### 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; <u>www.water.state.co.us</u>

June 1, 2019

The Surface Water Supply Index (SWSI) is used as an indicator of water supply conditions in the seven major river basins of the state and in each of the 41 smaller watersheds, or HUCs. The Colorado Water Conservation Board (CWCB) completed a major revision to the Colorado Drought Plan in 2010. At that time, Colorado adopted a revised SWSI analysis based on the components shown below, which vary depending on the time of year. The revised SWSI is based on a ranking of total volume in a HUC or major river basin ranked against similar volumes in historical years. For instance, in January, the total volume in a HUC is based on the forecasted runoff at specific locations plus the volume in storage in specific reservoirs, all within the HUC. That total volume is ranked against similar total volumes that occurred each January between 1970 and 2010.

Time Period	SWSI Components
February 1 - June 1	Forecasted Runoff + Reservoir Storage
July 1 - September 1	Previous Month's Streamflow + Reservoir Storage
October 1 - January 1	Reservoir Storage

In 2015, CWCB and the Division of Water Resources (DWR) (both Divisions of the Colorado Department of Natural Resources) completed a software project to implement an automated calculation of the SWSI and to document the underlying hydrologic data. July 1, 2015 was the first month that the automated DNR SWSI was published. The results of each month's analysis are summarized within this report and additional information, maps & data are available at: <u>http://water.state.co.us/DWRDocs/Reports/Pages/SWSIReport.aspx</u>. This report also contains updates about current regional conditions and water matters prepared by each DWR Division Office.

The SWSI calculation for the winter season (February 1 to June 1) is based on forecasted runoff (total volume for runoff season) combined with reservoir storage at the end of last month, in this case May 31. The statewide SWSI values for June 1 are close to average to above average. The SWSI values range from a low of +1.8 in the South Platte Basin and a high of +3.9 in the Rio Grande Basin, forecasted runoff data for June 1 was collected from multiple sources, including NRCS and the National Weather Service for the Colorado Basin, Arkansas Basin, Missouri Basin and West Gulf Basin. Comparing the May 1 SWSI using the forecasted streamflow only from NRCS and comparing the SWSI calculated using the forecasted streamflow from the multiple sources as was done for the June 1 SWSI, found that overall the SWSI become more conservative, with the overall SWSI percent difference from the NRCS forecast streamflow SWSI and the combined forecast streamflow for each basin being: 17% - Arkansas, -33% - Colorado, -22% - Gunnison, 2% - Rio Grande, -35% -San Juan-Dolores, -86% - South Platte and 15% - Yampa-White.

Basin	June 1 SWSI	Change from Previous Month	Change from Previous Year
Arkansas	2.9	1.2	1.5
Colorado	3.3	0.6	3.1
Gunnison	3.5	0.1	5.8
Rio Grande	3.9	1.6	4.4
San Juan-Dolores	2.5	-0.5	5.0
South Platte	1.8	1.0	-0.1
Yampa-White	2.4	2.3	5.0

				SWSI Scale				
-4	-3	-2	-1	0	1	2	3	4
Severe		Moderate		Near Normal	۵	bove Normal	Ab	undant
Drought		Drought		Supply		Supply		Supply



SURFACE WATER SUPPLY INDEX FOR COLORADO BY MAJOR RIVER BASIN

### SURFACE WATER SUPPLY INDEX FOR COLORADO BY HUC



Basin	HUC ID	HUC Name	SWSI	Reservoir Storage NEP	Forecast Flow NEP	Total Vol (AF)
	11020006	Huerfano	1.48	8	87	21,700
⊳	11020010	Purgatoire	1.28	78	78	63,600
vrka	11020001	Arkansas Headwaters	1.94	49	95	371,114
insa	11020005	Upper Arkansas-Lake Meredith	4.00	14	98	652,543
St	11020009	Upper Arkansas-John Martin Reservoir	3.45	66	98	826,535
	11020002	Upper Arkansas	4.03	53	98	834,300
	14010003	Eagle	3.49	76	92	350,000
Co	14010002	Blue	3.34	46	91	363,065
lora	14010004	Roaring Fork	3.33	N/A	90	750,970
Ido	14010001	Colorado Headwaters	3.28	15	89	1,397,520
	14010005	Colorado Headwaters-Plateau	3.42	16	91	2,223,447
	14020003	Tomichi	3.51	14	92	80,995
	14030003	San Miguel	2.73	21	83	112,000
Gu	14020006	Uncompahgre	3.72	90	88	191,145
nni	14020004	North Fork Gunnison	3.36	1	91	226,670
son	14020001	East-Taylor	3.58	N/A	94	347,821
	14020005	Lower Gunnison	3.54	55	92	1,360,000
	14020002	Upper Gunnison	3.44	N/A	94	1,441,120
Rio	13010004	Saguache	4.04	57	99	50,000
G	13010002	Alamosa-Trinchera	2.40	19	82	92,117
ran	13010005	Conejos	3.57	N/A	91	228,579
de	13010001	Rio Grande Headwaters	4.04	36	99	683,288
Sa	14080105	Middle San Juan	3.20	53	86	23,596
ո յլ	14080107	Mancos	1.95	12	73	25,977
Jan	14080102	Piedra	2.20	N/A	76	130,000
-Do	14080101	Upper San Juan	0.49	11	61	352,453
olor	14080104	Animas	3.28	50	90	475,858
es	14030002	Upper Dolores	3.84	77	92	553,587
	10190004	Clear	3.07	84	87	108,000
	10190005	St. Vrain	1.45	16	76	199,757
Sot	10190001	South Platte Headwater	3.85	36	98	243,300
ıth	10190002	Upper South Platte	-0.48	N/A	79	390,300
Pla	10190007	Cache La Poudre	2.43	31	78	396,952
tte	10190006	Big Thompson	0.44	49	68	545,288
	10190003	Middle South Platte-Cherry Creek	2.22	78	77	777,200
	10190012	Middle South Platte-Sterling	2.30	78	77	910,700
Ya	14050003	Little Snake	0.75	N/A	59	170,000
mp	14050005	Upper White	1.24	73	65	175,000
a-V	10180001	North Platte Headwaters	3.99	N/A	98	312,000
Vhi	14050001	Upper Yampa	2.19	N/A	73	427,779
te	14050002	Lower Yampa	1.72	N/A	71	510,000

June 1, 2019 SWSI Values by HUC and Non Exceedance Probabilities (NEP)

NEP is non exceedance percentage for total reservoir storage and streamflow forecast in HUC. Some HUCs do not have any reservoirs considered in the SWSI and are shown as "N/A". Total Vol is the volume of reservoir storage in the HUC plus the streamflow forecast. NEP is calculated compared to the volume historically occurring this month during the period 1970-2010. The following table lists each component considered in each HUC.

SWSI Color Scale	-4 0 (Severe Drought)	0.0 (Normal)	4.0 (Abundant Supply)
July Color Scale.		0.0 (Normat)	The (Abundanc Supply)

June 1.	2019 SWSI	Component	Information -	Streamflow	Forecast &	Reservoir	Storage -	<b>By HUC</b>
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HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP for Month
		CLEAR CREEK RESERVOIR	7,476	59
		HOMESTAKE RESERVOIR	13,147	20
11020001	Arkansas Headwaters	TWIN LAKES RESERVOIR	15,115	8
		TURQUOISE LAKE	40,376	4
		ARKANSAS RIVER AT SALIDA	295,000	95
		CUCHARAS RESERVOIR*	0	14
11020006	Huerfano	CUCHARAS RIVER AT BOYD RANCH NR LA VETA	5,800	52
		HUERFANO RIVER NEAR REDWING**	15,900	96
11020010	Purgatoiro	TRINIDAD LAKE	23,600	53
11020010	Fulgatone	PURGATOIRE RIVER AT TRINIDAD	40,000	78
11020002	Upper Arkansas	PUEBLO RESERVOIR	234,300	78
11020002	оррег Агканзаз	PUEBLO RESERVOIR INFLOW**	600,000	98
		CUCHARAS RIVER AT BOYD RANCH NR LA VETA	5,800	52
		ADOBE CREEK RESERVOIR	7,768	20
11020000	Upper Arkansas-John	HUERFANO RIVER NEAR REDWING**	15,900	96
11020009	Martin Reservoir	PURGATOIRE RIVER AT TRINIDAD	40,000	78
		JOHN MARTIN RESERVOIR	157,067	71
		PUEBLO RESERVOIR INFLOW**	600,000	98
	Upper Arkansas-Lake Meredith	CUCHARAS RIVER AT BOYD RANCH NR LA VETA	5,800	52
		LAKE HENRY	6,393	55
11020005		HUERFANO RIVER NEAR REDWING**	15,900	96
		MEREDITH RESERVOIR	24,450	49
		PUEBLO RESERVOIR INFLOW**	600,000	98
14010002	Rhuo	GREEN MOUNTAIN RESERVOIR	78,065	46
14010002	Dlue	BLUE RIVER INFLOW TO GREEN MOUNTAIN RES**	285,000	91
	Colorado Headwaters	WOLFORD MOUNTAIN RESERVOIR	57,220	75
14010001		WILLIAMS FORK RESERVOIR	80,300	79
		COLORADO RIVER NEAR DOTSERO**	1,260,000	89
1/010005	Colorado Headwaters-	VEGA RESERVOIR	23,447	16
14010003	Plateau	COLORADO RIVER NEAR CAMEO**	2,200,000	91
14010003	Eagle	EAGLE RIVER BELOW GYPSUM**	350,000	92
14010004	Roaring Fork	RUEDI RESERVOIR	65,970	15
14010004	Roaring FOR	ROARING FORK AT GLENWOOD SPRINGS**	685,000	90
		TAYLOR PARK RESERVOIR	58,821	14
14020001	East-Taylor	TAYLOR R INF TO TAYLOR PARK RESERVOIR**	109,000	93
		EAST RIVER AT ALMONT**	180,000	94
14020005	Lower Gunnison	GUNNISON RIVER NR GRAND JUNCTION**	1,360,000	92
14020004	North Fork Cuppicon	PAONIA RESERVOIR	6,670	1
14020004		NORTH FORK GUNNISON R NR SOMERSET**	220,000	91
14030003	San Miguel	SAN MIGUEL RIVER NEAR PLACERVILLE**	112,000	83
1/020002	Tomichi	VOUGA RESERVOIR NEAR DOYLEVILLE	995	90
14020003	TOILICIT	TOMICHI CREEK AT GUNNISON, CO**	80,000	92

HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP for Month
14020006	Uncompaharo	RIDGEWAY RESERVOIR	59,145	55
14020006	Uncompanyre	UNCOMPAHGRE RIVER AT COLONA**	132,000	88
		SILVER JACK RESERVOIR	2,389	3
		FRUITLAND RESERVOIR	7,535	61
		CRAWFORD RESERVOIR	13,230	38
14020002	Upper Gunnison	MORROW POINT RESERVOIR	112,755	38
		LAKE FORK AT GATEVIEW, CO**	153,000	99
		BLUE MESA RESERVOIR	447,211	23
		GUNNISON R INF TO BLUE MESA RESERVOIR**	705,000	94
		MOUNTAIN HOME	1,957	4
42040002	Alemana Trinchara	TERRACE RESERVOIR	6,160	23
13010002	Alamosa-Trinchera	CULEBRA CREEK AT SAN LUIS**	21,000	78
		ALAMOSA CREEK ABOVE TERRACE RESERVOIR	63,000	80
42040005	Canaiaa	PLATORO RESERVOIR	18,579	36
13010005	Conejos	CONEJOS RIVER NEAR MOGOTE	210,000	91
	Rio Grande Headwaters	RIO GRANDE RESERVOIR	6,154	6
10010001		CONTINENTAL RESERVOIR	16,104	99
13010001		SANTA MARIA RESERVOIR	21,030	92
		RIO GRANDE NEAR DEL NORTE	640,000	99
13010004	Saguache	SAGUACHE CREEK NEAR SAGUACHE, CO	50,000	99
	Animas	LEMON RESERVOIR	18,858	11
14080104		FLORIDA RIVER INFLOW TO LEMON RESERVOIR**	52,000	84
		ANIMAS RIVER AT DURANGO**	405,000	92
4 40004 07		JACKSON GULCH RESERVOIR	9,977	77
14080107	Mancos	MANCOS RIVER NEAR MANCOS**	16,000	73
4 40004 05	Middle Con Iven	LONG HOLLOW RESERVOIR	3,596	50
14080105	Middle Sali Juan	LA PLATA RIVER AT HESPERUS**	20,000	86
14080102	Piedra	PIEDRA RIVER NEAR ARBOLES**	130,000	76
		GROUNDHOG RESERVOIR	14,900	14
14030002	Upper Dolores	DOLORES RIVER BELOW MCPHEE RESERVOIR	205,000	92
		MCPHEE RESERVOIR	333,687	53
		LOS PINOS RIVER NEAR BAYFIELD	38,000	9
14080101	Upper San Juan	VALLECITO RESERVOIR	64,453	12
		SAN JUAN RIVER NEAR CARRACAS**	250,000	79
		MARIANO RESERVOIR	5,100	53
		WILLOW CREEK RESERVOIR	6,875	33
		LONE TREE RESERVOIR	8,500	85
10100000	Die Theseses	LAKE LOVELAND RESERVOIR	8,800	45
10190006	Big Inompson	BOYD LAKE	30,900	31
		BIG THOMPSON R AT MOUTH, NR DRAKE, CO	78,000	68
		CARTER LAKE	106,955	88
		LAKE GRANBY	300,158	47

HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP for Month
		BLACK HOLLOW RESERVOIR	3,892	66
		CHAMBERS LAKE	4,756	31
		HALLIGAN RESERVOIR	6,428	61
10190007		FOSSIL CREEK RESERVOIR	10,095	76
	Cache La Poudre	CACHE LA POUDRE**	10,552	99
		WINDSOR RESERVOIR	13,833	34
		COBB LAKE	16,540	63
		HORSETOOTH RESERVOIR	133,856	79
		CACHE LA POUDRE R AT CANYON MOUTH**	197,000	78
10190004	Clear Creek	CLEAR CREEK AT GOLDEN	108,000	87
		HORSECREEK RESERVOIR	12,100	11
		SOUTH BOULDER CK NR ELDORADO SPRINGS, CO**	21,000	37
		MILTON RESERVOIR	22,600	95
		BARR LAKE	29,400	65
	Middle Couth Dista	STANDLEY RESERVOIR	32,100	13
10190003	Cherry Creek	BOULDER CREEK NEAR ORODELL**	42,000	64
	enerry ereek	BIG THOMPSON R AT MOUTH, NR DRAKE, CO	78,000	68
		SAINT VRAIN CREEK AT LYONS**	88,000	93
		CLEAR CREEK AT GOLDEN**	108,000	87
		SOUTH PLATTE RIVER AT SOUTH PLATTE	147,000	79
		CACHE LA POUDRE R AT CANYON MOUTH**	197,000	78
		JULESBURG RESERVOIR	20,900	69
		SOUTH BOULDER CK NR ELDORADO SPRINGS, CO**	21,000	37
		PREWITT RESERVOIR	22,600	33
		JACKSON LAKE RESERVOIR	26,200	48
		EMPIRE RESERVOIR	32,500	64
	Middle South Platte- Sterling	BOULDER CREEK NEAR ORODELL**	42,000	64
10190012		RIVERSIDE RESERVOIR	55,800	89
		POINT OF ROCKS RESERVOIR	71,700	98
		BIG THOMPSON R AT MOUTH, NR DRAKE, CO	78,000	68
		SAINT VRAIN CREEK AT LYONS**	88,000	93
		CLEAR CREEK AT GOLDEN**	108,000	87
		SOUTH PLATTE RIVER AT SOUTH PLATTE	147,000	79
		CACHE LA POUDRE R AT CANYON MOUTH**	197,000	78
		ANTERO RESERVOIR	19,900	59
10190001	South Platte Headwater	SPINNEY MOUNTAIN RESERVOIR	42,600	86
10190001	South Platte Headwater	ELEVENMILE CANYON RESV INFLOW**	81,000	98
		ELEVENMILE CANYON RESERVOIR	99,800	71
		TERRY RESERVOIR	7,728	90
		GROSS RESERVOIR	8,268	25
		MARSHALL RESERVOIR	9,200	46
10190005	St. Vrain	BUTTONROCK (RALPH PRICE) RESERVOIR	11,200	1
10130003		UNION RESERVOIR	12,361	34
		SOUTH BOULDER CK NR ELDORADO SPRINGS, CO**	21,000	37
		BOULDER CREEK NEAR ORODELL**	42,000	64
		SAINT VRAIN CREEK AT LYONS**	88,000	93

HUC ID	HUC Name	Component Name	Component Volume (AF)	Component NEP for Month
		CHEESMAN LAKE	61,600	27
10190002	Upper South Platte	SOUTH PLATTE RIVER AT SOUTH PLATTE	147,000	79
		DILLON RESERVOIR	181,700	15
14050003	Little Snake	LITTLE SNAKE RIVER NEAR LILY**	170,000	59
14050002	Lower Yampa	YAMPA RIVER NEAR MAYBELL**	510,000	71
10180001	North Platte Headwaters	NORTH PLATTE R NR NORTHGATE**	312,000	98
14050005	Upper White	WHITE RIVER NEAR MEEKER**	175,000	65
		YAMCOLO RESERVOIR	6,579	34
		ELKHEAD CREEK ABOVE LONG GULCH**	16,000	58
14050001	Upper Yampa	STAGECOACH RESERVOIR NR OAK CREEK	35,200	99
		YAMPA RIVER AT STEAMBOAT SPRINGS**	155,000	70
		ELK RIVER NEAR MILNER, CO**	215,000	69

NEP is non exceedance percentage (percentile) for volume of the component compared to this month during the historical period 1970-2010.

\*No longer exists \*\*Forecast Data provided by NWS from the Colorado River Basin Forecast, Missouri River Basin Forecast, Arkansas River Basin Forecast and Rio Grande River Basin Forecast.

Water Volume NEP Color Scale:

0 (Well Below Normal) 100 (Well Above Normal) 50 (Normal)

### Basinwide Conditions Assessment The SWSI value for the month was +1.8.

The weather pattern, like most of the state, continued with below average temperatures and above average precipitation throughout the South Platte Basin in northeastern Colorado during the month of May. Overall basin precipitation was 141% of average for the month of May, ranging from snow in the mountainous areas and foothills to late snow and rain in the foothills and eastern plains. This above average precipitation during the Month of May elevated the water year-to-date precipitation to 118% for the basin.

As a result of the above average precipitation and lower than normal temperatures throughout the basin, the basinwide snowpack ended the month of May at 392% of the median and 1,614% of last years end of May snowpack levels. Widespread above average precipitation throughout the South Platte River basin in March and April continued into May resulting in no drought conditions ending the month of May. Cooler than normal temperatures, especially in the high mountainous area has resulted in anticipated delays in peak snowmelt runoff in streams and rivers throughout the basin. The June and July streamflow forecasts flow in the South Platte River basin well above average with 139% of average for the South Platte River and 124% of average for the Big Thompson River.

The overall basin above average precipitation, mostly in the form of high mountain snow, and slightly below average temperatures during the month of May has resulted in a delayed peak snowmelt and runoff resulting in below average flows in streams for the month. The flows at the Kersey gage downstream of the City of Greeley, with the average daily flows for the month of May of approximately 848 cfs, 46% of the historic mean value of 1,850 cfs. The average daily flows at the Julesburg gage for the month of May was 289 cfs, 26% of the historic mean value of 1,105 cfs. The below average flows at these gages and in the tributaries throughout the South Platte basin are due to delayed runoff from mountain snowmelt and increasing demand for water diversions to storage and irrigation use during the month.

The Calls on the South Platte River were indicative of the weather pattern ending April and heading into May with cooler weather delaying the typical average peak snowmelt runoff flows in the streams and rivers. The Calls on the mainstem of the South Platte River were controlled at the beginning of May through mid-May bouncing between a 1908 Burlington Canal priority at the Western Ditch headgate on the upper end, the 1922 priority at the North Sterling No. 1 on the lower end, and no call below the Sterling No. 1. However, with the demand for direct flow irrigation rights by mid-May and the slow runoff,

the call wnet more senior in mid-May to the 1885 Burlington Canal direct flow water right administered at the Western Ditch headgate and the 1897 priority on the lower end of the river at the Harmony from May 15th through May 18th, with the 1897 Compact Call on May 18th through May 20th. Then cooler weather and late precipitation including snow throughout the basin in late May resulted in the call going more junior, with no call (free river conditions) on the South Platte River mainstem on May 21st for most of the remainder of May.

Typically the reservoir fill season is between November 1 and April 1 of each year, with irrigation season direct flows starting around April 1. The delayed runoff of snowmelt in the month of May limited some reservoirs abilities to fill at a fast pace, however the cooler weather and precipitation in late May allowed many reservoirs to continue to fill as well as some iunior recharge rights to come into priority towards the end of May into June. Reservoirs storage levels throughout the South Platte River mainstem ended the month of May near average at the 6 SWSI Representative Reservoirs at 548,065 acre-feet volume, which is 97% of the long term average. Additionally, 32 indexed reservoirs throughout Division 1 basin at 109% of the long term average (1981- 2010) with a storage volume of 1.007.656 acre-feet at the end of May, representing approximately 84% of full capacity. This is ahead of the long term average of 82% for the end of April storage in the 32 indexed reservoirs throughout Division 1.

The temperature and precipitation outlook into May, June, and July 2019, prepared by the National Weather Service, in northeastern Colorado indicates a trend toward slightly below average temperatures and above average precipitation in the South Platte River Basin. Streamflow forecasts for the South Platte basin range from 131% on the upper portion of the basin to below average of 69% of average for Bear Creek, with basin wide forecast of near average streamflows.





South Platte-DataComposite-SWSI



### **Basinwide Conditions Assessment**

The SWSI value for the month was +2.9.

### <u>Outlook</u>

Thanks to improved snowpack conditions, river calls began fairly senior (Catlin Canal - 4/15/1884 with pass thru to Fort Lyon Canal) and went increasingly more junior as the month of May progressed ending with the Fort Lyon Canal 3/1/1887 call, but at times was as junior as the Colorado Canal 6/9/1890 call.

### Administrative/Management Concerns

Arkansas River flows have remained steady due to cooler day and night time temperatures in the

mountains, which have discouraged run-off. Snowpack still remains above average in the Arkansas watershed, so when run-off does begin, it should be considerably higher than last year.

Flows in the Cucharas Basin appear to have peaked, but there has also been spring showers that have shown an increase in flow. Cooler temperatures at night giving way to warmer temperatures during the day have produced a steady, albeit small diurnal.

Flows in the Huerfano Basin have been fairly undramatic to date, but there is still significant snowpack up above and the traditional run-off generally does not peak until early June, so it is still early. Flows are generally below average for this time of year, but once again, cooler temperatures have prevailed.

Flows in the Purgatoire Basin started the month off low, then jumped up significantly, but then ended the month about where it began. Flows have generally been average and the run-off peak is historically in June.





Arkansas-DataComposite-SWSI



### Basinwide Conditions Assessment

The SWSI value for the month was +3.9.

Flow at the gaging station Rio Grande near Del Norte averaged 2780 cfs (111% of normal). The Conejos River near Mogote had a mean flow of 810 cfs (85% of normal). Streamflow throughout the upper Rio Grande basin jumped to well above average levels around May 12 and stayed there until a cold spell on May 18 - 29 dropped levels to well below the long-term historic averages. As temperatures warmed again near the end of the month, streamflow increased significantly. The delayed runoff roared into action the second week of June with flows generally two to three times the long-term average for the higher elevation streams.

The mountains and the some of the Valley floor received <u>three</u> significant snowstorms during May. This added significant snowpack to a basin that was already at above average depths. It has been decades since this basin received three events like this during May. The impact to the expected runoff was momentous.

### <u>Outlook</u>

The May snowstorms resulted in the Natural Resources Conservation Service increasing the upper Rio Grande Basin streamflow forecasts on June 1st. Most streams in the area are forecast in the 120 to 150% of average range for **April through September** volumes. However, the May snowstorms and cool-off put the **June through September** runoffs in the 150% to 250% range. Hang on!

Recent National Weather Service forecasts are predicting above normal precipitation for Colorado for this summer and fall.

### Administrative/Management Concerns

Localized flooding in the San Luis Valley this runoff season became an issue during early May and again in early June with the increase in temperature and runoff. Cooler temperatures reduced flow temporarily from May 19 - 30, but streamflow returned with additional intensity at the end of the month as temperatures climbed to normal levels.

Water delivery to the State line for Compact purposes has been difficult as the Conejos and Rio Grande channels have seen sediment and vegetation fill since the last large runoff.

### Public Use Impact

The weather pattern during May was beneficial to reduce the runoff and keep snow in the mountains for a longer June and July melt. Currently, reservoir storage in the basin has increased substantially as the reservoirs were able to store under their junior priorities. Beaver Reservoir reached spill level.





Rio Grande-DataComposite-SWSI



### <u>Basinwide Conditions Assessment</u> The SWSI value for the month was +3.5.

April was drier than the past two months with northern areas receiving around 110% of average while southern areas received around 90% of average. An average of all Gunnison basin Snotel sites peaked at 143% of average on April 14th, approximately one week later than normal. April was the first month of the water year where most of the Gunnison basin experienced temperatures slightly above average (1-3 degrees). Temperatures were not warm enough, however, to melt significant snowpack at high elevations and many sites have increased back to near the peak with late April snowfall. Much greater than average lower elevation snow has resulted in high flows on tributaries throughout the basin.

### <u>Outlook</u>

April to July runoff forecasts prepared by the CBRFC on April 1st increased again. After dropping on April 15th to 860,000 acre-feet, the April to July inflow forecast for Blue Mesa Reservoir rose to 970,000 acre-feet due to the significant precipitation at the end of the month. Climate forecasts for the next 30 and 90 day period still place the Gunnison in an area expected to receive greater than average precipitation.

### Administrative/Management Concerns

Snowmelt of ample low elevation snow caused Blue Mesa Reservoir levels to rise at up to 1.5 feet per day during April. In fact, Blue Mesa gained almost 80,000 acre-feet in April and runoff hasn't begun in earnest yet. The above mentioned CBRFC inflow forecast for Blue Mesa falls in the moderately wet year category, which results in a 24 hour peak flow target in the Black Canyon of 7,158 cfs. Target flows specified in the Record of Decision (ROD) for reoperations of the Aspinall Unit, including provisions that cut the duration in half for years following an extreme drought, include 20 days at 8,070 cfs or greater. Within that 20 days there is a 10 day target peak of 14,350 cfs . As a result of late April storms and the resulting increase in forecasted inflows, Blue Mesa is expected to rise to within four feet of full at 7515.5 feet, which corresponds to a peak content of 795,000 acre-feet (144% of average). As mentioned previously, reaching these targets for the intended durations will present an operating challenge for the Bureau of Reclamation because the water level is currently well below

the spillway at Blue Mesa. In order to maintain large flows to meet those targets the spillways at all three Aspinall Unit reservoirs must be used. Reclamation will attempt to reduce the need for Aspinall storage to meet these targets by timing the releases with peak flows on the North Fork, but this is difficult due to the unpredictably of forecasts on the North Fork.

Operations at Taylor Park, Ridgway and Paonia Reservoirs are now focused on preventing, or limiting the amount of spill that will occur. Given forecast inflows at the three reservoirs of 130,000, 118,000 and 147,000 acre-feet, however, it may be difficult to keep the reservoirs from spilling due to limited amounts that can be released through their outlets.

Snowpack at the Park Reservoir Snotel continues to climb and on May 10th is at a new peak of 36.6 inches of SWE. Surface Creek continues to contain enough water to supply all the irrigators due to the continued melting of low elevation snow and rainfall.

### Public Use Impacts

Some areas on tributaries fed by low elevation snow saw flows in late April greater than in the last 10 years as a result of melting and rain on snow. These flows caused flooding of low lying areas and washed out culverts across local roadways over Horsefly Creek, Happy Canyon Creek and Spring Creek.

Although Reclamation attempts to time the large Aspinall ROD releases to be as low impact as possible, they may have an impact on the peak boating season in the Gunnison Gorge depending on when the North Fork peak occurs. Final timing and amounts for peak releases should be in late May and early June, but won't be determined until within a week of the peak.



Gunnison-DataComposite-SWSI



<u>Basinwide Conditions Assessment</u> The SWSI value for the month was +3.3.

### <u>Outlook</u>

Colorado River flows and tributary flows are running above average. River flows are forecasted to continue above average through June. Below average temperatures and below average precipitation are forecast for the month of June. There is still a fair amount of snow at higher elevations.

### Administrative/Management Concerns

There is currently no call on the Colorado River. Grand Valley Irrigation diversions (Government Highline/Orchard Mesa Irrigation, Grand Valley Irrigation canals) continue at or near full capacity. Reservoirs are currently filling and Wolford Reservoir has spilled.

### Public Use Impacts

Colorado Parks and Wildlife along with local counties and municipalities are warning rafters, kayakers, tubers, anglers, swimmers and anyone nearing rivers of the danger of the current high water levels and swift moving rapids. If swept into the river for any reason, it will most likely be very difficult to get back to shore especially with the water being very cold. Trouble can happen very fast.



Colorado-DataComposite-SWSI



### Basinwide Conditions Assessment

### The SWSI value for the month was +2.4.

Total April precipitation in the combined; Yampa, White, and North Platte River basins, as measured at the SNOTEL sites operated by NRCS, was reported at 102% of average, Year to Date 114% average. Reservoir storage for the combined basins at the end of April was 104% of average compared to 121% last year.

Snowpack for the combined basins as of May 1, 2019 was at 105% of the median and 133% of last year. The snow water equivalent (SWE) as of April 30, 2019 was 103% of median for the Yampa River basin, 122% of median in the White River basin, 103% of median in the Little Snake River basin, and 109% of median in the North Platte River basin.

NRCS predicted average spring and summer streamflow's in the Yampa, White, and North Platte River basins. NRCS runoff forecasts predict a range from 123% of average for the North Platte River at Northgate and 106% of average for the Little Snake River near Dixon.

Division 6 stream gages are currently being set up to operate for the season, there a few still to be set up. Div 6 staff wishes to acknowledge the Hydro's from Div 1 and Div 7 for assisting us in setting up our sites...as we are attempting to hire our own Hydro...**Thank You!** 

### Reservoir Outlook

As of April 30, 2019:

- Fish Creek Reservoir was storing approximately 2,005 AF, 46.3% of capacity. The capacity of Fish Creek Reservoir is 4,167 AF.
- Yamcolo Reservoir was storing 5,435 AF, 565 of capacity. The capacity of Yamcolo Reservoir is 9,621 AF.
- Elkhead Creek Reservoir was storing 25,290 AF. The capacity of Elkhead Creek Reservoir is 24,778 AF.
- Stagecoach Reservoir was storing 34,175 AF, 93% of capacity. The capacity of Stagecoach Reservoir is 36,439 AF

Water stored in Fish Creek Reservoir is primary used for municipal purposes, Yamcolo Reservoir for irrigation purposes, Elkhead Creek Reservoir for municipal, industrial, recreational, and fish recovery releases. Stagecoach Reservoir, primarily used for recreation, but has a significant amount of stored water allocated for agriculture, municipal, industrial and augmentation uses.

### Public Use Impacts

Steamboat Ski Resort closed for the season April 14, 2019... the mountain summit received over 400 inches snow for the season and the "total base amount" for the ski area set a seasonal record as well...

River and stream channels have begun to melt out and open up for angles at lower elevations above

Stagecoach Reservoir and the lake surface is ice-free. Check the CPW website for updated local fishing conditions. In addition, local rafting companies are preparing for an exciting season of white water experiences...

In addition, local Emergency Managers are taking steps to prepare for the possibility of localized flooding due to the potential for higher runoff as conditions fluctuate.

Soil Moisture Profile Concerns: Early season stream flows are beginning to increase, however, we are seeing little to no surface flow on many small tributary drainages, as water users have reported that "melt" from snow covered meadows "went straight in the ground"...



Yampa-White-DataComposite-SWSI



<u>Basinwide Conditions Assessment</u> The SWSI value for the month was +2.5.

Flow at the Animas River at Durango averaged 2,262 cfs (87% of average). The flow at the Dolores River at Dolores averaged 1,488 cfs (88% of average). The La Plata River at Hesperus averaged 123 cfs (76% of average). Precipitation in Durango was 2.12 inches for the month, 174% of the 30-year average of 1.22 inches. Precipitation to date in Durango, for the water year is 18.54 inches, 150% of the 30-year average of 12.37 inches. End of last month precipitation to date, for the water year was 146% of average. The average high and low temperatures for the month of May in Durango were 65° and 35°. In comparison, the 30-year average high and low for the month is 72° and 38°. At the end of the month Vallecito Reservoir contained 65,431 acre-feet compared to its average content of 91,430 acre-feet (72% of average). McPhee Reservoir was up to 334,081 acre-feet compared to its average content of 334,950 (100% of average), while Lemon Reservoir was up to 19,220 acre-feet as compared to its average content of 30,398 acre-feet (63% of average).

### <u>Outlook</u>

Precipitation (2.12 inches) was above average for May in Durango. There were 18 years out of 124 years of record where there was more precipitation than this year. The flows in the rivers within the basin fell below average for this time of the year. The drop in flows is due to the cooler than average temperatures. There are 69 out of 109 years of record where the total flow past the Animas River at Durango stream gauge was more than this year. There were 64 out of 108 years of record where the total flow past the Dolores stream gauge was more than this year and 64 out of 102 years of record where the total flow past the La Plata River at Hesperus gauge was more than this year. Most of the reservoirs within the basin are expected to fill. Vallecito began releasing excess water on March 21 to prepare for the expected spring runoff with in that basin. On May 31, the NRCS SNOTEL sites reported an average snow-water-equivalent within the basin at 893%. Last month the average snow-water-equivalent at the end of the month was 159%.











### HUC 14080107 (Mancos) Surface Water Supply - JUN





































HUC 11020002 (Upper Arkansas) Surface Water Supply - JUN

























HUC 13010005 (Conejos) Surface Water Supply - JUN

















HUC 14020001 (East-Taylor) Surface Water Supply - JUN















# HUC 14030002 (Upper Dolores) Surface Water Supply - JUN

















# HUC 14050005 (Upper White) Surface Water Supply - JUN









