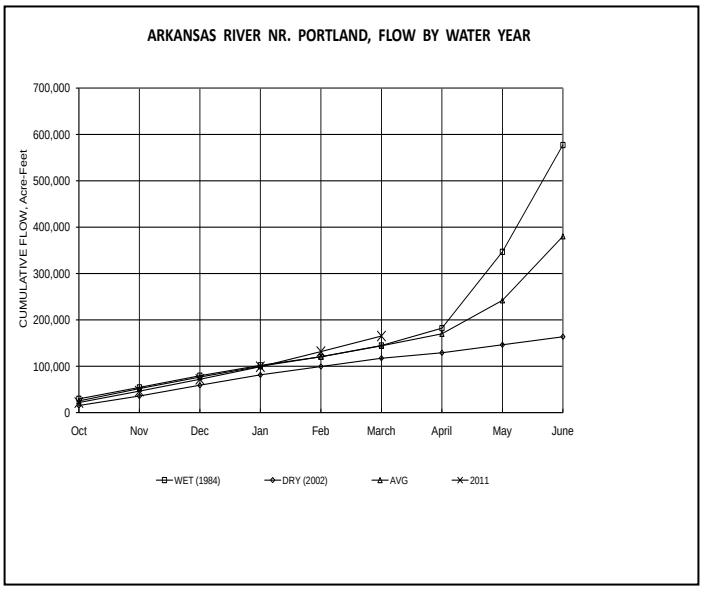
Outlook

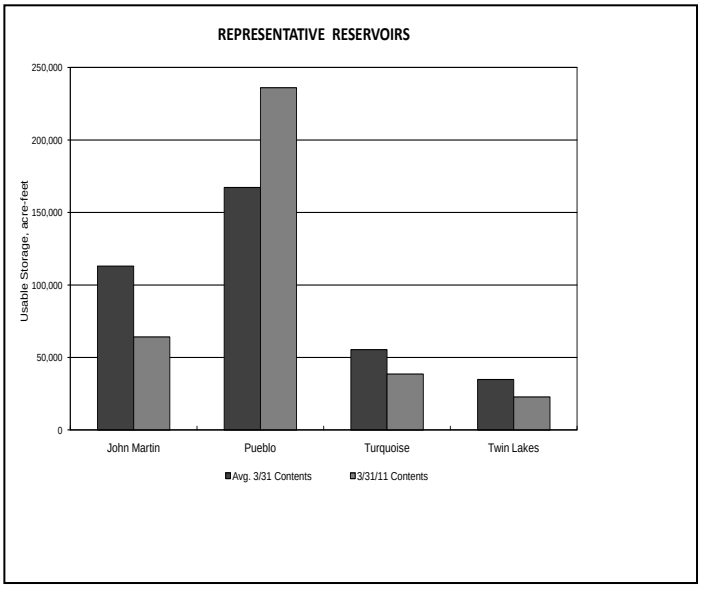
Total distributed reservoir storage following the Pueblo Winter Water Program was 121,484 acre-feet, including 44,554 acre-feet in Pueblo Reservoir, 65,411 acre-feet in off-channel reservoirs, and 11,159 acre-feet in John Martin Reservoir (after distribution to accounts). Conservation Storage in John Martin Reservoir through March 31, 2010 totaled 21,719 acre-feet.

Administrative/Management Concerns

Lower elevations in the basin continue to be very dry; however the overall basin snowpack hovered just below average with most of the snowpack strength in the upper basin and a weaker snowpack in the southern mountains.



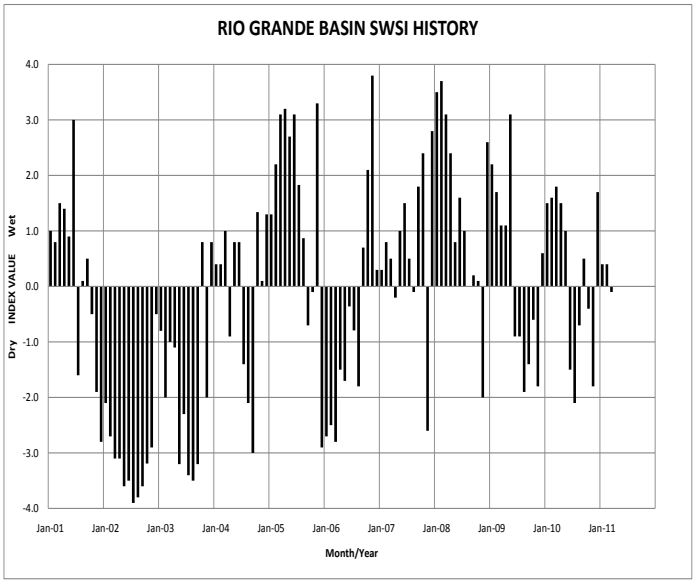




Basinwide Conditions Assessment

The SWSI value for the month was -0.1. The Natural Resources Conservation Service reports that April 1 snowpack is 78% of normal. Storage in Platoro, Rio Grande, and Santa Maria reservoirs totaled 104% of normal as of the end of March.

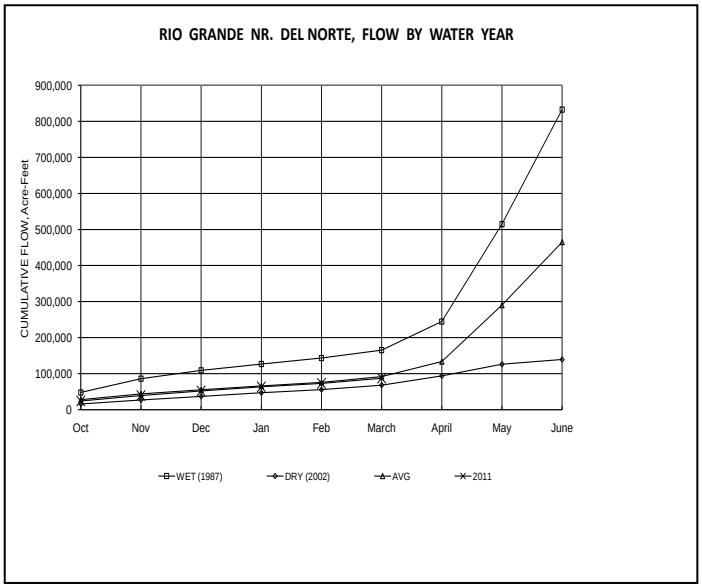
Flow at the gaging station Rio Grande near Del Norte averaged 235 cfs (88% of normal). The Conejos River near Mogote had a mean flow of 70 cfs (89% of normal). Streamflow in the upper Rio Grande basin was generally below average during March as snowfall on the mountains and plains was scarce after mid-month.



Outlook

The month of March had warmer and drier conditions when compared to long-term records. Year to date precipitation is below normal for the San Luis Valley. NOAA weather forecasts for the next three months call for below normal precipitation and warmer than normal temperatures.

The recent coordinated forecast by the NRCS and NWS predict below normal runoff conditions throughout the upper Rio Grande basin. The best forecast within the basin is 76% of normal for the Rio Grande, Saguache and Conejos drainages. But the Sangre de Cristo Mountains have very poor snowpack. Runoff will be only 30 to 50% of normal. Very little or no snowpack at the lower and mid-elevations is much of the reason for these forecasts.

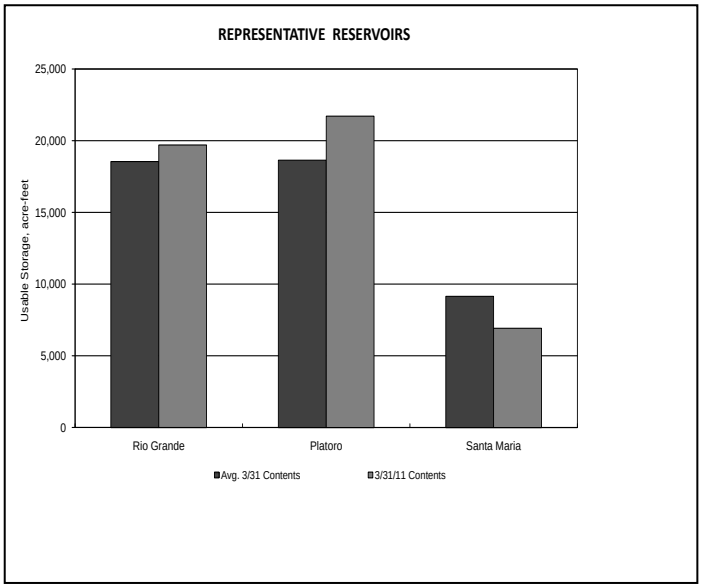


Administrative/Management Concerns

The San Luis Valley Well Rules Advisory Committee will re-convene on May 13, 2011 at 10:00 a.m. on the Adams State campus. More details are available by contacting the Division office. This group of appointees is tackling the task of crafting rules governing the withdrawal of ground water in Water Division 3. Implementation of these rules will require non-exempt well users to replace all injurious depletions from the use of their wells. This is the first meeting of the group after several months of effort by the RGDSS modeling team to finalize well pumping response functions.

Public Use Impacts

Due to the warm and dry conditions, all drainages in the Rio Grande basin began irrigation season diversions before April 1. Implementation of the State Engineer's Policy 2010-1, Irrigation Season Policy for Division No. 3, began with shut-off dates for the 2010 season. But the 2011 irrigation season start-up is the first under these new guidelines. The irrigation season policy pertains to both surface diversions and irrigation well use.

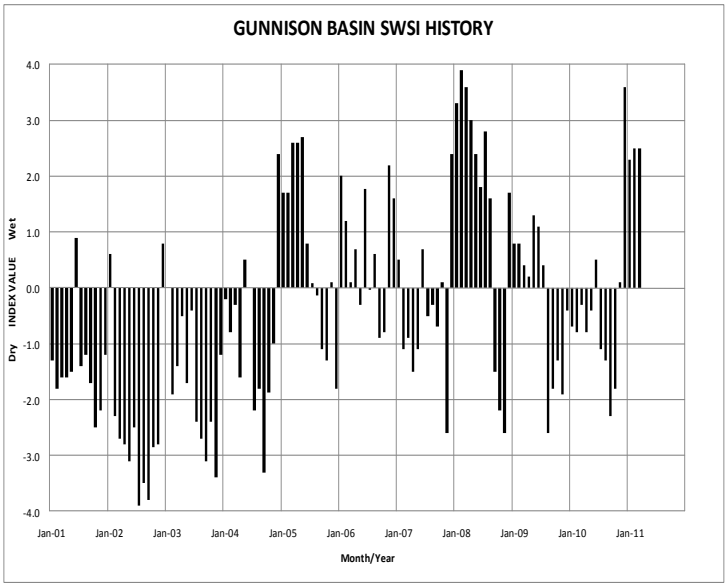


Basinwide Conditions Assessment

The SWSI value for the month was +2.5. The Natural Resources Conservation Service reports that April 1 snowpack is 115% of normal. Flow at the gaging station Uncompahgre River near Ridgeway was 52.1 cfs, as compared to the long-term average of 62.2 cfs. Storage in Taylor Park, Crawford, and Fruitland reservoirs totaled 113% of normal as of the end of March.

March precipitation in the Gunnison basin ended near normal at between 85 and 100% of normal. Excellent snowpack conditions continue in the Gunnison Basin and we expect to end the year well above normal since on April 1st we sit at 112% of the average seasonal total. As expected at the beginning of the season due to the La Nina conditions in the Pacific, conditions vary greatly between the northern and southern areas of the basin. For example, northern areas such as the Grand Mesa sit at 128% of seasonal total while the southern areas such as Lake City and above Ridgway Reservoir are right at average.

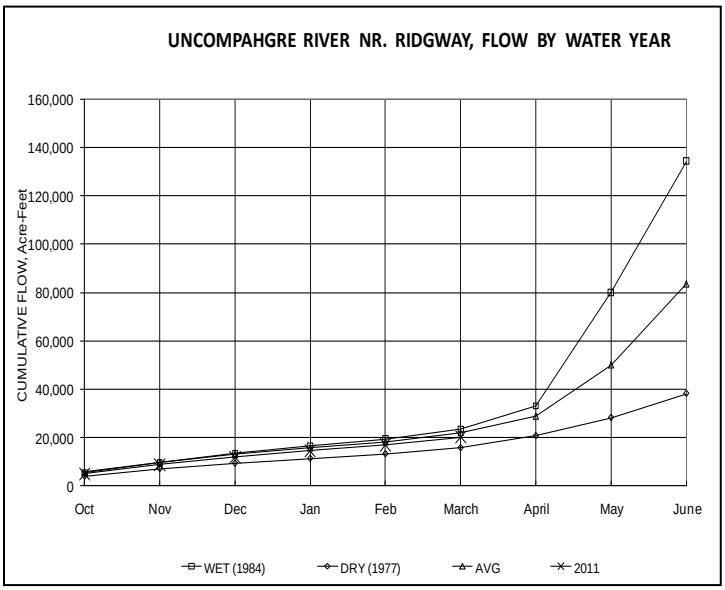
Unfortunately, snowpack in the San Miguel portion of Division 4 dropped to 88% of normal during March because of well below average precipitation (50 to 69% of average) experienced during March.



Outlook

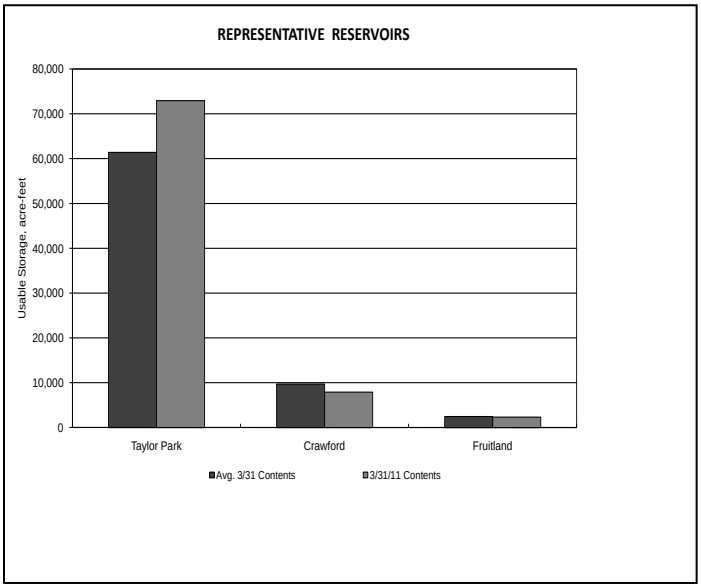
It appears that we will come close to equaling the NRCS predictions of 116% of seasonal snowpack as we currently are at 112% and snowpack typically peaks during the week of April 8th. As of April 1st we have only experienced a few minor dust on snow events and people in the basin are keeping their fingers crossed that it stays that way so that our snowpack runs off a bit more slowly than the past two years. Only time will tell, however, since a good portion of the windy spring season remains.

The National Climate Center predicts a good chance that the Gunnison basin will experience higher than average temperatures and lower than average precipitation during the next 30 days while predicting closer to equal chances for average temperatures and precipitation during the 90 day outlook period.



Administrative/Management Concerns

Based on the latest USBR Water Supply Forecast, Blue Mesa is expected to fill in 2011 with unregulated inflow predicted to be 800,000 acre-feet. Releases from Blue Mesa have been increased during March to provide storage for the anticipated above average inflow (111% of normal). On April 8th, the USBR was releasing 1,800 cfs from Crystal Dam with an anticipated peak one day release that could be around 7,500 cfs in order to achieve a peak in the Black Canyon of 6,370 cfs as decreed in the Black Canyon Federal Reserve water right. This peak will require a spectacular spill from the Crystal Dam spillway for a third year in a row. Due to the heavy snowpack in the North Fork of the Gunnison, this peak will be timed with runoff from the North Fork in an attempt to reach the endangered fish flow recommendation of 11,700 cfs at Whitewater while preventing flooding in the Delta area.



Public Use Impacts

The Uncompahgre Valley Water Users began operating their ditches, including the Gunnison Tunnel, later than normal this year with the Gunnison tunnel still remaining below 200 cfs on April 1st.

Basinwide Conditions Assessment

The SWSI value for the month was +3.3. The Natural Resources Conservation Service reports that April 1 snowpack is 128% of normal. Flow at the gaging station Colorado River near Dotsero was 913 cfs, as compared to the long-term average of 1072 cfs. Storage in Green Mountain, Ruedi, and Williams Fork reservoirs totaled 125% of normal as of the end of March.

Outlook

Basin wide river flows should increase significantly above average in April with beginning run-off and reservoir release increases to open storage capacity for anticipated high runoff this season. Heavy precipitation in late March increased Upper Colorado Basin wide snowpack to 128 percent of average for snow water equivalent on April 1st. This is a large contrast from the April 1, 2010 Upper Colorado Basin snowpack which was just 77 percent of average. Sites in the Roaring Fork Basin including Independence Pass, Ivanhoe (upper Fryingpan Valley), and McClure Pass all exceeded 120 percent of average. Roaring Fork River flows will likely increase significantly from added increased Ruedi Reservoir releases throughout April.

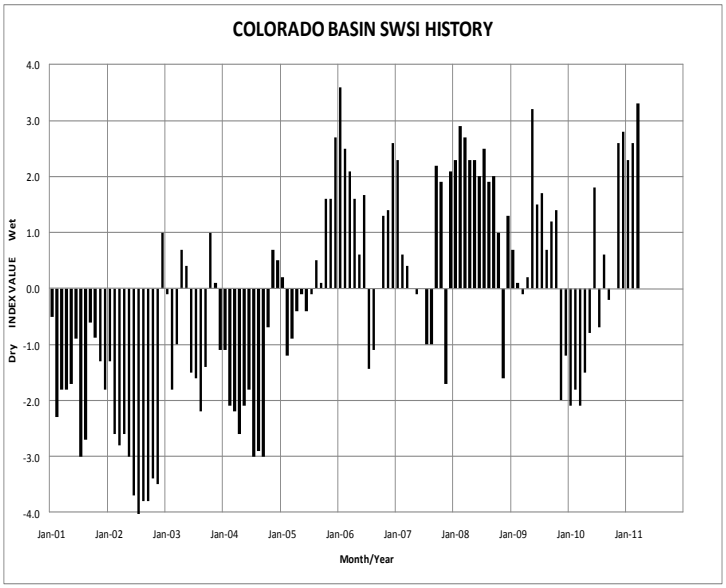
Administrative/Management Concerns

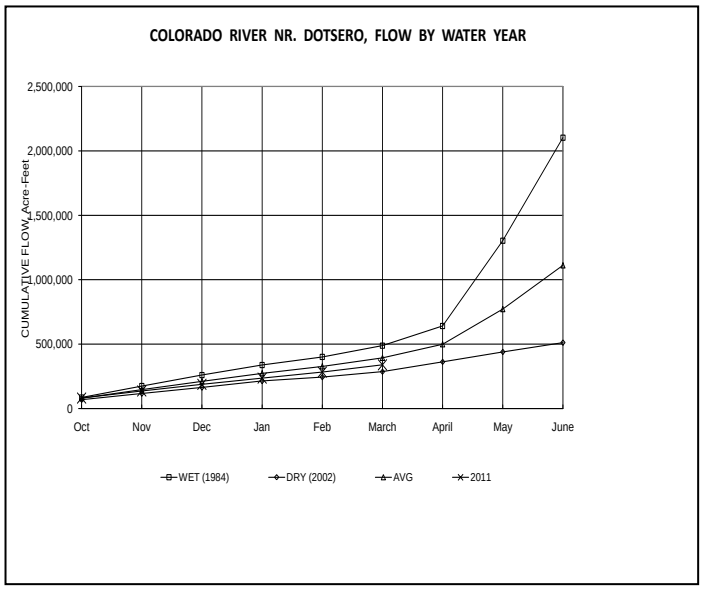
Lake Granby will likely spill this season. Willow Creek Reservoir is currently releasing 330 cfs with potential for release of up to 1100 cfs by May. Green Mountain Reservoir releases were increased by an additional 50 cfs in early April. Ruedi Reservoir releases have also increased by nearly 100 cfs in early April.

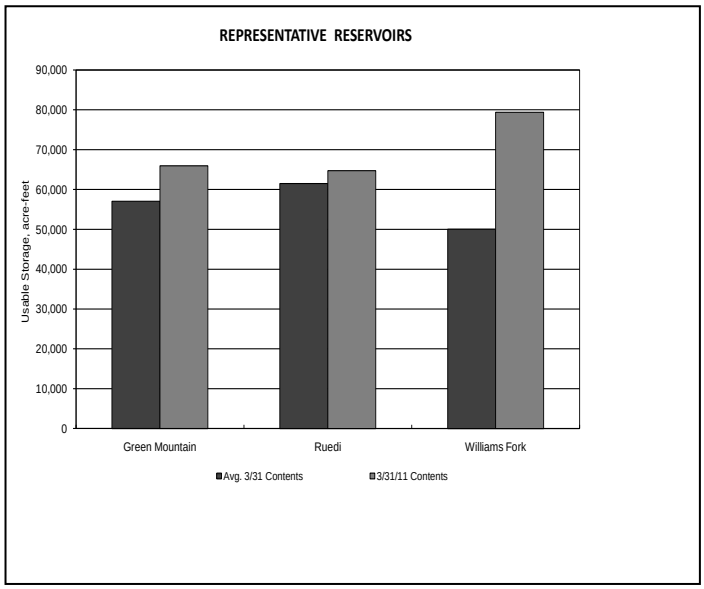
Public Use Impacts

Heavy snow in late March boosted Aspen/Snowmass ski area snow with the base depth at Highland Bowl and the top of Snowmass reaching 115 inches. Nov. 1 through March 31 snowfall at Snowmass reached 298 inches compared to the 206 inch total over the same five-month period in 2009-2010. As a result, Aspen Highlands will remain open until April 24th, while Aspen Mountain and Snowmass will close on April 10th.

The projected additional release of 3.13 million acre-feet into Lake Mead, reported last month, will likely avoid shortages on the lower Colorado River for up to five years. Lake Mead dropped to an elevation of 1082 feet last fall – seven feet above the level at which a shortage would have been declared. The lake's elevation is projected to reach 1,112.5 feet by the end of the year.







Basinwide Conditions Assessment

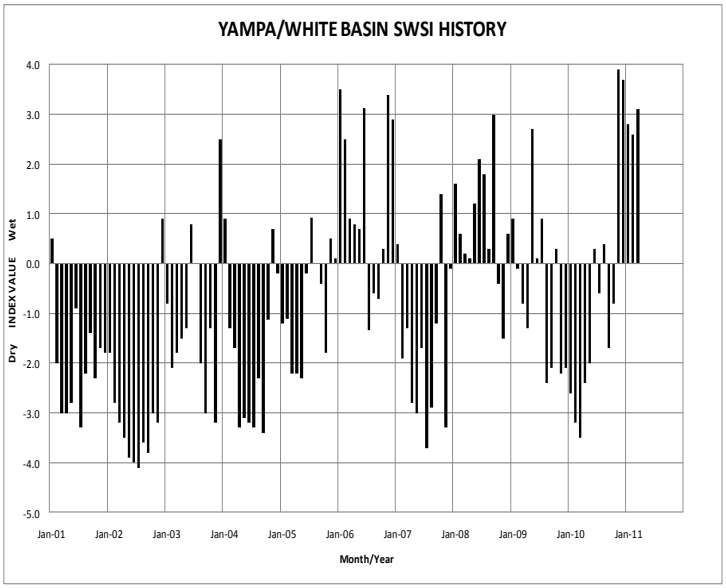
The SWSI value for the month was +3.1. Flow at the gaging station Yampa River at Steamboat was 169 cfs, as compared to the long-term average of 155 cfs.

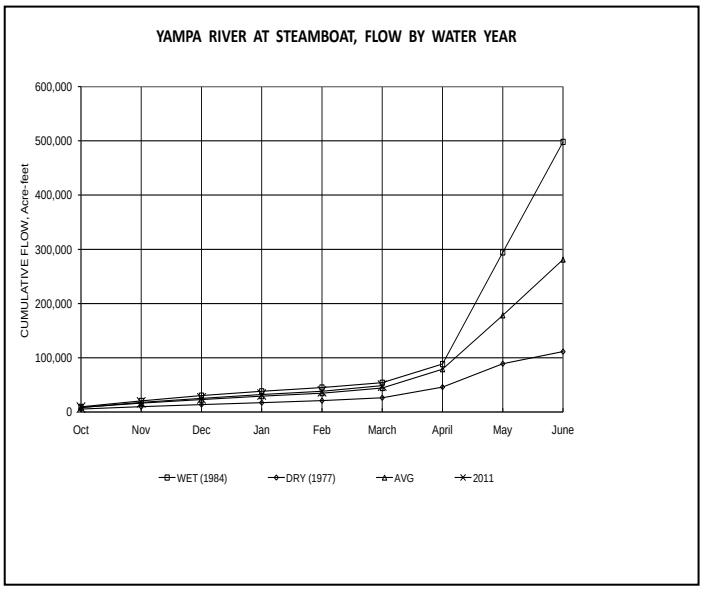
March precipitation was well above the monthly average in the Yampa, White, and North Platte River basins. Precipitation for the month, as measured at the SNOTEL sites operated by NRCS, was reported at approximately 125% of average for the Yampa, White, and North Platte River basins. Total precipitation for the water year as a percent of average to date in the combined basins at the end of March is 129%.

The snow water equivalent (SWE) for the water year to date on March 31, 2011 was 137% of average for the North Platte River basin and 128% of average for the Yampa and White River basins.

As of March 1, 2011, NRCS continues to predict above average to well above average spring and summer streamflows in the Yampa, White, and North Platte River basins. The latest runoff forecasts from the NRCS for the April through July period are 147% of average for the North Platte River near Northgate, 136% of average for the Yampa River near Maybell, 129% of average for the Little Snake River near Lily, and 114% of average for the White River near Meeker.

Currently most of the Division 6 stream gages are closed for the winter season. Seasonal gages will be reopened throughout the month of April.





Outlook

As of March 31st Fish Creek Reservoir was storing 2,675 AF. The capacity of Fish Creek Reservoir is 4,167 AF. Yamcolo Reservoir storage increased during March to 9,090 AF. That volume is 95% of Yamcolo Reservoir's capacity. On March 31st Elkhead Creek Reservoir was storing 20,675 AF. Elkhead storage volume was unchanged from the end of February and represents 83% of capacity. At the end of March, Stagecoach Reservoir was storing approximately 21,900 AF which is 60% of the capacity of 36,460 AF. Water stored in Fish Creek Reservoir is used primarily for municipal purposes, Yamcolo Reservoir for irrigation purposes, and Elkhead Creek Reservoir for municipal, industrial, recreational, and fish recovery releases. Stagecoach Reservoir is primarily used for recreation though a significant amount of stored water is allocated for municipal, industrial, irrigation and augmentation uses. However, water is rarely released for those purposes.

Public Use Impacts

Steamboat Ski Resort had received 415 inches of snow at mid-mountain as of March 31, 2011. Stagecoach Reservoir has approximately 16 to 18 inches of ice with several inches of snow and slush on top. There are still opportunities for ice fishing at both Stagecoach Reservoir and Steamboat Lake State Parks although conditions are changing with warming temperatures.

Basinwide Conditions Assessment

The SWSI value for the month was -0.5. The Natural Resources Conservation Service reports that April 1 snowpack is 89% of normal. Flow at the Animas River at Durango averaged 258 cfs (85% of average). The flow at the Dolores River at Dolores averaged 117 cfs (87% of average). The La Plata River at Hesperus averaged 17.4 cfs (109% of average).

Precipitation in Durango was 0.69 inches for the month, 44% of the 30-year average of 1.57 inches. Precipitation to date in Durango, for the water year, is 7.42 inches, 74% of the 30-year average of 10.01 inches. The average high and low temperatures for the month of March in Durango were 55^{o} and 25^{o}. In comparison, the 30-year average high and low for the month is 54^{o} and 25^{o}.

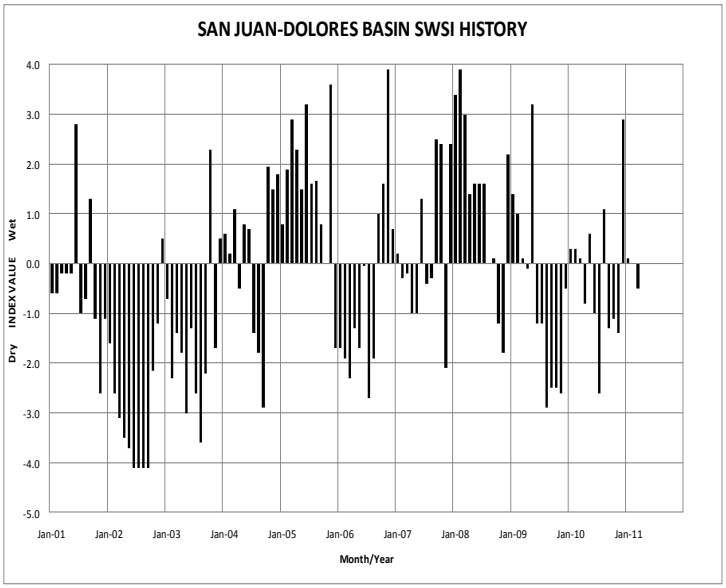
At the end of the month Vallecito Reservoir contained 76,970 acre-feet compared to its average content of 55,461 acre-feet (139% of average). McPhee Reservoir was up to 280,495 acre-feet compared to its average content of 271,508 (103% of average), while Lemon Reservoir was up to 15,070 acre-feet as compared to its average content of 20,213 acre-feet (75% of average).

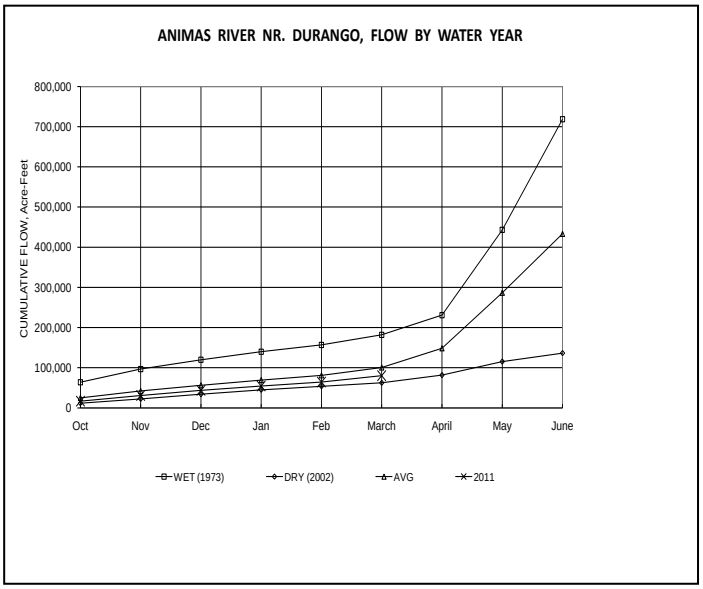
Outlook

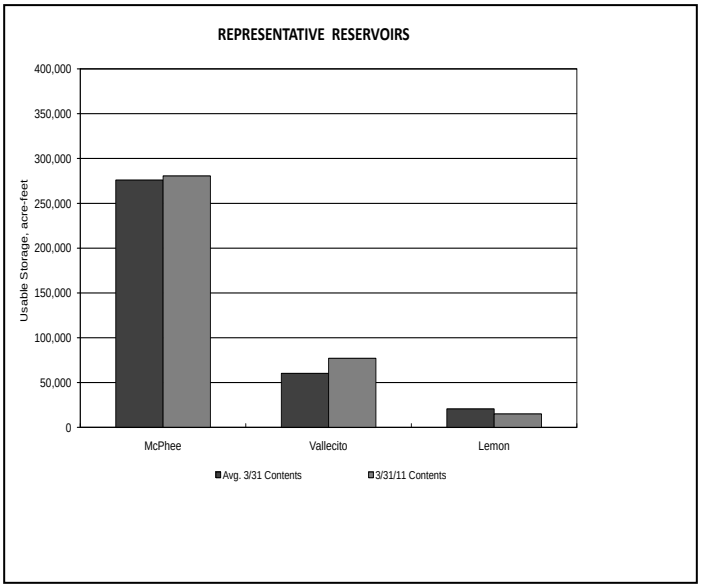
Precipitation (0.69-inches) was one of the lower monthly totals for March in Durango. There are 88 years out of 117 years of record where there was more precipitation than this year. On March 31st the NRCS SNOTEL sites estimated 91% snow-water equivalent within the basin which is slightly lower than last month 101% of average.

Administrative/Management Concerns

The base flow in most, if not all the rivers within the basin remained near average. With the warm spring weather the Pine Ridge Ditch was able to turn on and filled the reservoir that supplies water to the Durango West subdivision. The LaPlata River was not on compact call the entire month of March.







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