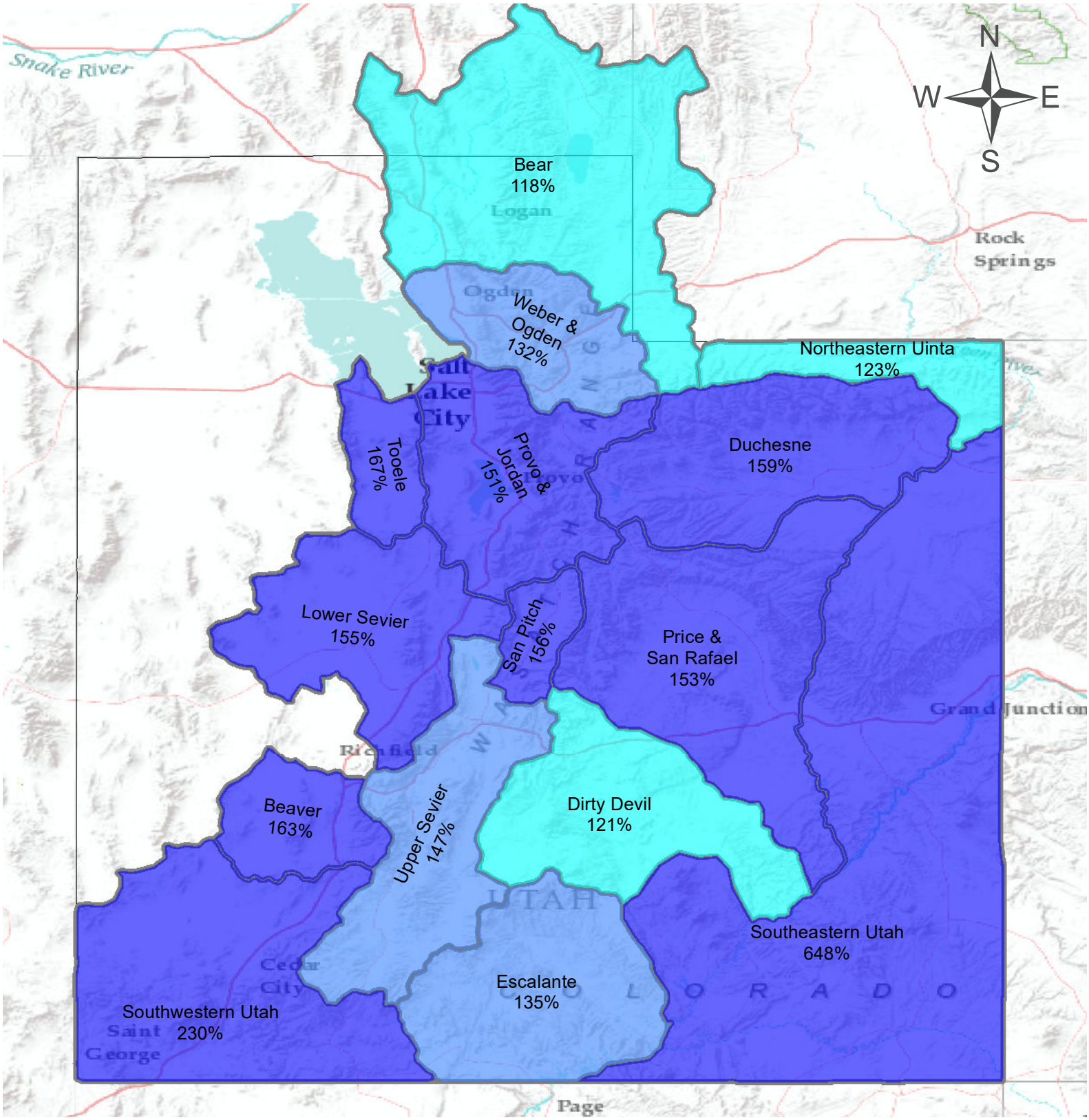
Utah Water Supply Outlook Report

May 1, 2019

Tree wells at GBRC HQ SNOTEL site, near Ephraim

Photo by Jordan Clayton



Statewide Snow Water Equivalent

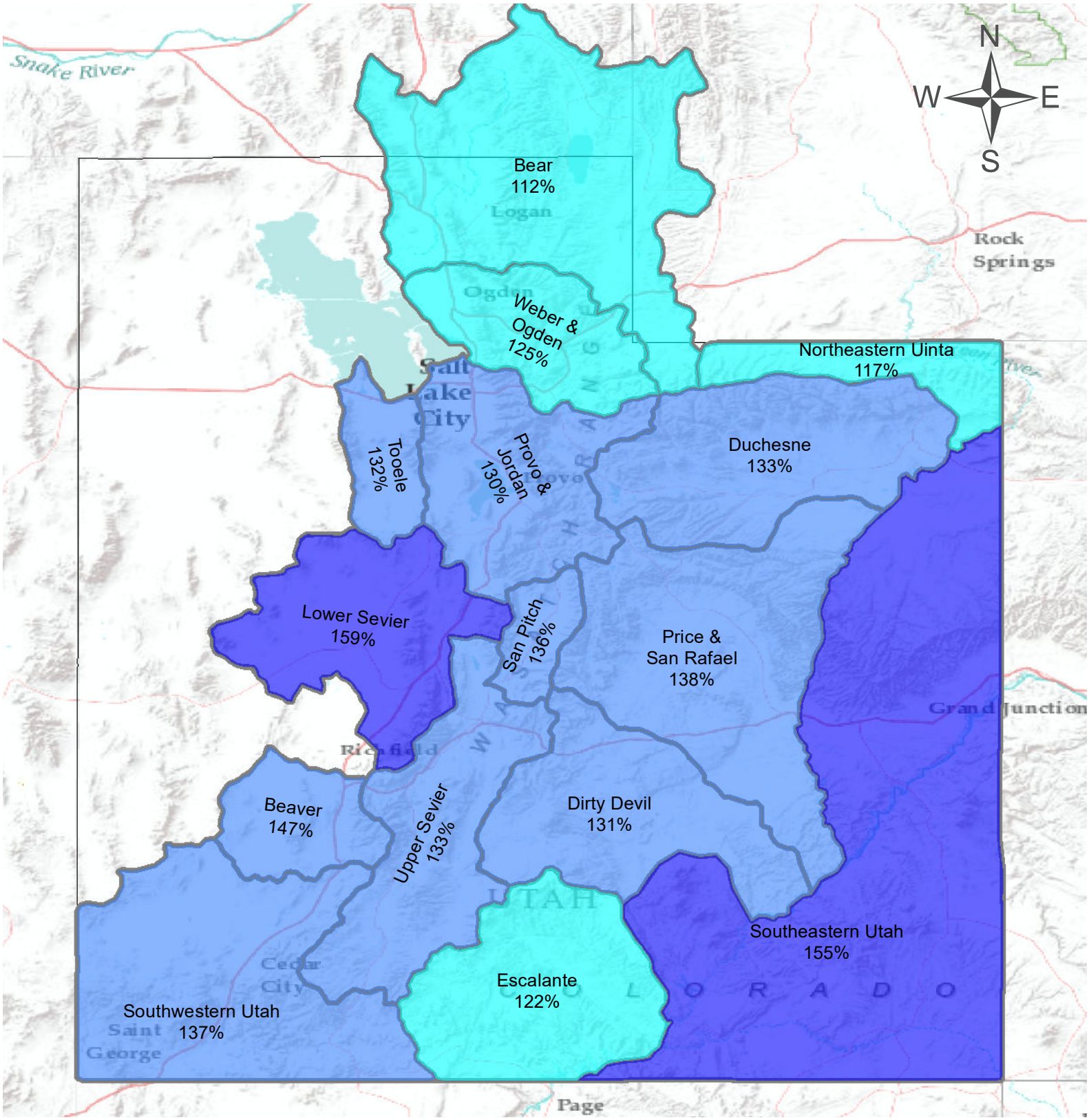
As of May 1, 2019:

143% of Normal Snow Water Equivalent

0 10 20 40 60 80 100 Miles

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%



Statewide Precipitation

<u>As of May 1, 2019:</u>

127% of Normal Precipitation

129% of Normal Precipitation Last Month

0 10 20 40 60 80 100 Miles

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%

STATE OF UTAH GENERAL OUTLOOK
May 1, 2019

SUMMARY

Utah's snowpack is coming off and we're already seeing the impact in our streams and reservoirs. Most of the current observed streamflow levels range from 100 to over 250%, and we still have a significant amount of high elevation snowpack left to melt out. Soil moisture across the state is high at 81%, which will improve runoff efficiency as the snowmelt progresses. For the most part we'll see some pretty good streamflow through the month of May on into June: forecast streamflow volumes range from 98 to 270% of normal statewide. Reservoirs will improve storage levels with this much-needed runoff, and if our wet spring lingers, the resulting delayed/reduced consumption for irrigation and other uses will also augment reservoir levels.

This report contains the final 2019 water supply forecasts, Surface Water Supply Indices per basin, summaries of current snow, precipitation, and soil moisture conditions in Utah's mountain regions, statewide reservoir statistics, and many other details.

Staffing Update
Due to ongoing hiring limitations with the NRCS and critical staffing shortages in the Utah Snow Survey program, we have implemented the following advisory, effective immediately:
- *We will be discontinuing the monthly Climate and Water Reports until further notice.*
- *SNOTEL data should now be considered "provisional" until they can be reviewed by a staff member. Quality control will be limited to once every other week during the summer months.*
- *SNOTEL site/sensor repairs will be handled as quickly as possible, but prolonged delays are possible.*

SNOWPACK

May 1 snowpack is at 143% normal across the state. That's pretty big compared to 35% this time last year. Basin averages are all greater than 100%. At the lower end is the Bear Basin at 118%, Dirty Devil at 121%, Northeastern Uinta at 123%, and Weber & Ogden at 132%. Central Utah numbers range between 150% – 160% and southern Utah is at 230% in the Southwest and 648% in the Southeast. Note that, for some regions like Southeastern Utah, very low average snowpack for this time of year distorts the percent normal values.

PRECIPITATION

Precipitation for the month of April was above normal at 129%, which brings our seasonal accumulation to 127% of average. All in all it's been a pretty wet spring and, according to the NOAA Climate Prediction Center, the above-average precipitation pattern may continue for at least the next 8 – 14 days.

RESERVOIRS

Currently reservoir storage is at 72% compared to 79% last year but we still have a fair amount of snowpack left and we expect to see a big improvement by the end of the runoff season. Many small to medium-size reservoirs should fill, and we'll likely see our biggest reservoirs gain a significant amount of water (e.g. Bear Lake and Strawberry Reservoir). A continued wet spring would also help delay our reservoir consumption.

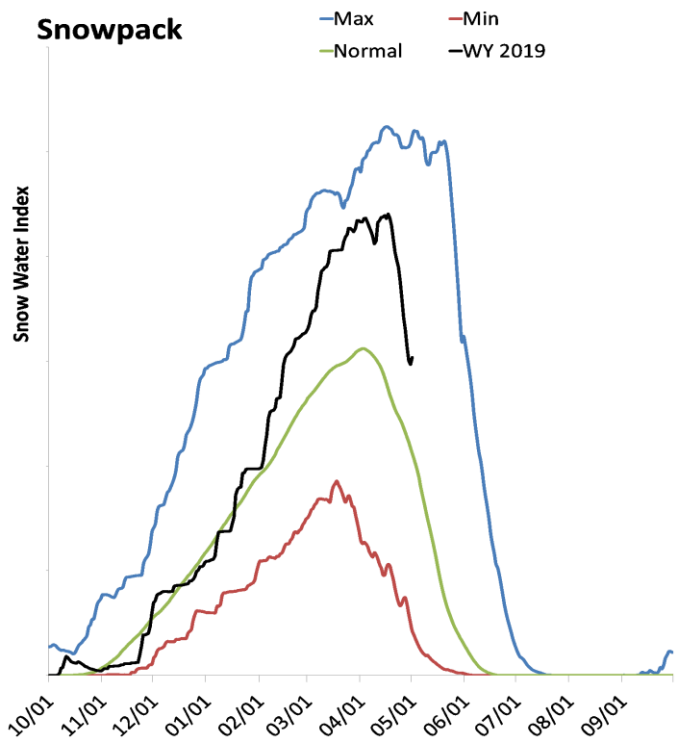
STREAMFLOW

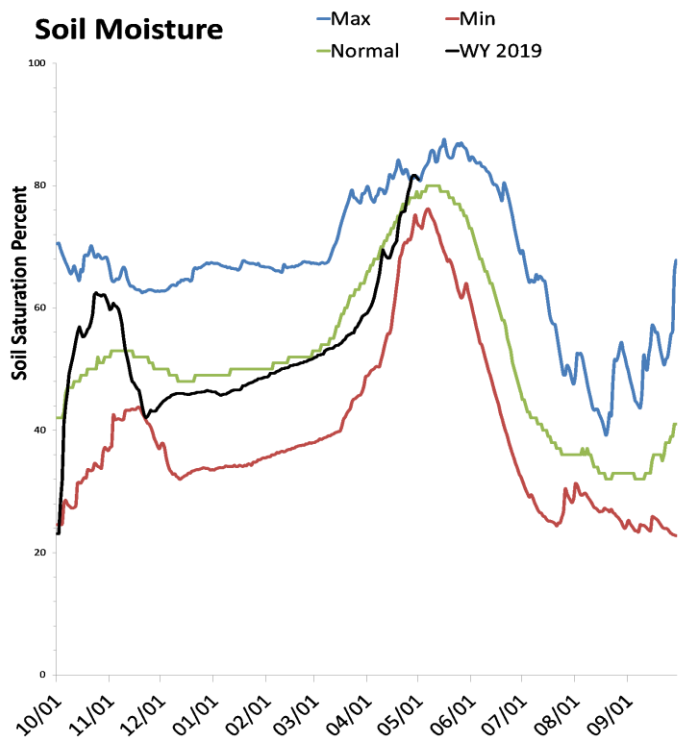
May-July streamflow forecasts range from 98% to 270%. The Bear River numbers are right about 115%, Weber Ogden and Provo Jordan streamflow forecasts are at 125%, the Duchesne is at 144%, and the projected forecast numbers keep climbing as we go south with over 250% in Southeastern Utah.

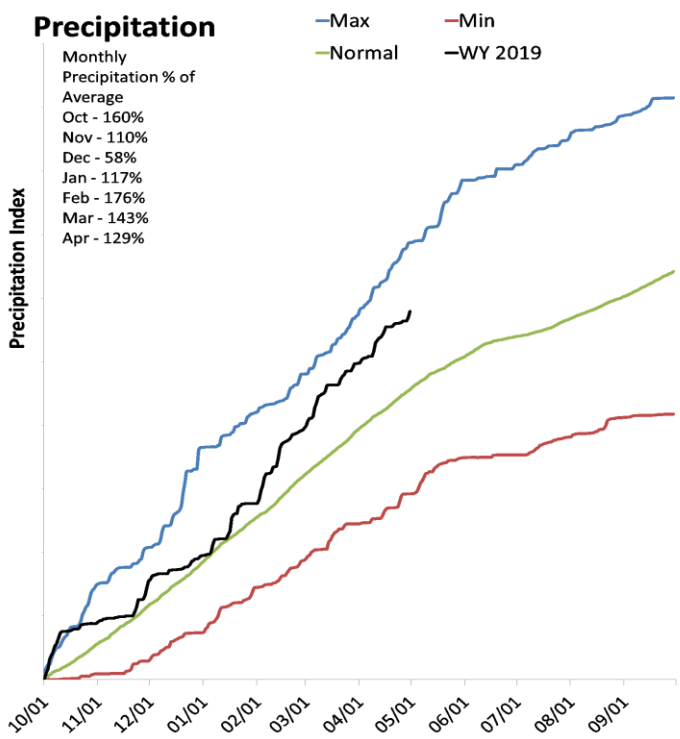
Statewide Utah

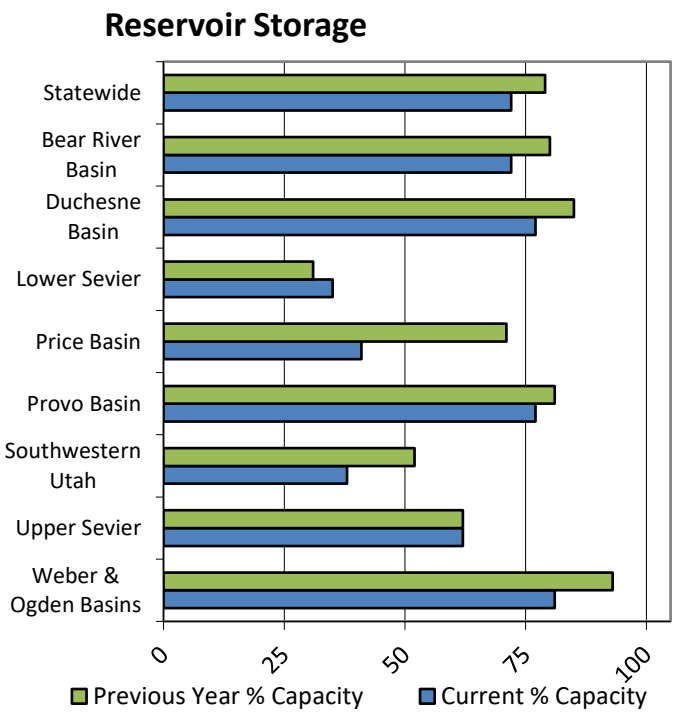
May 1, 2019

Snowpack in Utah is much above normal at 143% of normal, compared to 35% last year. Precipitation in April was above average at 129%, which brings the seasonal accumulation (Oct-Apr) to 127% of average. Soil moisture is at 81% compared to 77% last year. Reservoir storage is at 72% of capacity, compared to 79% last year. Forecast streamflow volumes range from 98% to 270% of average.







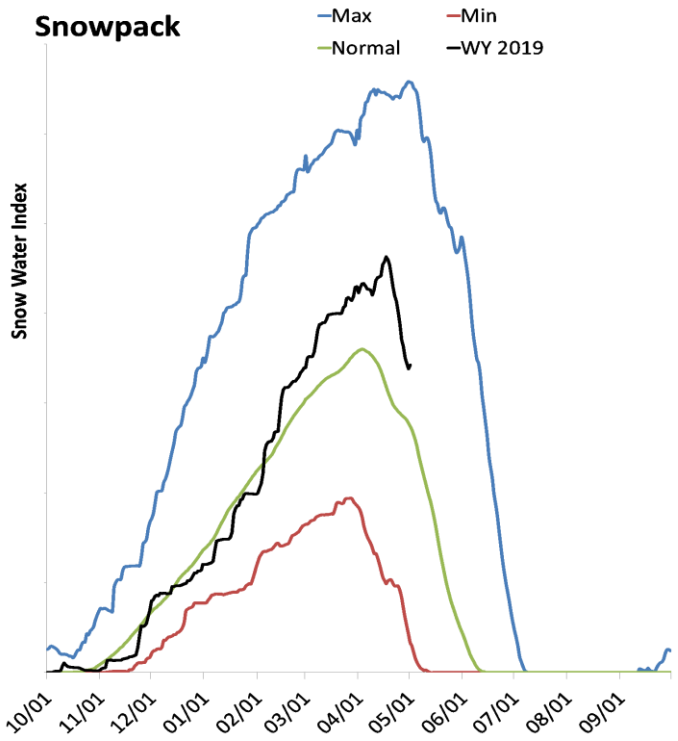


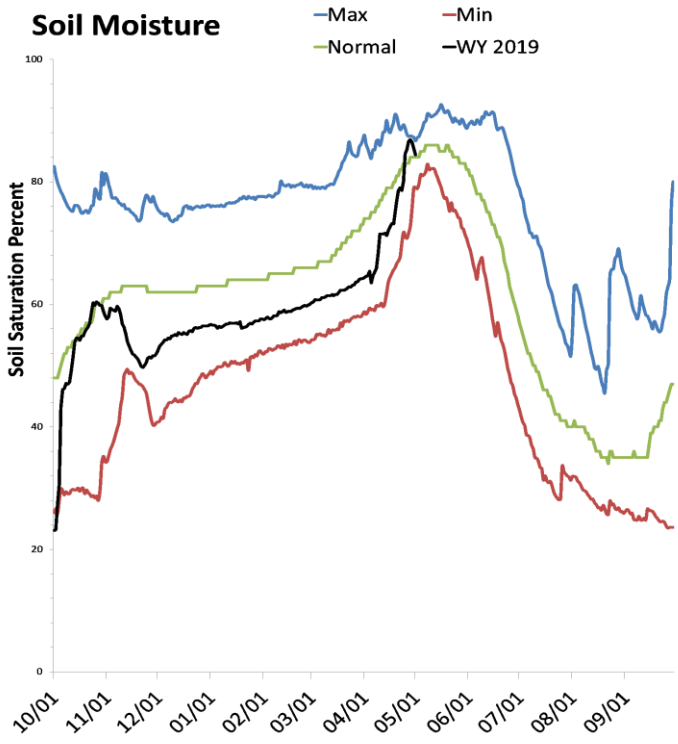
SNOTEL Data

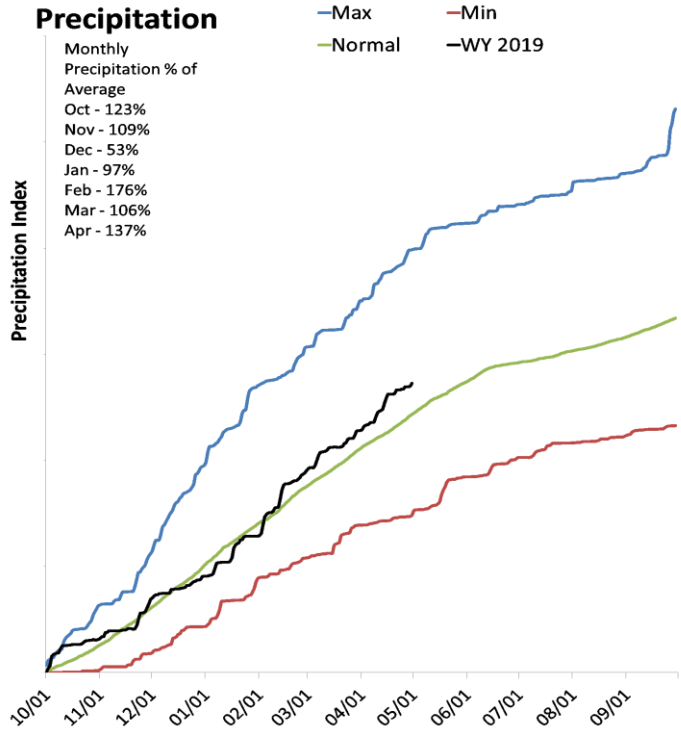
Bear River Basin

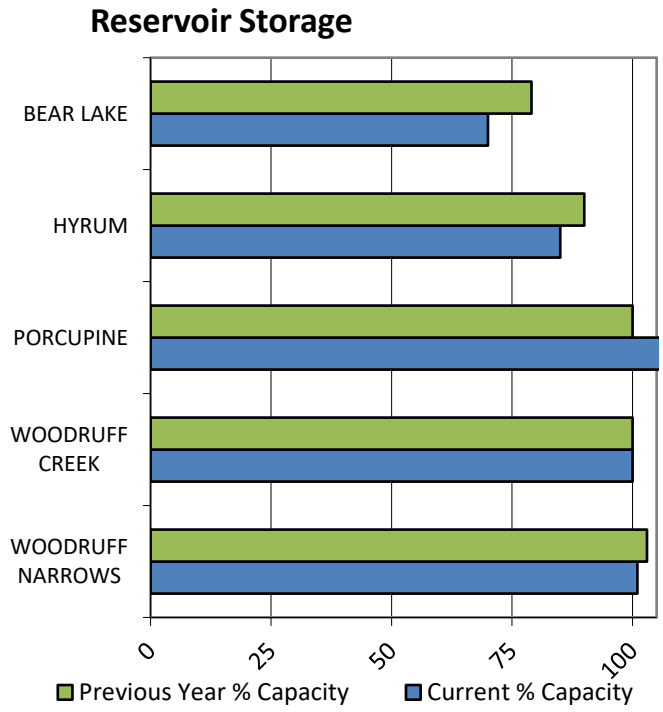
May 1, 2019

Snowpack in the Bear River Basin is above normal at 118% of normal, compared to 61% last year. Precipitation in April was much above average at 136%, which brings the seasonal accumulation (Oct-Apr) to 112% of average. Soil moisture is at 84% compared to 85% last year. Reservoir storage is at 72% of capacity, compared to 80% last year. Forecast streamflow volumes range from 113% to 165% of average. The surface water supply index is 70% for the Bear River, 68% for the Woodruff Narrows, 71% for the Little Bear.









SNOTEL Data

Data Current as of: 5/7/2019 7:35:30 AM

Bear River
Streamflow Forecasts - May 1, 2019

Bear River	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Bear R nr UT-WY State Line								
	APR-JUL	106	119	128	114%	137	150	112
	APR-SEP	118	133	143	116%	153	168	123
	MAY-JUL	97	110	118	113%	126	139	104
	MAY-SEP	108	122	132	114%	142	156	116
Bear R ab Resv nr Woodruff								
	APR-JUL	85	117	139	115%	161	193	121
	APR-SEP	88	123	147	115%	171	205	128
	MAY-JUL	72	102	122	116%	142	172	105
	MAY-SEP	75	108	130	117%	152	185	111
Big Ck nr Randolph								
	APR-JUL	2.6	4.6	5.9	155%	7.2	9.2	3.8
	MAY-JUL	2.2	3.9	5.1	165%	6.3	8	3.1
Smiths Fk nr Border								
	APR-JUL	82	92	99	111%	106	116	89
	APR-SEP	96	108	116	112%	124	136	104
	MAY-JUL	73	83	90	113%	97	107	80
	MAY-SEP	89	100	108	114%	116	127	95
Bear R bl Stewart Dam								
	APR-JUL	123	169	200	109%	235	280	183
	APR-SEP	137	190	225	110%	260	315	205
	MAY-JUL	90	135	165	113%	195	240	146
	MAY-SEP	103	155	191	113%	225	280	169
Little Bear at Paradise								
	APR-JUL	38	45	50	111%	55	62	45
	MAY-JUL	26	33	38	119%	43	50	32
Logan R nr Logan								
	APR-JUL	108	120	128	115%	136	148	111
	MAY-JUL	91	103	111	116%	119	131	96
Blacksmith Fk nr Hyrum								
	APR-JUL	33	44	51	119%	58	69	43
	MAY-JUL	21	30	37	119%	44	53	31

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Reservoir Storage End of April, 2019	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Bear Lake	917.2	1027.1	651.7	1302.0
Hyrum Reservoir	13.0	13.8	14.1	15.3
Porcupine Reservoir	13.2	11.3	10.1	11.3
Woodruff Creek	4.0	4.0	3.8	4.0
Woodruff Narrows Reservoir	58.0	59.1	45.5	57.3
Basin-wide Total	1005.4	1115.3	725.2	1389.9
# of reservoirs	5	5	5	5

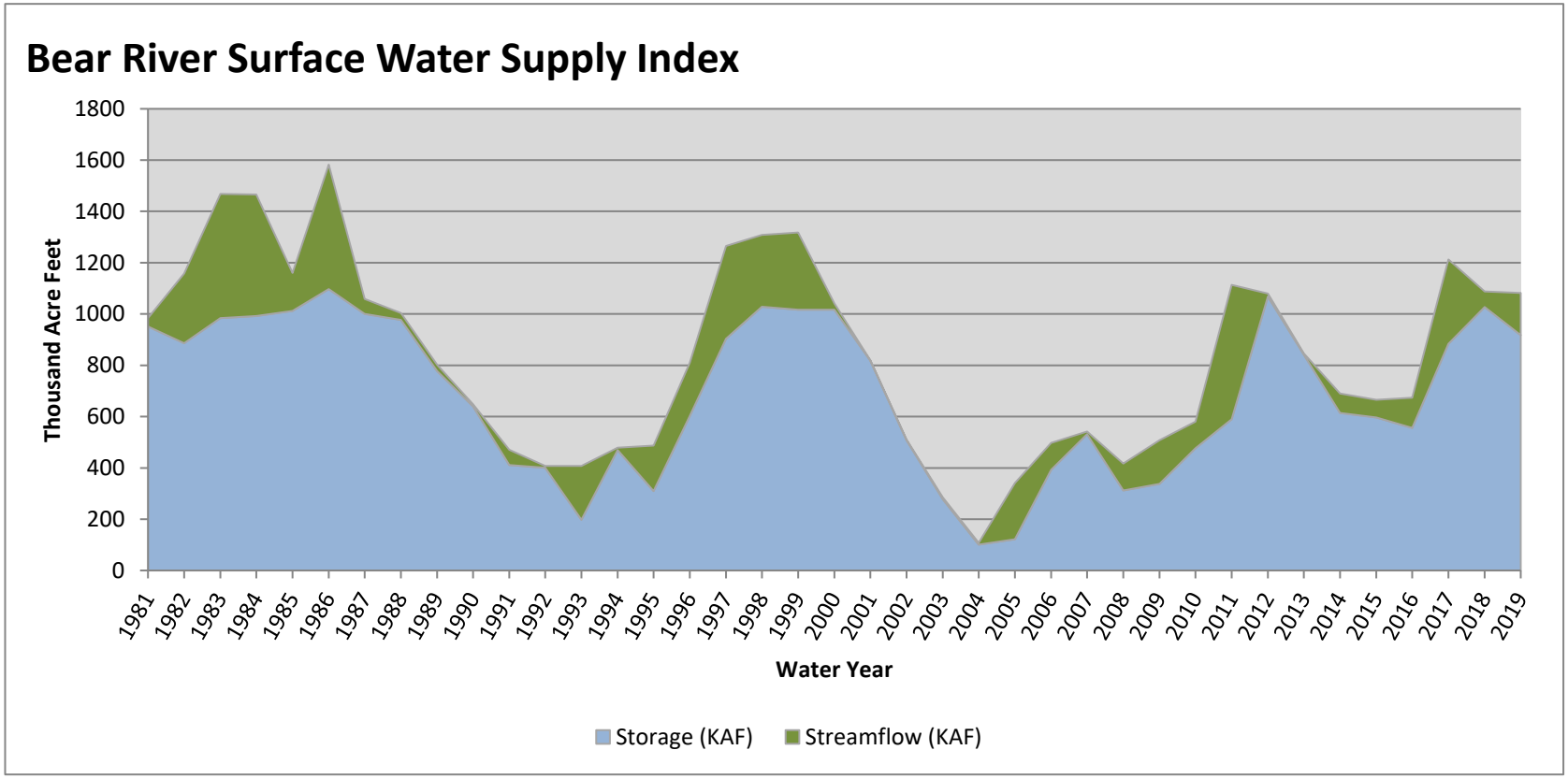
Watershed Snowpack Analysis May 1, 2019	# of Sites	% Median	Last Year % Median
Upper Bear	4	131%	50%
Middle Bear	7	112%	67%
Lower Bear	2	129%	52%
Logan River	9	114%	62%

May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Bear River	**917.18**	**165.00**	**1082.18**	**70**	**1.67**	**87, 12, 18, 11**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.

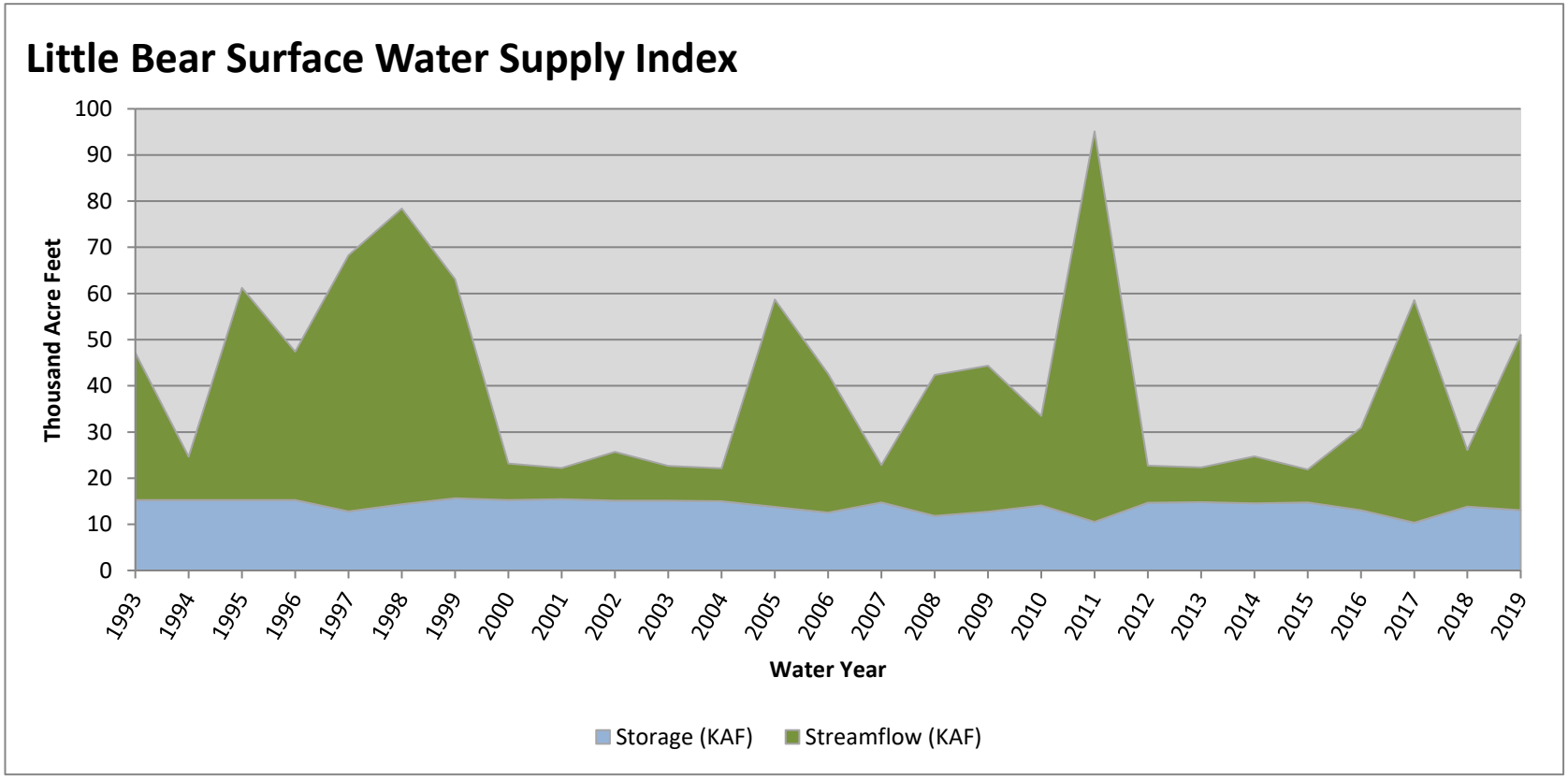


May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Little Bear	**13.02**	**38.00**	**51.02**	**71**	**1.79**	**93, 96, 17, 05**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.

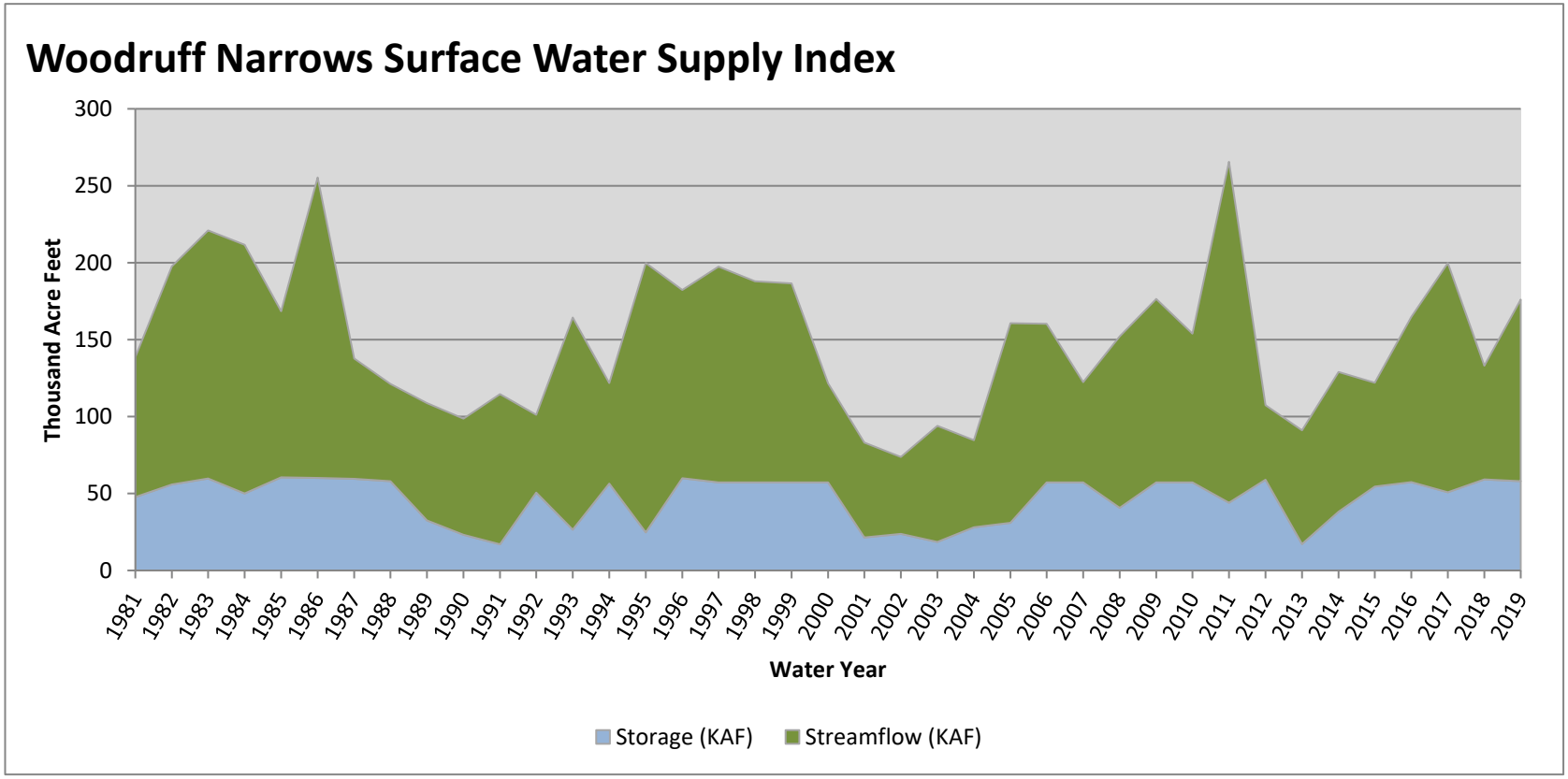


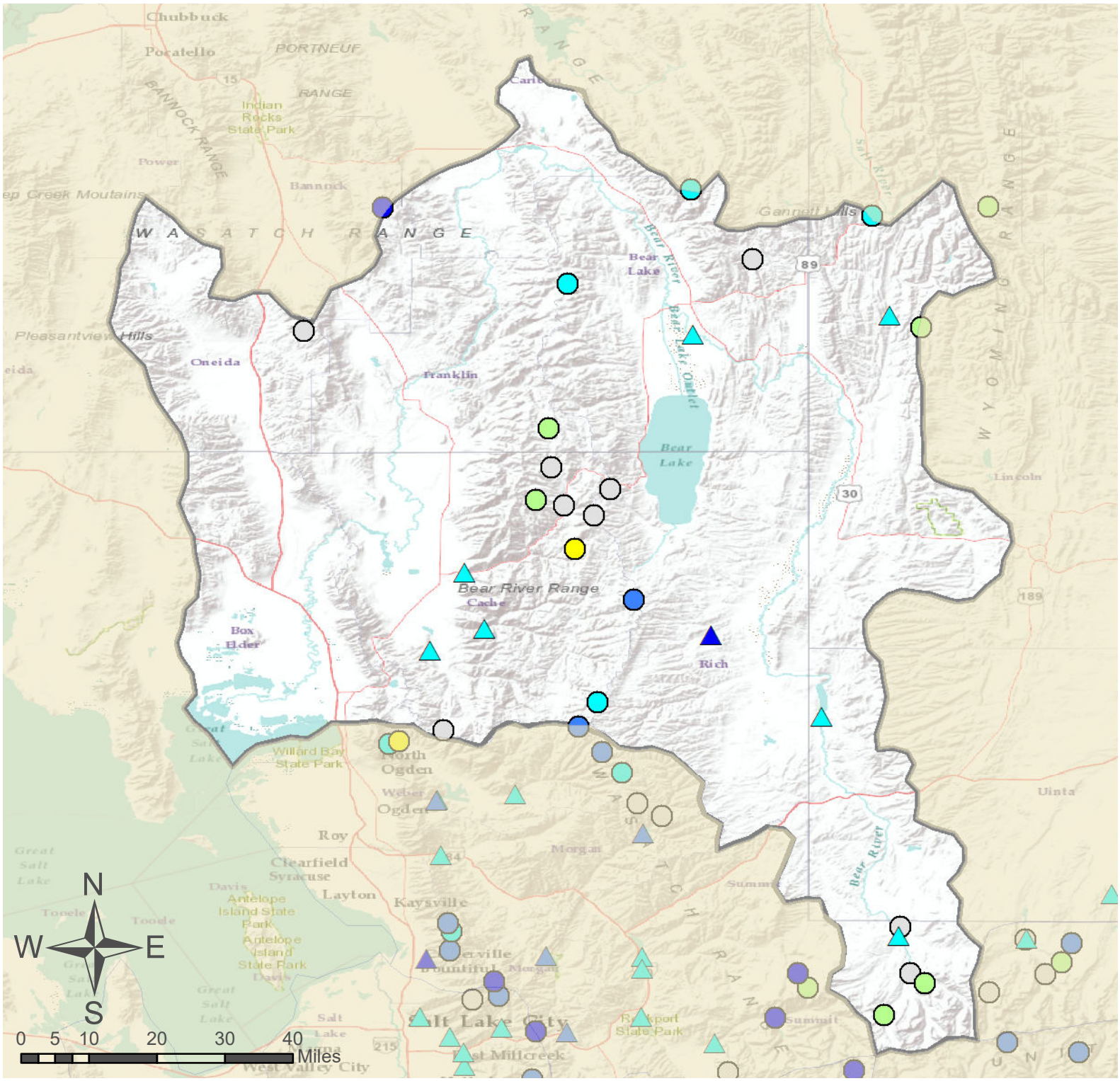
May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Woodruff Narrows	**58.00**	**118.00**	**176.00**	**68**	**1.46**	**16, 85, 09, 96**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.





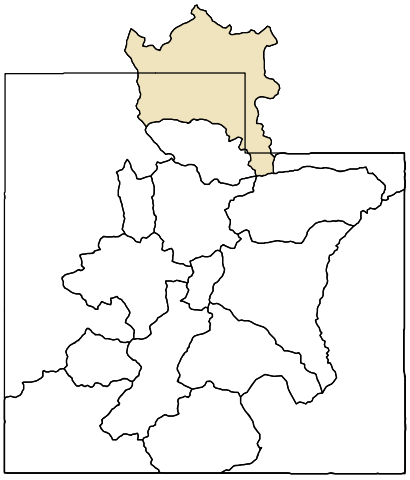
Bear River Basin

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



As of May 1, 2019:

118% of Normal SWE

112% of Normal Precipitation

136% of Normal Precipitation Last Month

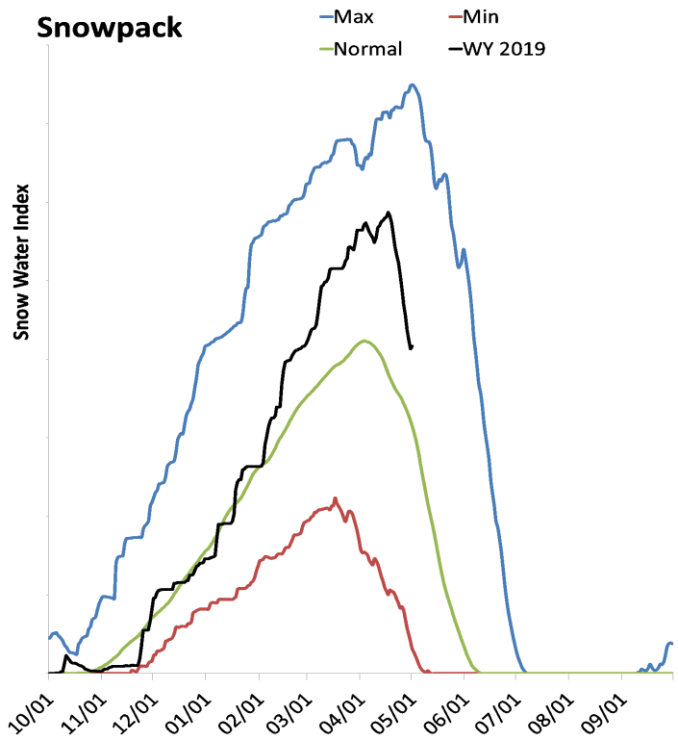
84% Saturation Soil Moisture

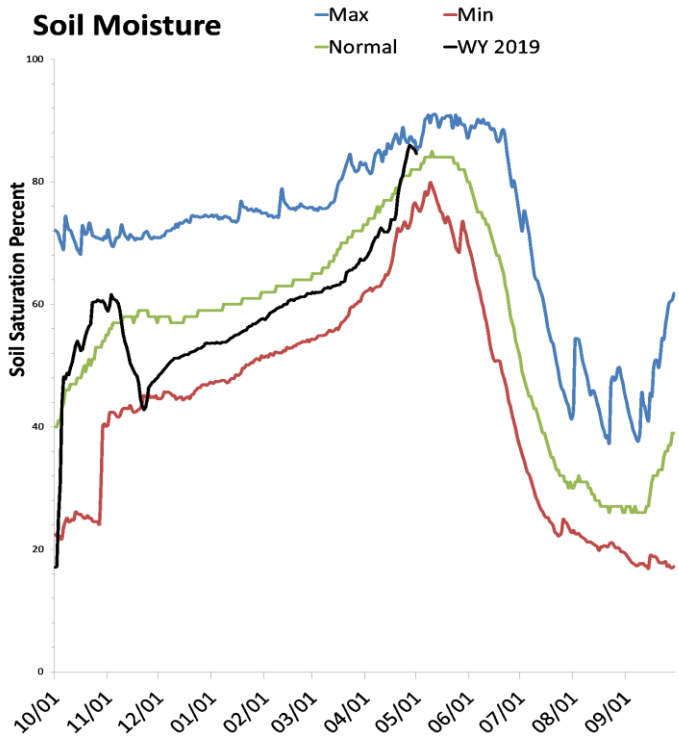
Bear River Basin

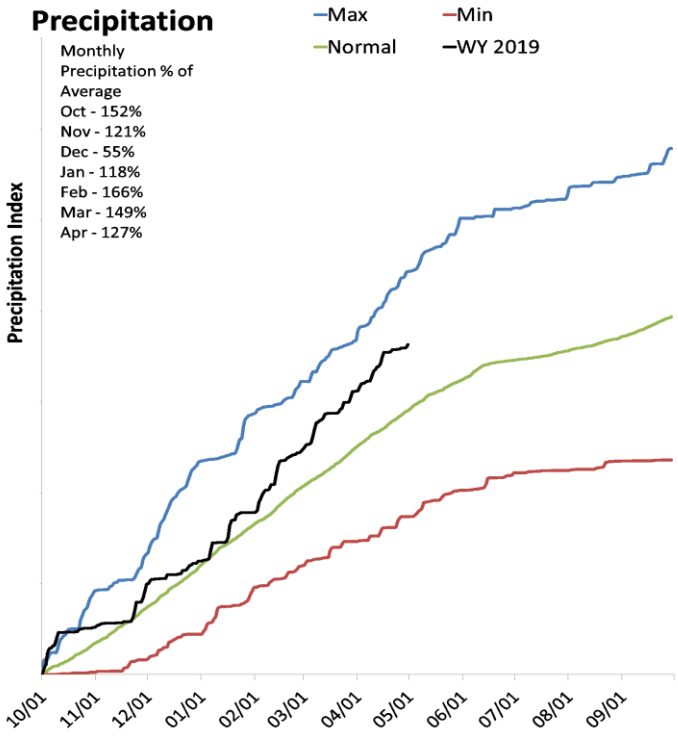
Weber & Ogden River Basins

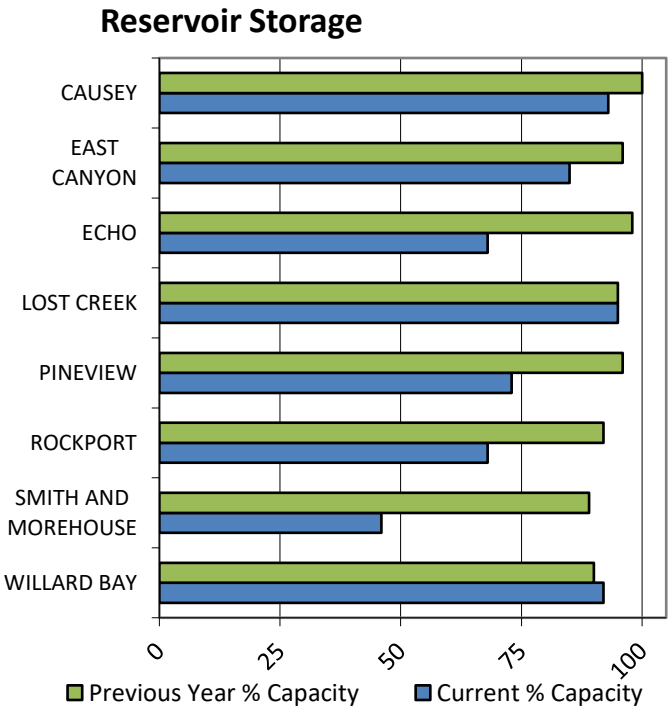
May 1, 2019

Snowpack in the Weber & Ogden River Basins is much above normal at 132% of normal, compared to 31% last year. Precipitation in April was above average at 127%, which brings the seasonal accumulation (Oct-Apr) to 125% of average. Soil moisture is at 84% compared to 84% last year. Reservoir storage is at 81% of capacity, compared to 93% last year. Forecast streamflow volumes range from 118% to 159% of average. The surface water supply index is 63% for the Ogden River, 75% for the Weber River.









SNOTEL Data

Data Current as of: 5/7/2019 7:35:46 AM

Weber Ogden Rivers
Streamflow Forecasts - May 1, 2019

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Weber Ogden Rivers	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Smith & Morehouse Resv Inflow								
	APR-JUL	37	39	41	121%	43	45	34
Weber R nr Oakley								
	APR-JUL	129	142	150	128%	158	171	117
	MAY-JUL	113	126	135	127%	144	157	106
Rockport Reservoir Inflow								
	APR-JUL	124	140	151	123%	162	178	123
	MAY-JUL	109	124	134	126%	144	159	106
Chalk Ck at Coalville								
	APR-JUL	30	41	49	120%	57	68	41
	MAY-JUL	22	34	41	121%	48	60	34
Weber R nr Coalville								
	APR-JUL	122	141	154	122%	167	186	126
	MAY-JUL	104	121	132	125%	143	160	106
Echo Reservoir Inflow								
	APR-JUL	136	176	205	123%	230	270	166
	MAY-JUL	120	155	179	118%	205	240	152
Lost Ck Reservoir Inflow								
	APR-JUL	8.1	12.5	15.5	128%	18.5	23	12.1
	MAY-JUL	4.5	8.4	11	129%	13.6	17.5	8.5
East Canyon Ck nr Jeremy Ranch								
	APR-JUL	15.4	18.7	21	138%	23	27	15.2
	MAY-JUL	6.2	10.8	14	137%	17.2	22	10.2
East Canyon Ck nr Morgan								
	APR-JUL	28	34	38	136%	42	48	28
	MAY-JUL	18.6	23	26	134%	29	33	19.4
Weber R at Gateway								
	APR-JUL	240	325	385	122%	445	535	315
	MAY-JUL	174	245	295	123%	340	410	240
SF Ogden R nr Huntsville								
	APR-JUL	56	64	69	123%	74	82	56
	MAY-JUL	38	45	49	123%	53	60	40
Pineview Reservoir Inflow								
	APR-JUL	93	124	144	122%	164	195	118
	MAY-JUL	55	77	93	122%	109	131	76
Wheeler Ck nr Huntsville								
	APR-JUL	6.3	7.5	8.4	133%	9.3	10.5	6.3
	MAY-JUL	3.5	4.9	5.8	135%	6.7	8.1	4.3
Centerville Ck								
	APR-JUL	1.82	1.99	2.1	156%	2.2	2.4	1.35
	MAY-JUL	1.36	1.56	1.7	159%	1.84	2	1.07

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Reservoir Storage End of April, 2019	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Causey Reservoir	6.6	7.1	5.0	7.1
East Canyon Reservoir	42.1	47.6	40.4	49.5
Echo Reservoir	50.1	72.3	54.4	73.9
Lost Creek Reservoir	21.5	21.4	14.6	22.5
Pineview Reservoir	80.0	105.3	79.9	110.1
Rockport Reservoir	41.5	55.8	40.1	60.9
Willard Bay	196.9	193.1	158.7	215.0
Smith And Morehouse Reservoir	3.7	7.2	4.5	8.1
Basin-wide Total	442.3	509.9	397.6	547.1
# of reservoirs	8	8	8	8

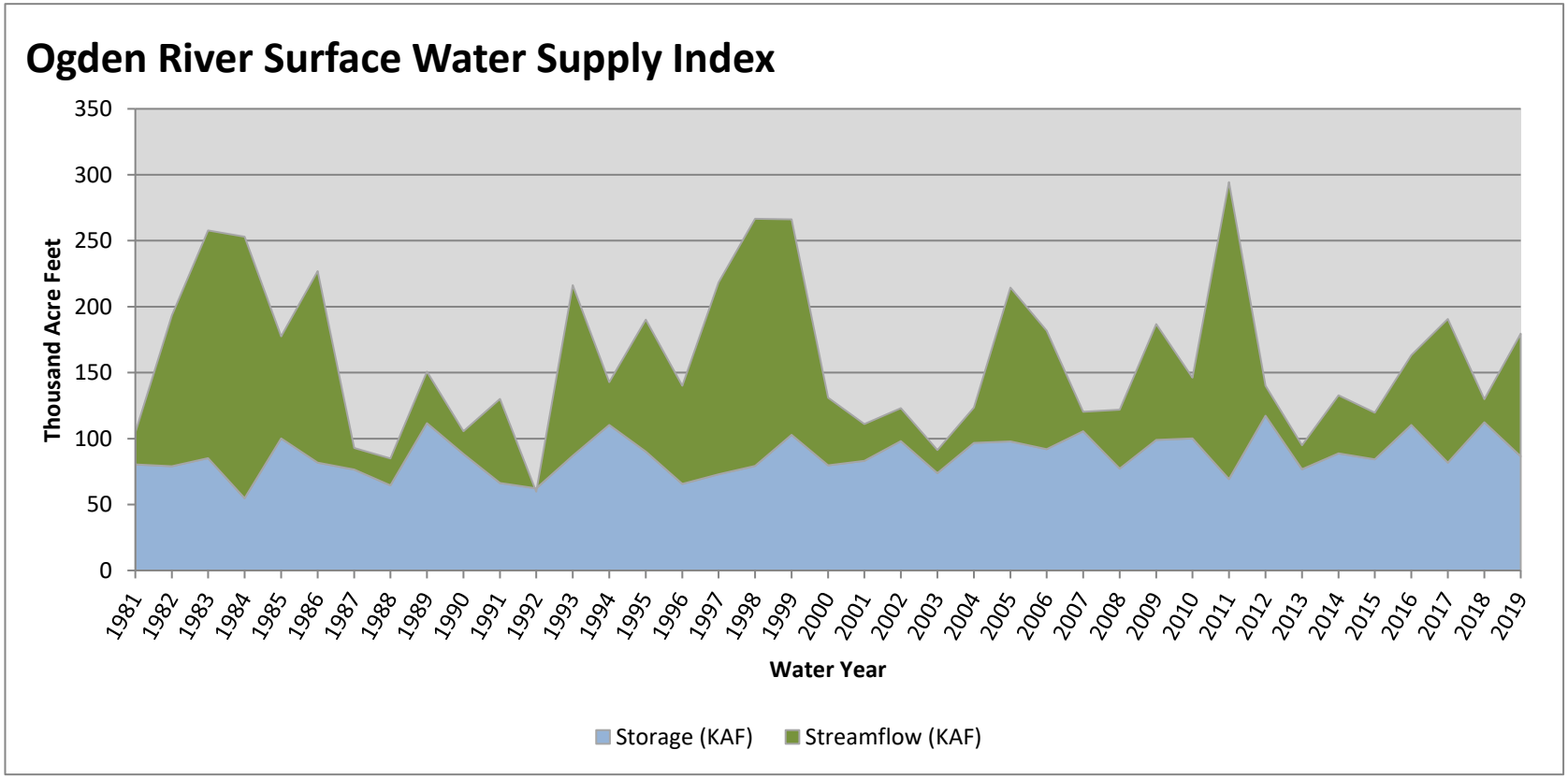
Watershed Snowpack Analysis May 1, 2019	# of Sites	% Median	Last Year % Median
Upper Weber	11	136%	42%
Lower Weber	7	132%	26%
Ogden River	5	122%	14%
Lost Creek	3	127%	40%

May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Ogden River	**86.60**	**93.00**	**179.60**	**63**	**1.04**	**16, 85, 06, 09**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.

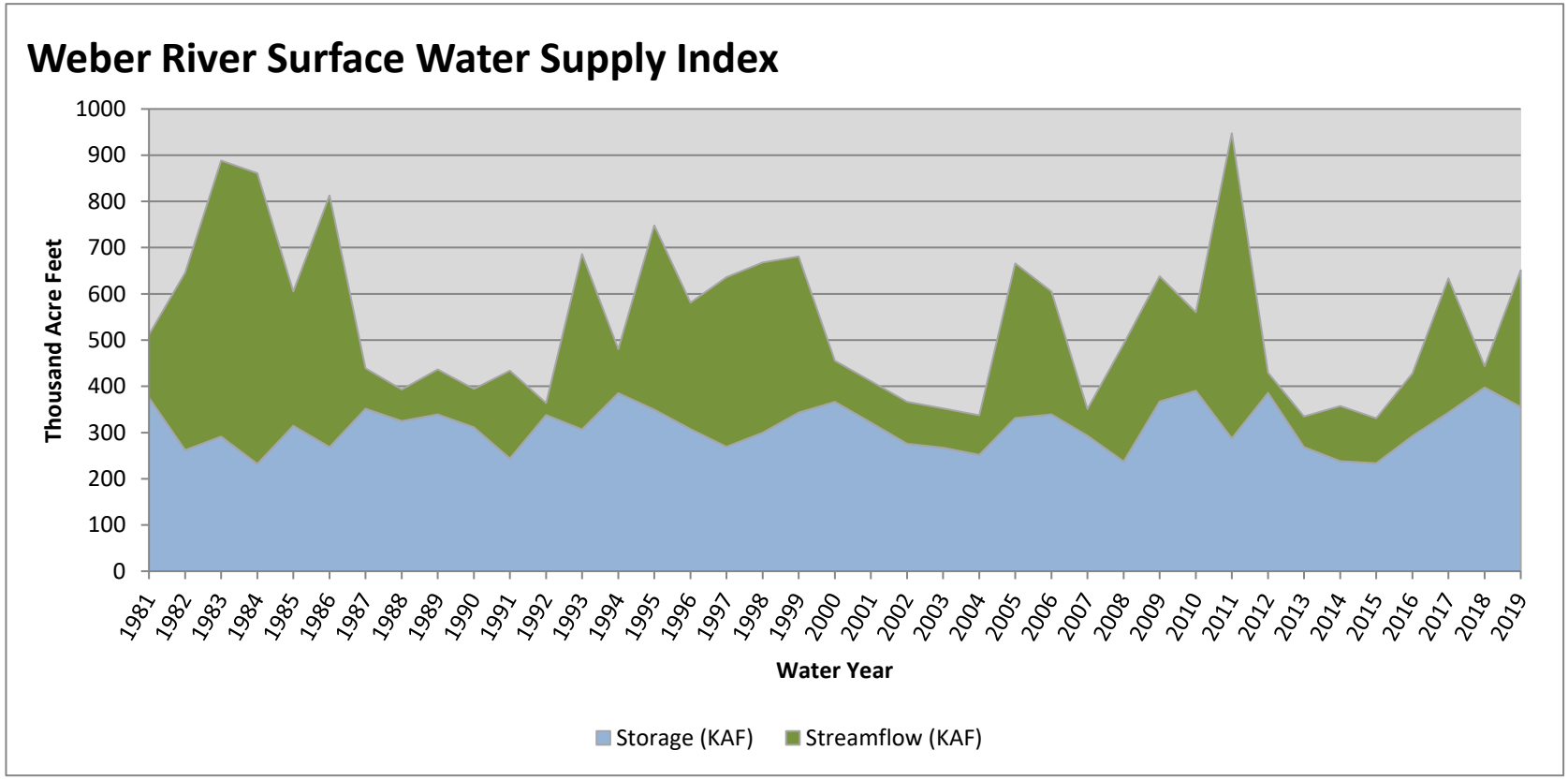


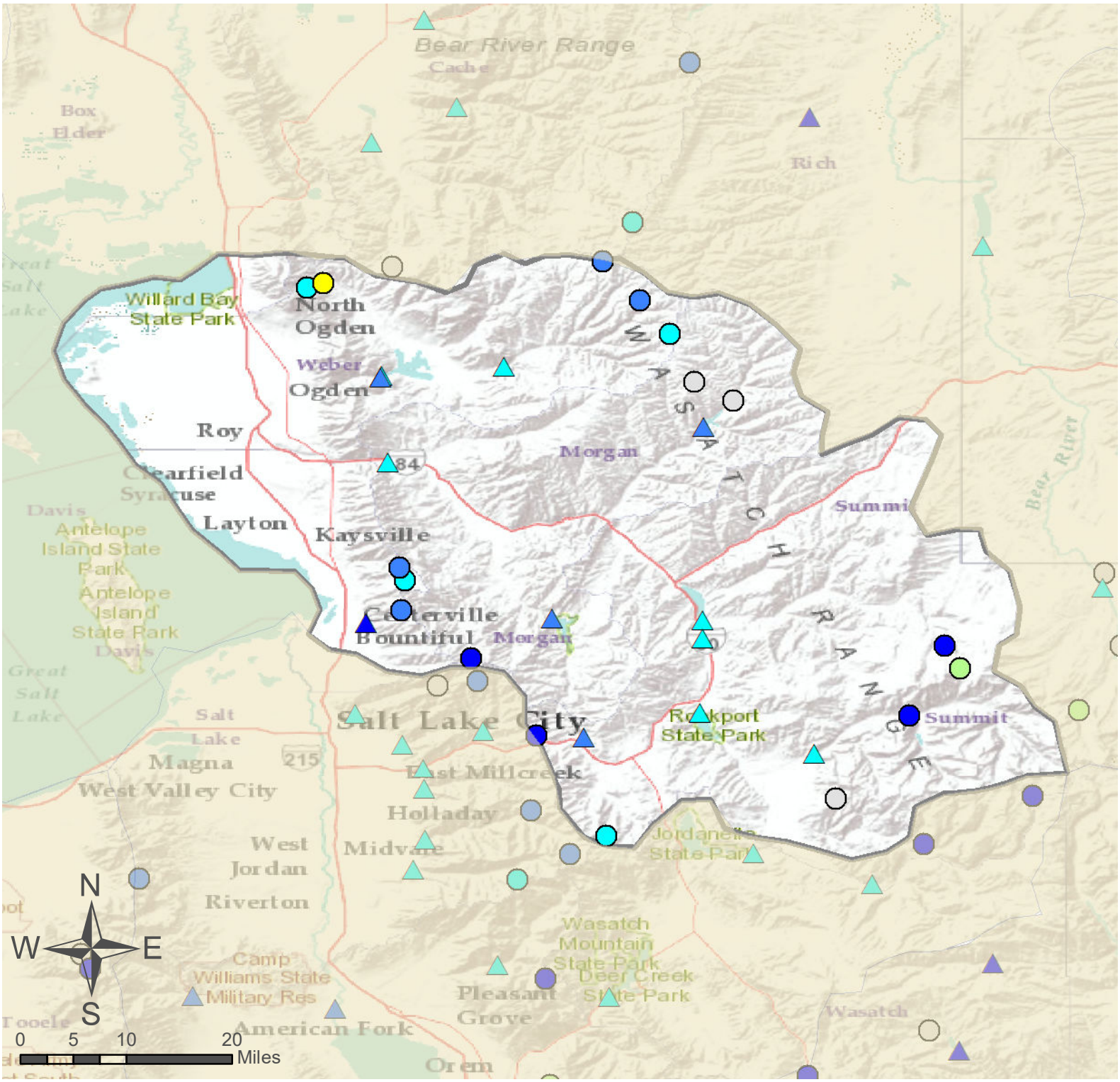
May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Weber River	**355.73**	**295.00**	**650.73**	**75**	**2.08**	**09, 82, 05, 98**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.





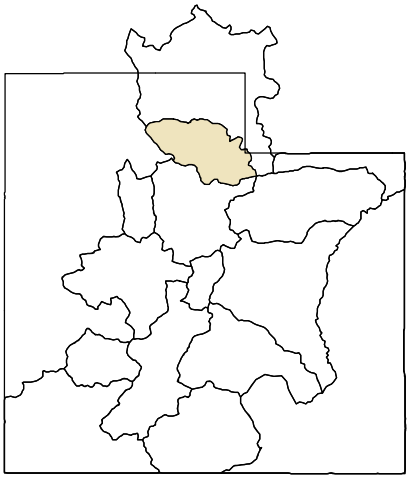
Weber & Ogden River Basins

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



<u>As of May 1, 2019:</u>

132% of Normal SWE

125% of Normal Precipitation

127% of Normal Precipitation Last Month

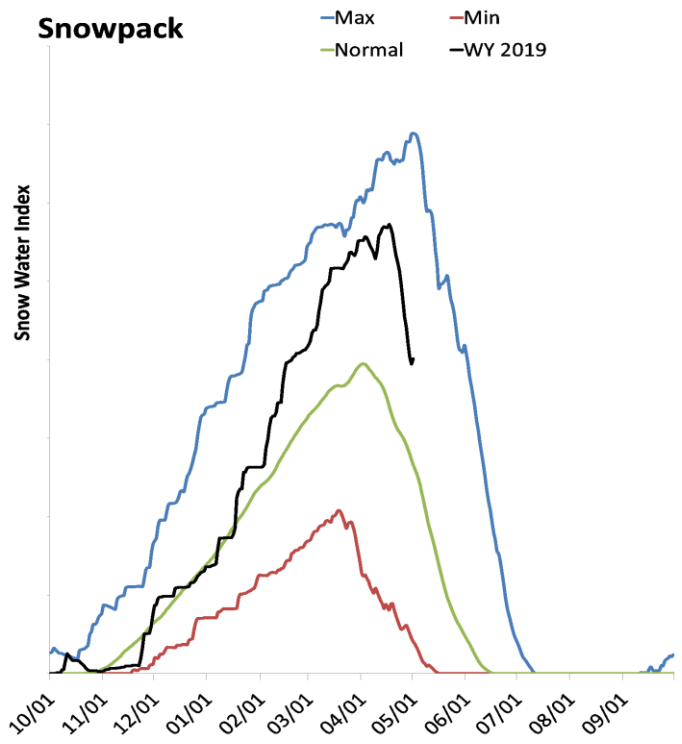
84% Saturation Soil Moisture

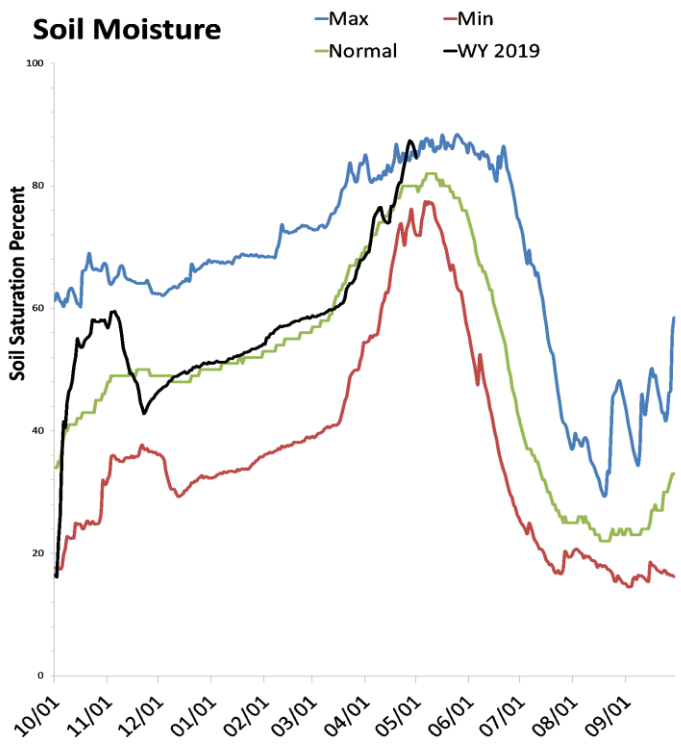
Weber & Ogden River Basins

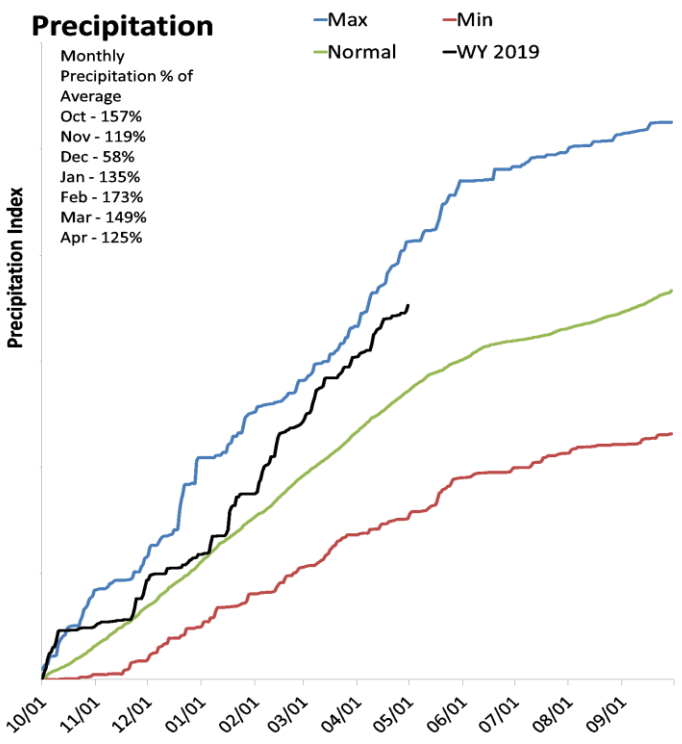
Provo & Jordan River Basins

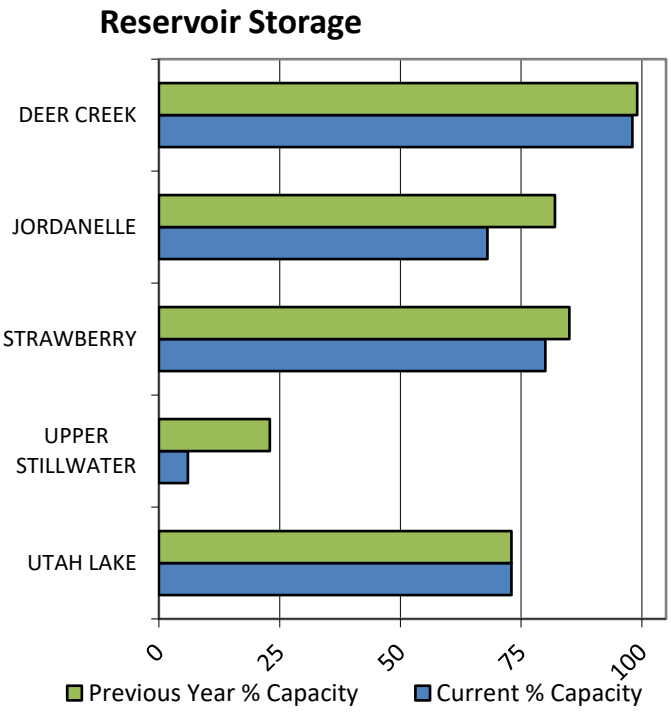
May 1, 2019

Snowpack in the Provo & Jordan River Basins is much above normal at 151% of normal, compared to 34% last year. Precipitation in April was above average at 125%, which brings the seasonal accumulation (Oct-Apr) to 130% of average. Soil moisture is at 85% compared to 79% last year. Reservoir storage is at 77% of capacity, compared to 81% last year. Forecast streamflow volumes range from 115% to 143% of average. The surface water supply index is 38% for the Provo River.









SNOTEL Data

Data Current as of: 5/7/2019 7:35:59 AM

Provo Jordan Rivers
Streamflow Forecasts - May 1, 2019

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Provo Jordan Rivers	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Provo R at Woodland								
	APR-JUL	90	108	121	121%	135	157	100
	MAY-JUL	86	100	109	122%	118	132	89
Provo R at Hailstone								
	APR-JUL	95	116	131	121%	147	173	108
	MAY-JUL	87	105	118	126%	132	154	94
Provo R bl Deer Ck Dam								
	APR-JUL	113	131	144	124%	157	175	116
	MAY-JUL	90	107	118	126%	129	146	94
Spanish Fk at Castilla								
	APR-JUL	19.7	62	91	132%	120	162	69
	MAY-JUL	3.5	43	69	128%	95	134	54
American Fk ab Upper Powerplant								
	APR-JUL	31	36	40	125%	44	49	32
	MAY-JUL	29	34	38	127%	42	47	30
Utah Lake Inflow								
	APR-JUL	29	215	360	136%	500	710	265
	MAY-JUL	17.3	128	265	138%	400	595	192
W Canyon Ck nr Cedar Fort								
	APR-JUL	1.66	2.2	2.5	142%	2.8	3.3	1.76
	MAY-JUL	1.41	1.88	2.2	143%	2.5	3	1.54
Little Cottonwood Ck nr SLC								
	APR-JUL	34	41	45	118%	50	57	38
	MAY-JUL	36	40	43	116%	46	50	37
Big Cottonwood Ck nr SLC								
	APR-JUL	32	38	42	117%	46	52	36
	MAY-JUL	29	34	38	115%	42	47	33
Mill Ck nr SLC								
	MAY-JUL	4.1	5.8	7	119%	8.2	9.9	5.9
Parleys Ck nr SLC								
	APR-JUL	10.8	14.6	17.2	121%	19.8	24	14.2
	MAY-JUL	9.9	13.2	15.4	120%	17.6	21	12.8
Dell Fk nr SLC								
	APR-JUL	2.8	5.3	6.9	125%	8.5	11	5.5
	MAY-JUL	1.23	3.4	4.9	126%	6.4	8.6	3.9
Emigration Ck nr SLC								
	APR-JUL	2.3	3.9	5	125%	6.1	7.7	4
	MAY-JUL	1.58	3	3.9	126%	4.8	6.2	3.1
City Ck nr SLC								
	APR-JUL	5.6	7.7	9.2	119%	10.7	12.8	7.7
	MAY-JUL	5.5	7.5	8.8	121%	10.1	12.1	7.3
Salt Ck at Nephi								
	APR-JUL	7.6	9.6	10.9	115%	12.2	14.2	9.5
	MAY-JUL	6.1	7.7	8.8	116%	9.9	11.5	7.6

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Reservoir Storage End of April, 2019	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Deer Creek Reservoir	146.6	148.4	122.0	149.7
Strawberry Reservoir	883.4	941.2	678.4	1105.9
Utah Lake	631.4	633.9	830.9	870.9
Jordanelle Reservoir	217.9	263.5	247.1	314.0
Basin-wide Total	1879.3	1987.0	1878.4	2440.5
# of reservoirs	4	4	4	4

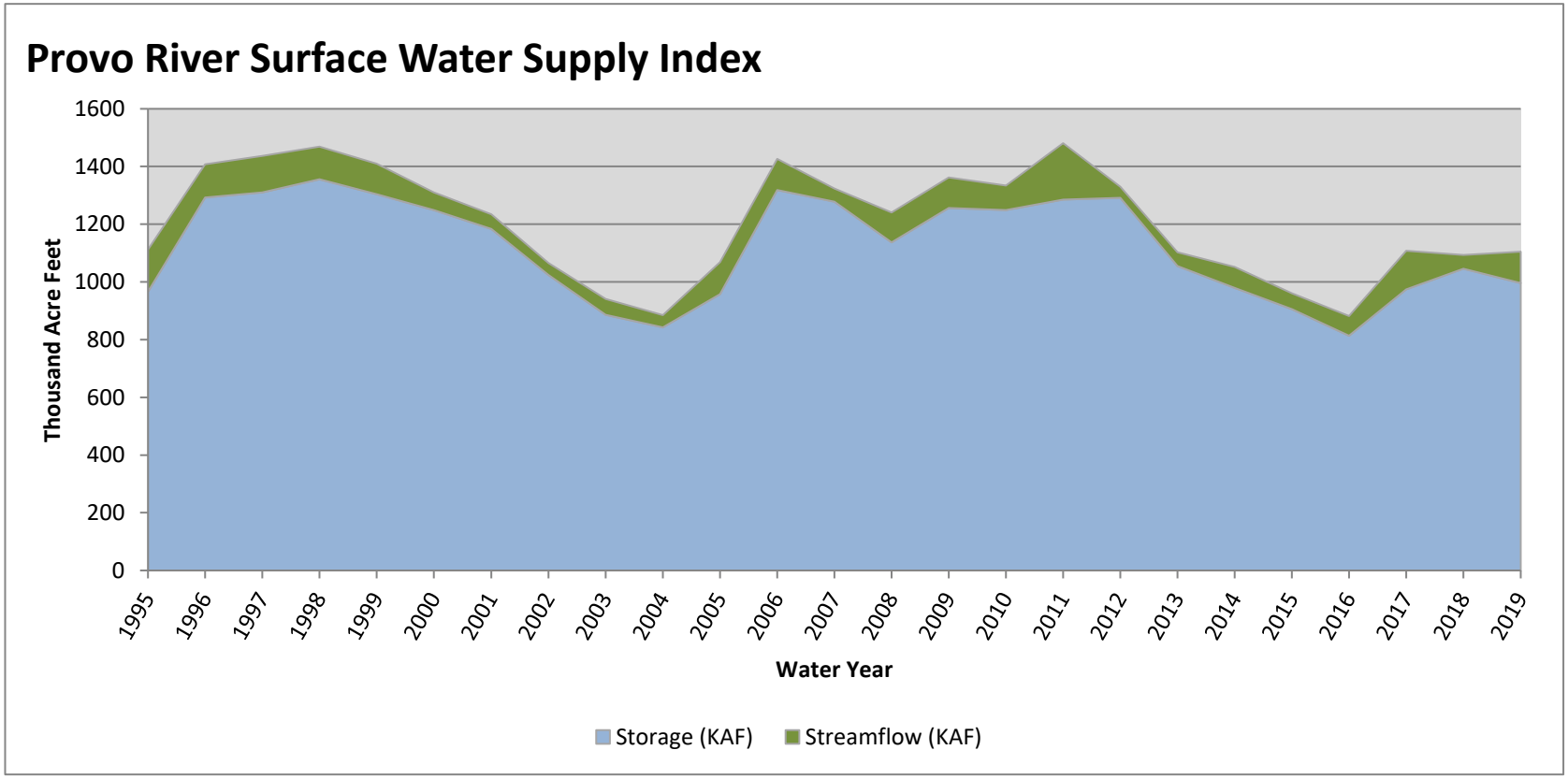
Watershed Snowpack Analysis May 1, 2019	# of Sites	% Median	Last Year % Median
Provo River	7	151%	42%
Jordan River	16	136%	47%
Utah Lake	13	146%	40%
Spanish Fork River	5	168%	4%
Six Creeks	15	136%	48%
Cottonwood Creeks	7	129%	53%

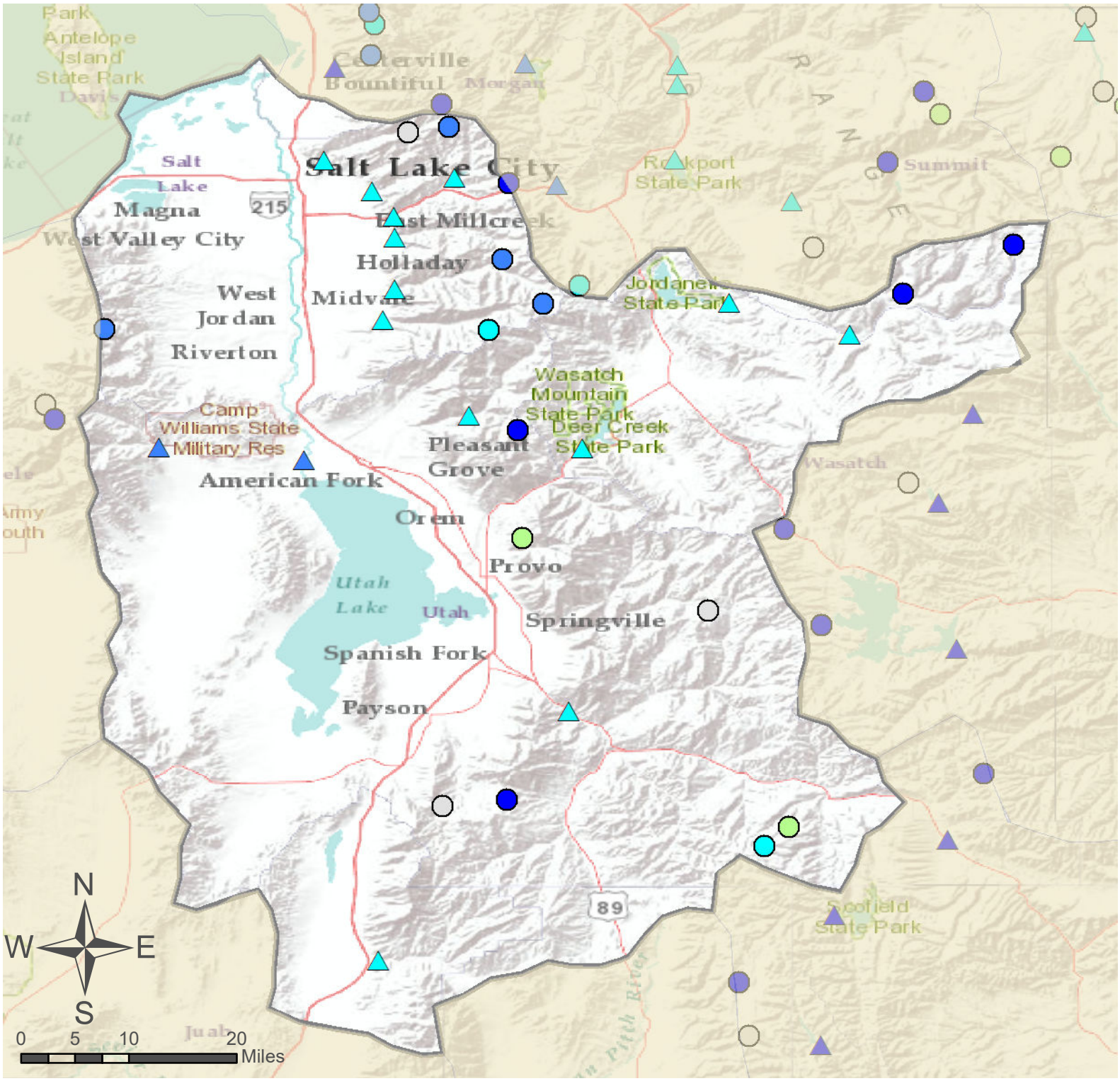
May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Provo River	**995.91**	**109.00**	**1104.91**	**38**	**-0.96**	**18, 13, 17, 95**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.





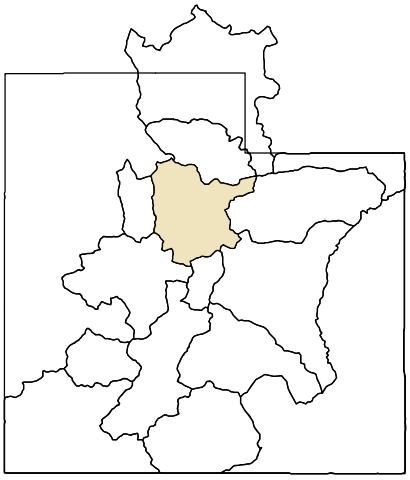
Provo & Jordan River Basins

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



As of May 1, 2019:

151% of Normal SWE

130% of Normal Precipitation

125% of Normal Precipitation Last Month

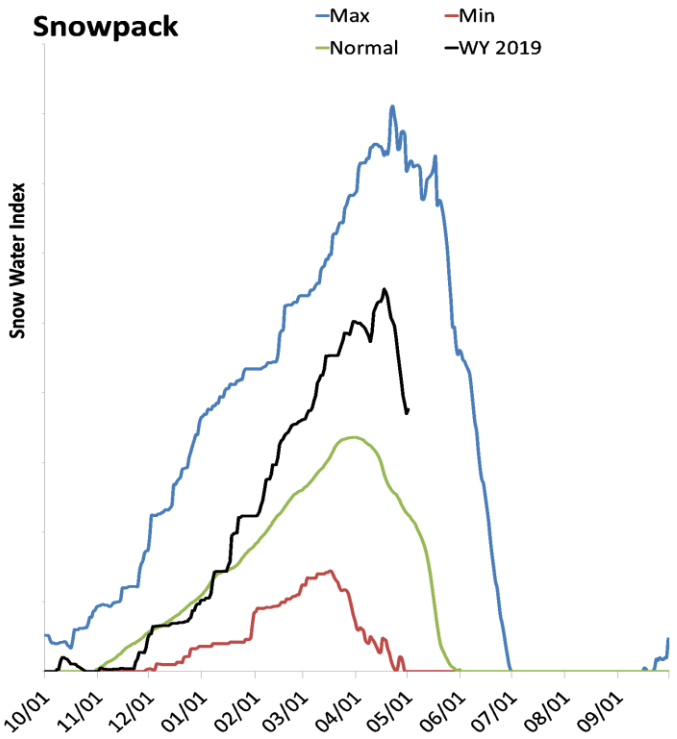
85% Saturation Soil Moisture

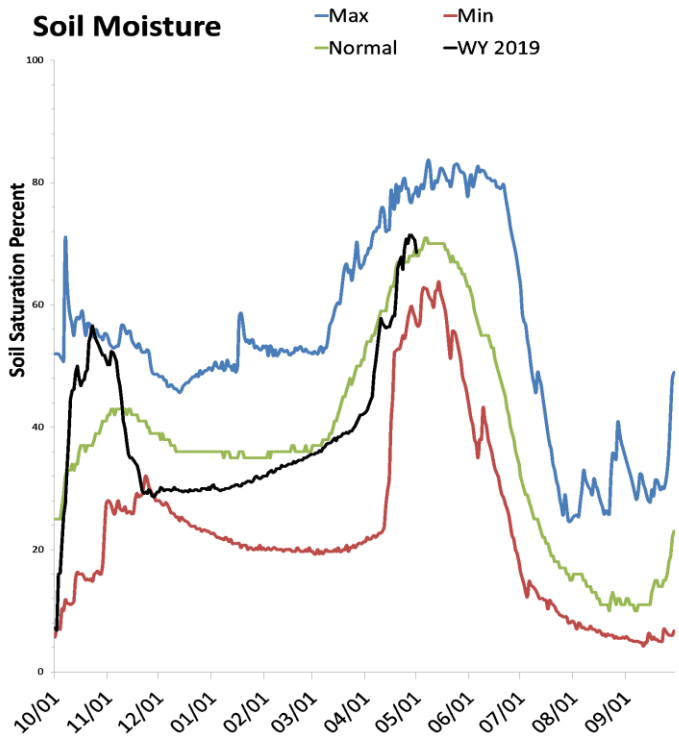
Provo & Jordan River Basins

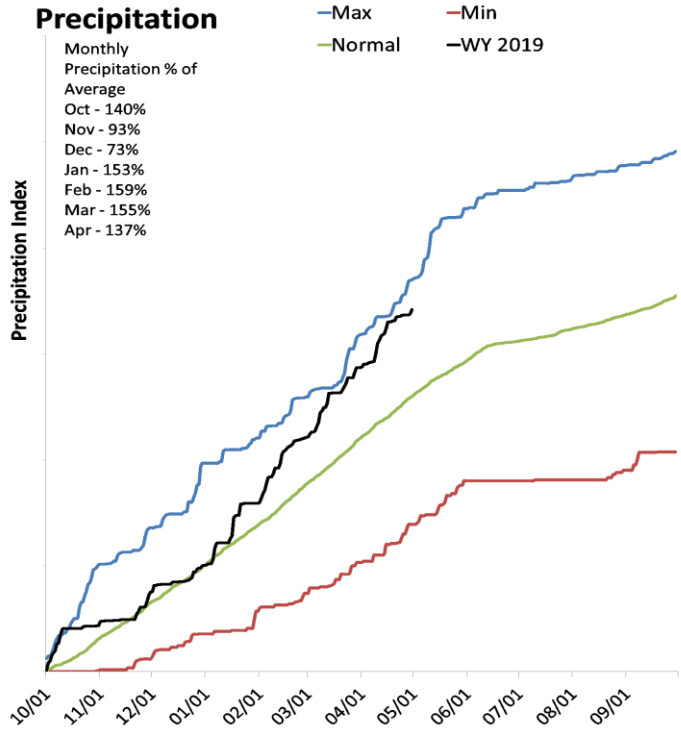
Tooele Valley & West Desert Basins

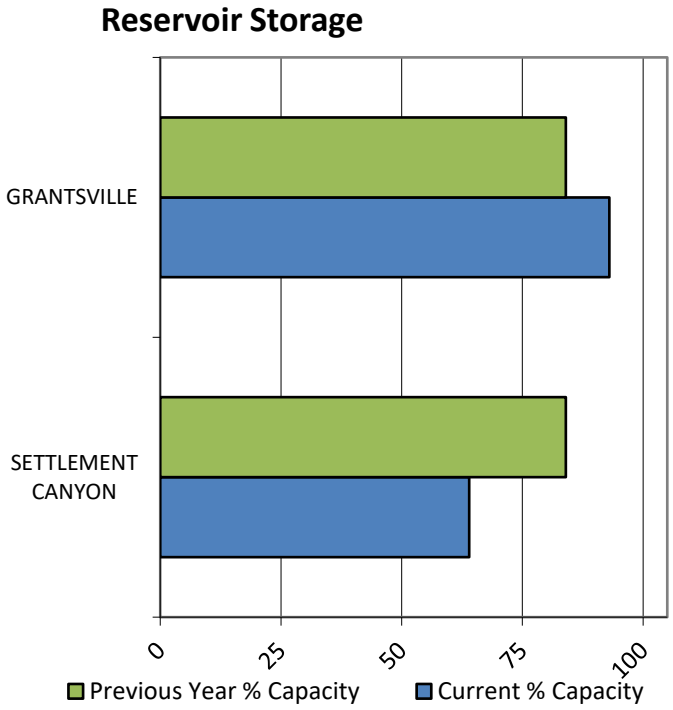
May 1, 2019

Snowpack in the Tooele Valley & West Desert Basins is much above normal at 167% of normal, compared to 20% last year. Precipitation in April was much above average at 138%, which brings the seasonal accumulation (Oct-Apr) to 132% of average. Soil moisture is at 70% compared to 62% last year. Reservoir storage is at 86% of capacity, compared to 84% last year. Forecast streamflow volumes range from 119% to 150% of average.









SNOTEL Data

Data Current as of: 5/7/2019 7:36:10 AM

Tooele Valley West Desert
Streamflow Forecasts - May 1, 2019

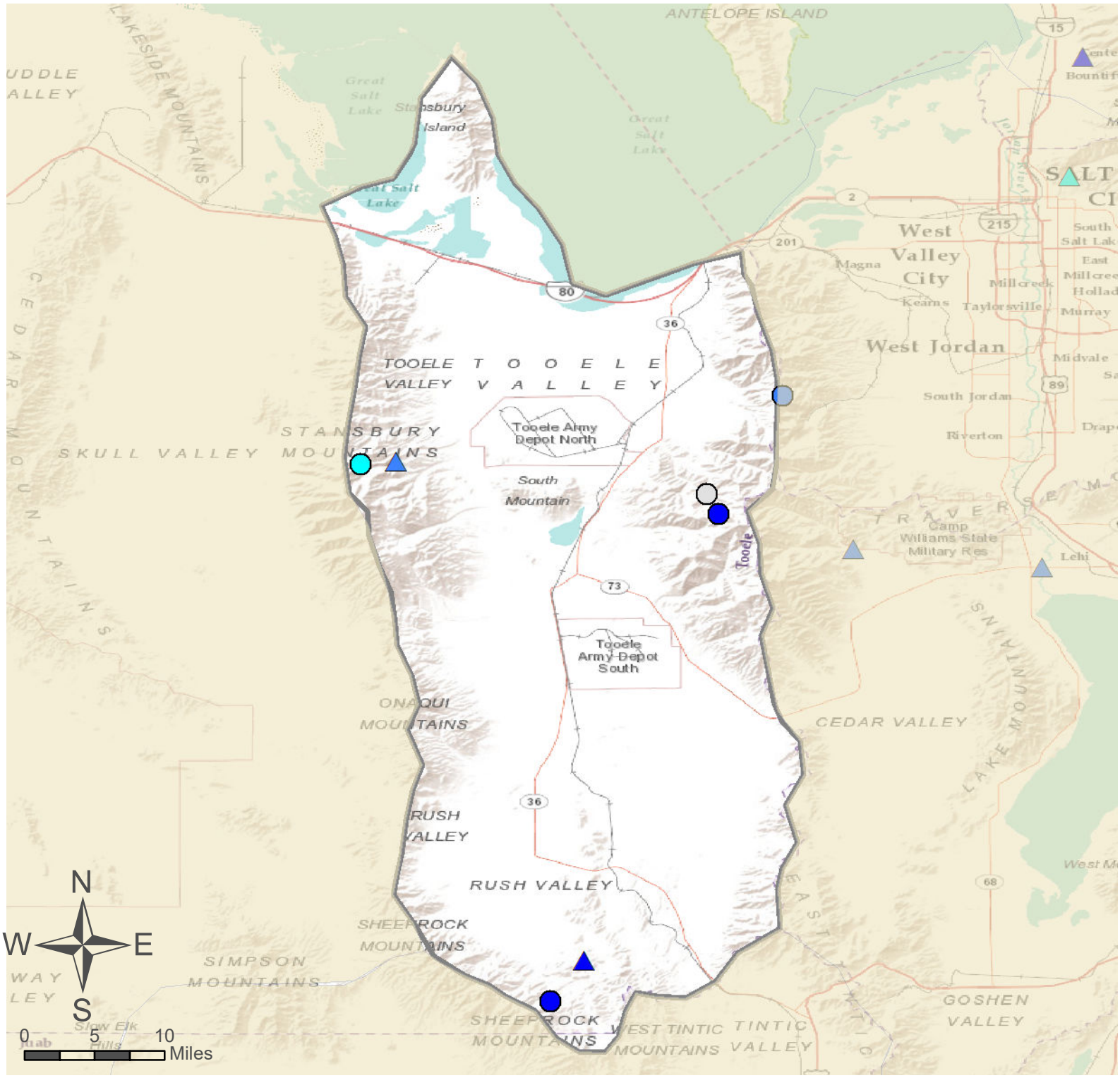
Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Tooele Valley West Desert	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Vernon Ck nr Vernon								
	APR-JUL	1.11	1.7	2.1	151%	2.5	3.1	1.39
	MAY-JUL	0.77	1.22	1.52	150%	1.82	2.3	1.01
S Willow Ck nr Grantsville								
	APR-JUL	3.2	3.8	4.2	135%	4.6	5.2	3.1
	MAY-JUL	2.7	3.3	3.6	133%	3.9	4.5	2.7
Dunn Ck nr Park Valley								
	APR-JUL	2.2	3	3.5	121%	4	4.8	2.9
	MAY-JUL	1.83	2.6	3.1	119%	3.6	4.4	2.6
W Canyon Ck nr Cedar Fort								
	APR-JUL	1.66	2.2	2.5	142%	2.8	3.3	1.76
	MAY-JUL	1.41	1.88	2.2	143%	2.5	3	1.54

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Reservoir Storage End of April, 2019	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Settlement Canyon Reservoir	0.6	0.8	0.8	1.0
Grantsville Reservoir	3.1	2.8	2.8	3.3
Basin-wide Total	3.7	3.6	3.6	4.3
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis May 1, 2019	# of Sites	% Median	Last Year % Median
Tooele Valley	3	154%	19%
Raft River	0		
Deep Creek	0		
Northwestern Utah	2	151%	8%



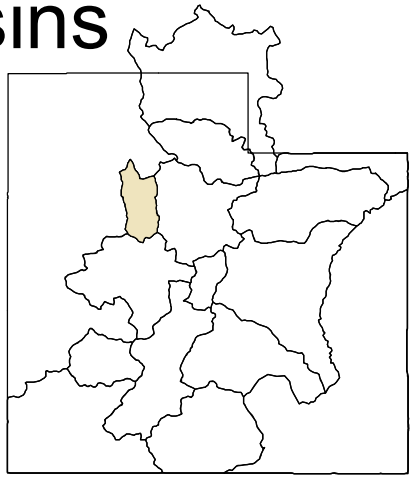
Tooele Valley & West Desert Basins

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



<u>As of May 1, 2019:</u>

167% of Normal SWE

132% of Normal Precipitation

138% of Normal Precipitation Last Month

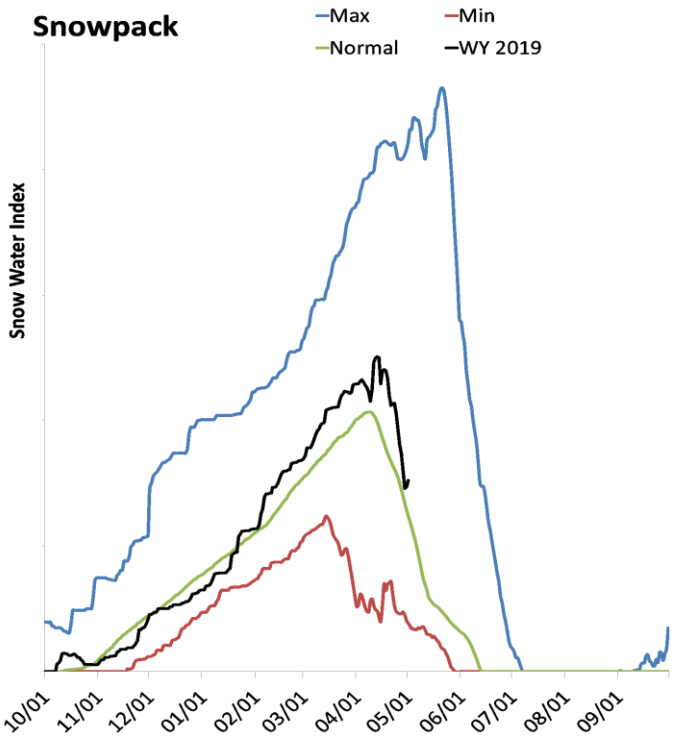
70% Saturation Soil Moisture

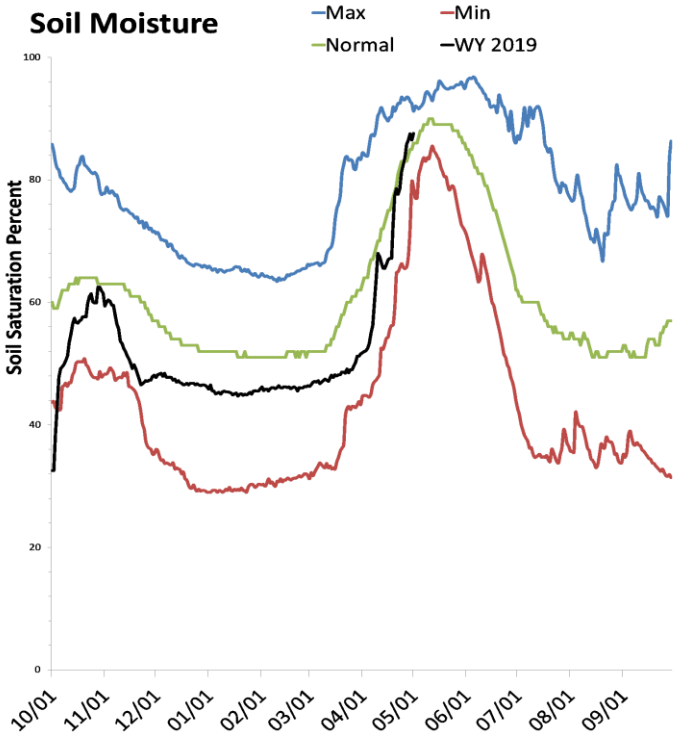
Tooele Valley & West Desert Basins

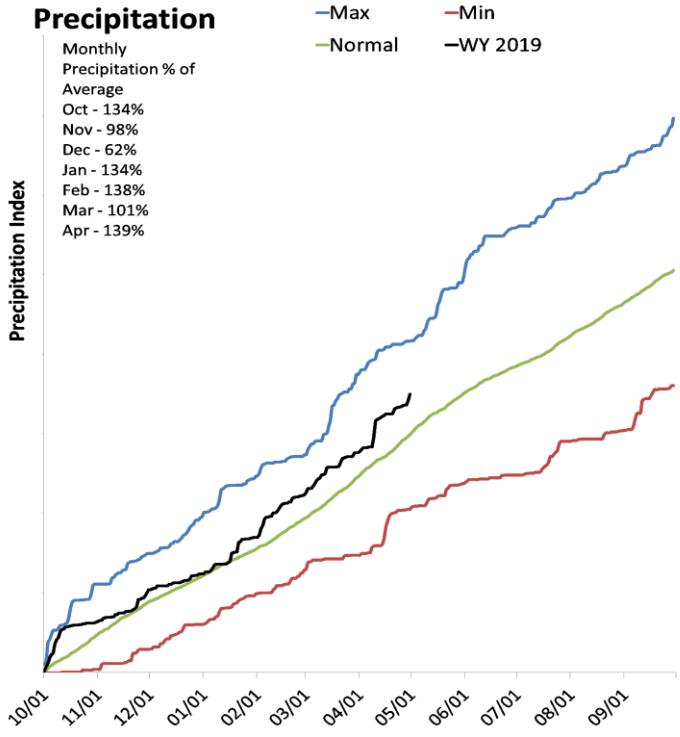
Northeastern Uinta Basin

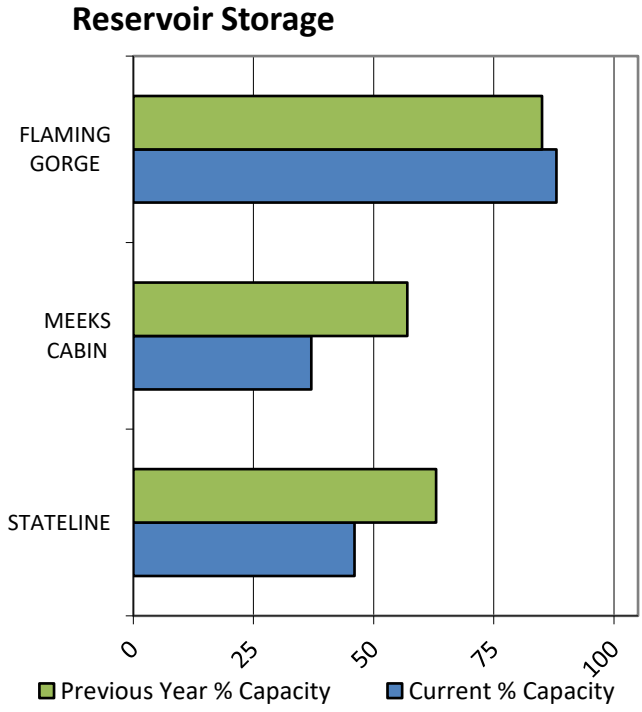
May 1, 2019

Snowpack in the Northeastern Uinta Basin is above normal at 123% of normal, compared to 37% last year. Precipitation in April was much above average at 141%, which brings the seasonal accumulation (Oct-Apr) to 117% of average. Soil moisture is at 85% compared to 82% last year. Reservoir storage is at 88% of capacity, compared to 85% last year. Forecast streamflow volumes range from 98% to 122% of average. The surface water supply index is 70% for the Blacks Fork, 70% for the Smiths Creek.









SNOTEL Data

Data Current as of: 5/7/2019 7:36:18 AM

Northeastern Uintas
Streamflow Forecasts - May 1, 2019

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Northeastern Uintas	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Blacks Fk nr Robertson								
	APR-JUL	86	97	105	122%	113	124	86
	MAY-JUL	81	92	100	122%	108	119	82
EF of Smiths Fork nr Robertson [2]								
	APR-JUL	24	30	33	122%	37	43	27
	MAY-JUL	22	28	31	119%	35	41	26
Flaming Gorge Reservoir Inflow [2]								
	APR-JUL	770	950	1070	109%	1190	1370	980
	MAY-JUL	530	710	830	98%	950	1130	845
Ashley Ck nr Vernal								
	APR-JUL	42	51	58	116%	64	75	50
	MAY-JUL	41	50	57	121%	63	74	47
Big Brush Ck ab Red Fleet Reservoir								
	APR-JUL	17.1	21	24	114%	27	32	21
	MAY-JUL	15.2	19	22	120%	25	30	18.4

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Reservoir Storage End of April, 2019	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Flaming Gorge Reservoir	3302.6	3185.8	3039.0	3749.0
Stateline Reservoir	5.5	7.6	6.3	12.0
Meeks Cabin Reservoir	11.9	18.4	16.5	32.5
Basin-wide Total	3320.0	3211.7	3061.8	3793.5
# of reservoirs	3	3	3	3

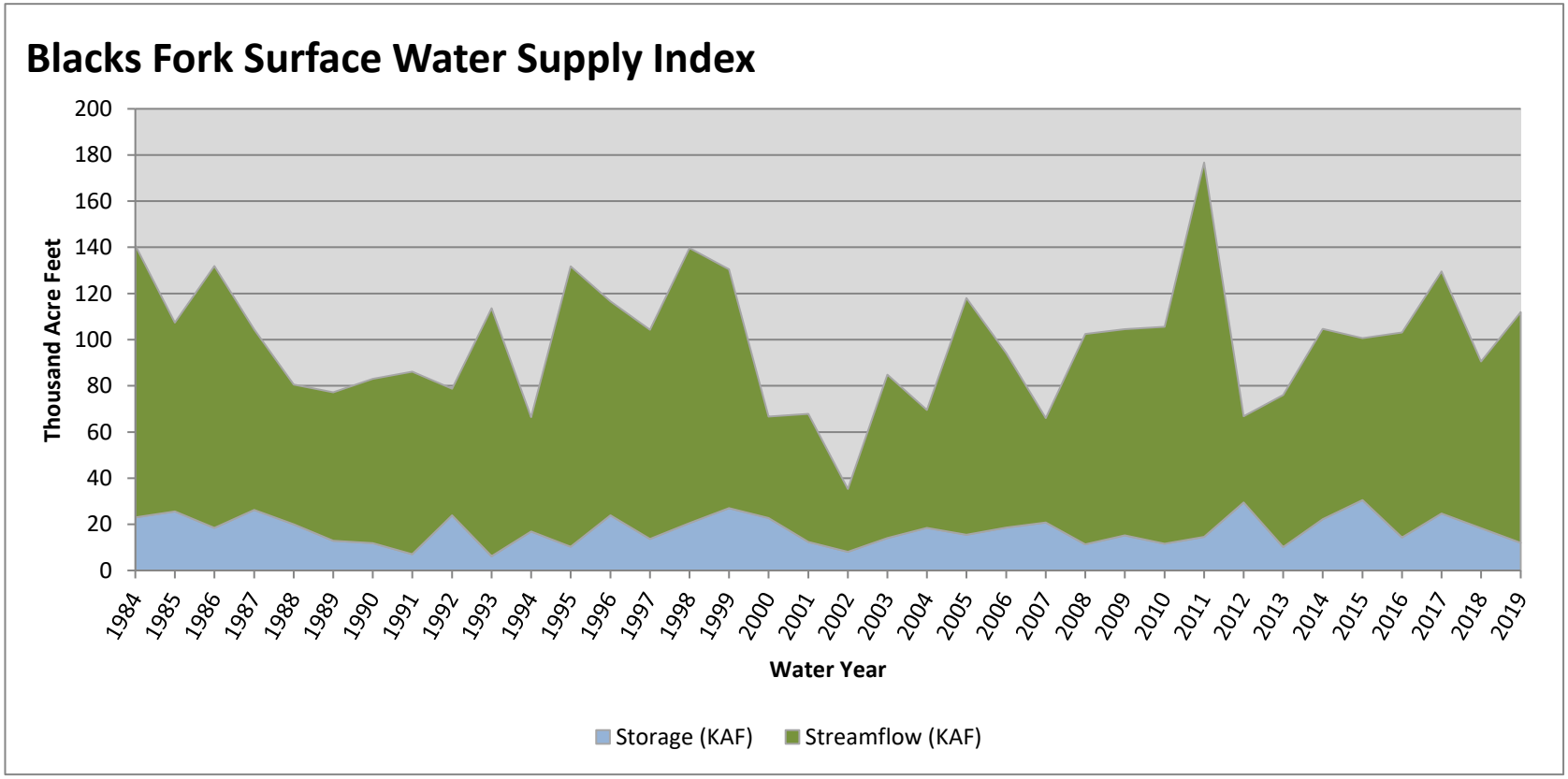
Watershed Snowpack Analysis May 1, 2019	# of Sites	% Median	Last Year % Median
Blacks Fork River	5	118%	55%
Upper Green	2	96%	0%
Ashley Brush Creeks	4	146%	13%

May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Blacks Fork	**11.93**	**100.00**	**111.93**	**70**	**1.69**	**10, 85, 93, 96**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.

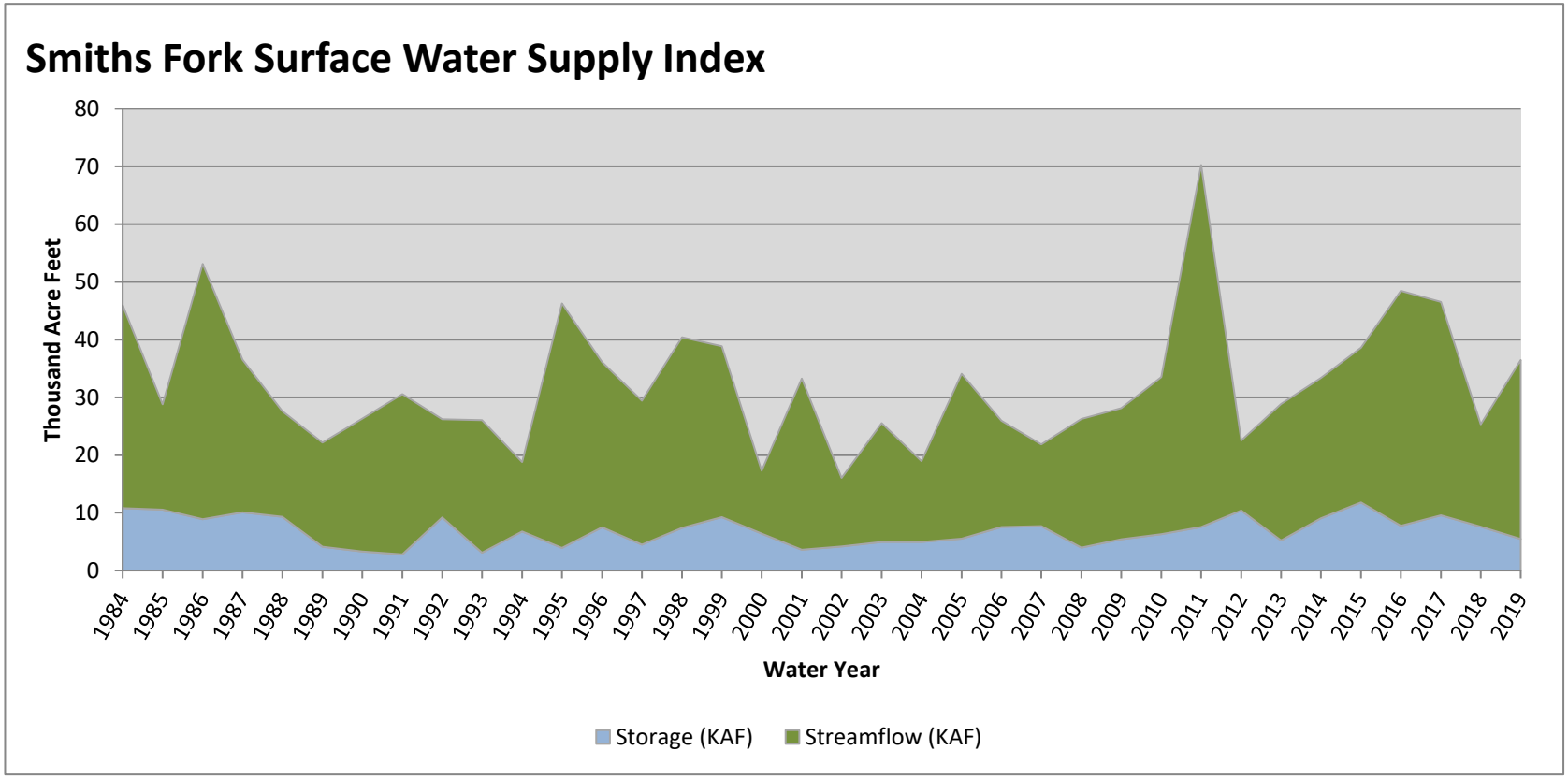


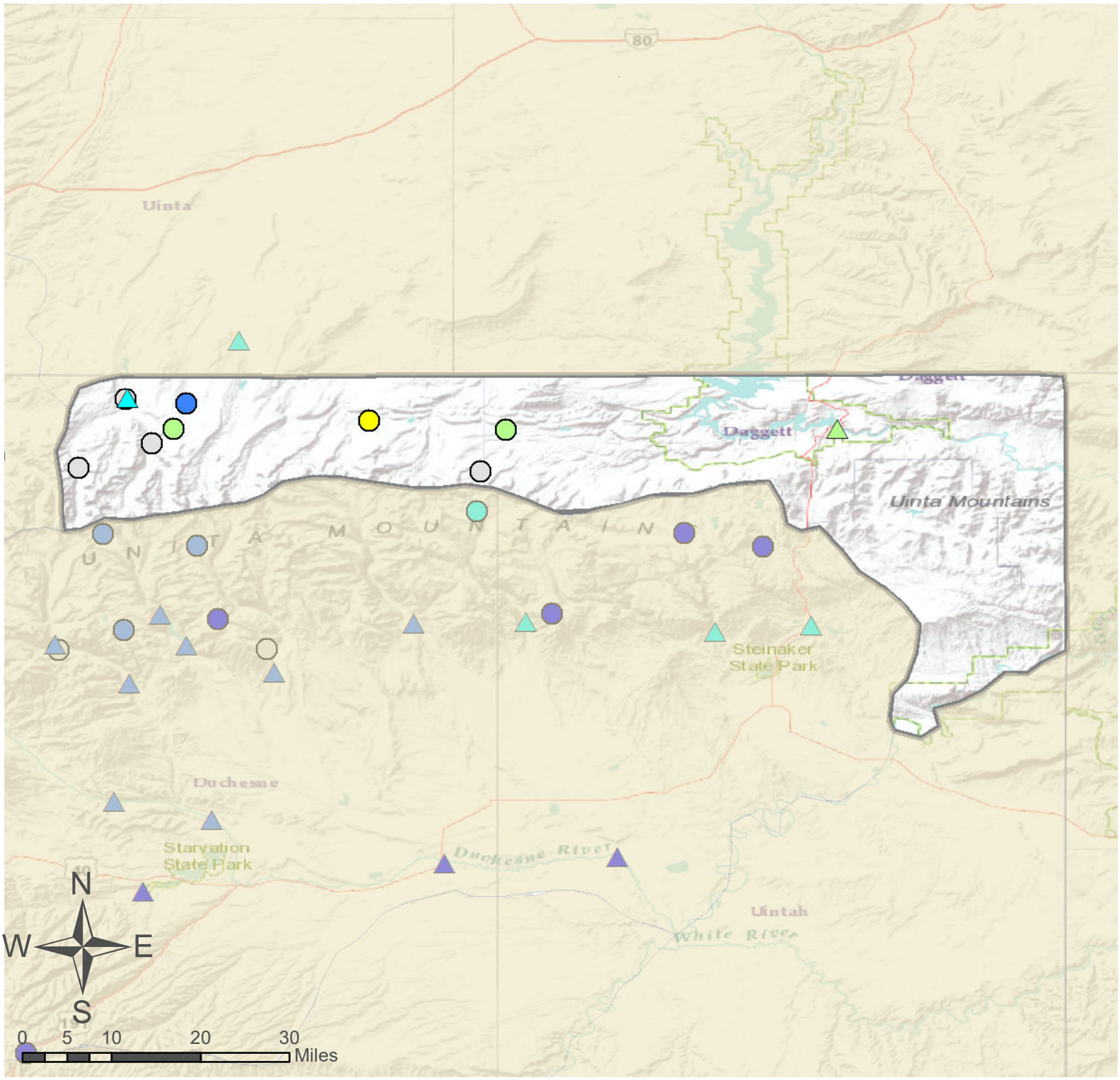
May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Smiths Fork	**5.48**	**31.00**	**36.48**	**70**	**1.69**	**05, 96, 87, 15**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.





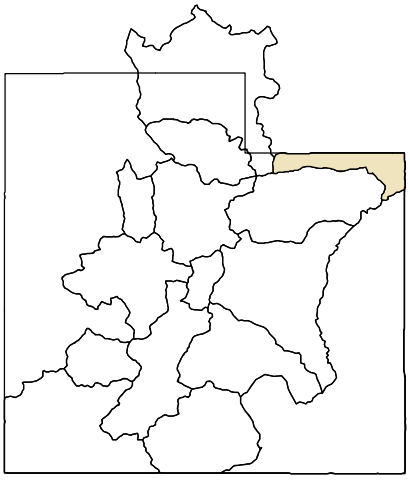
Northeastern Uinta Basin

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



<u>As of May 1, 2019:</u>

123% of Normal SWE

117% of Normal Precipitation

141% of Normal Precipitation Last Month

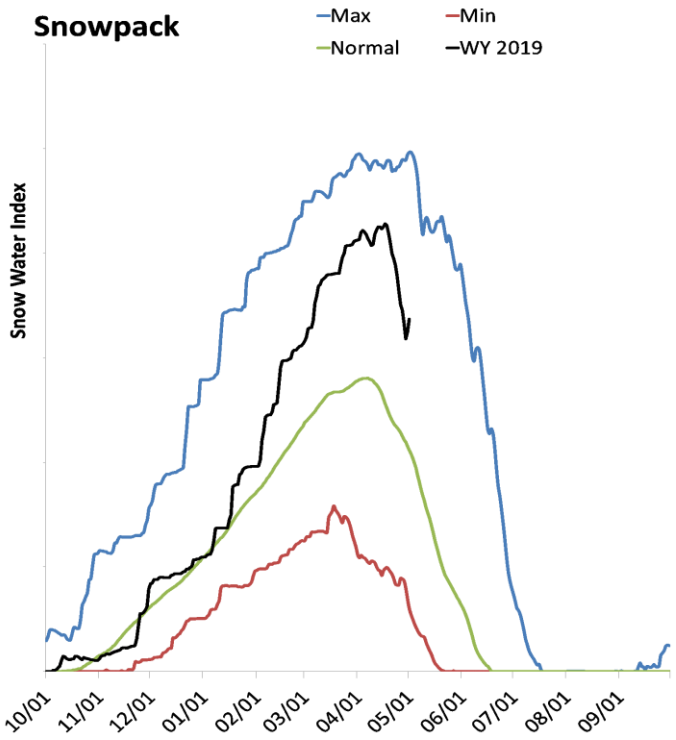
85% Saturation Soil Moisture

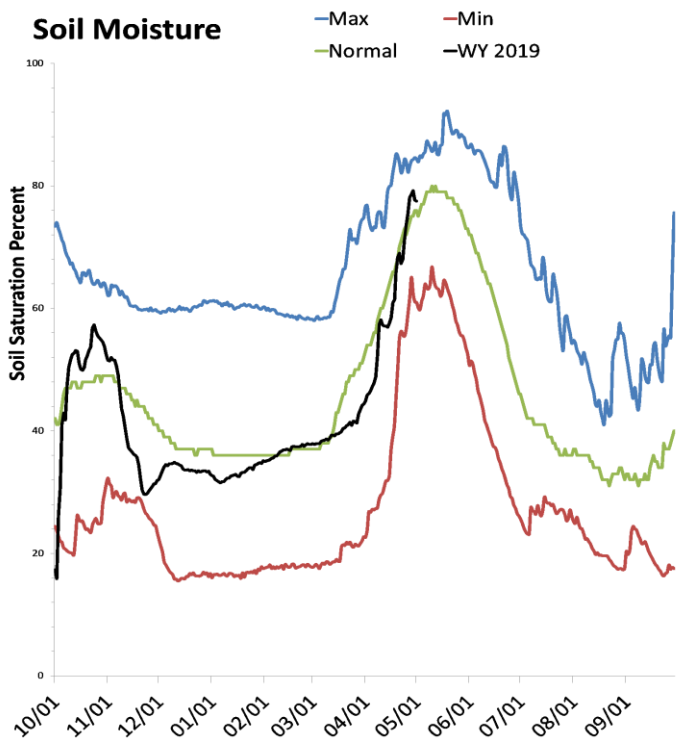
Northeastern Uinta Basin

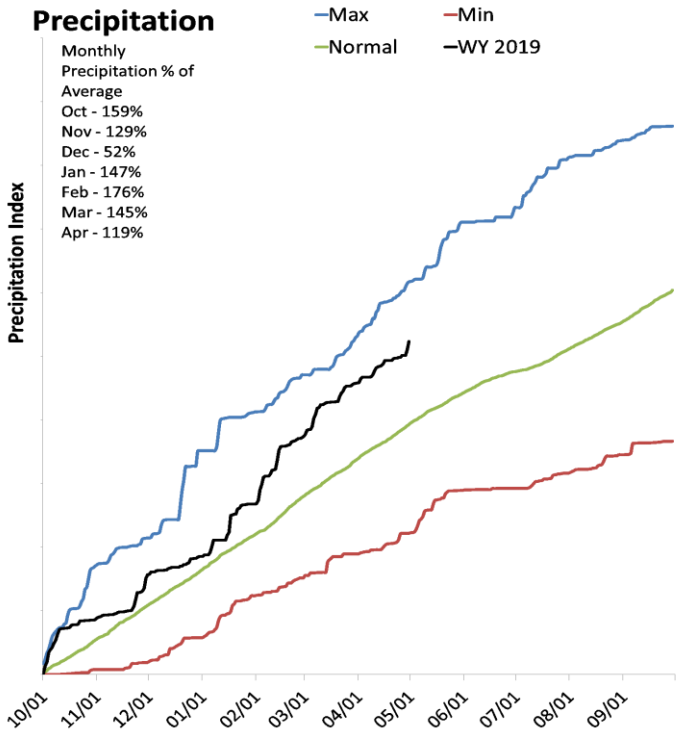
Duchesne River Basin

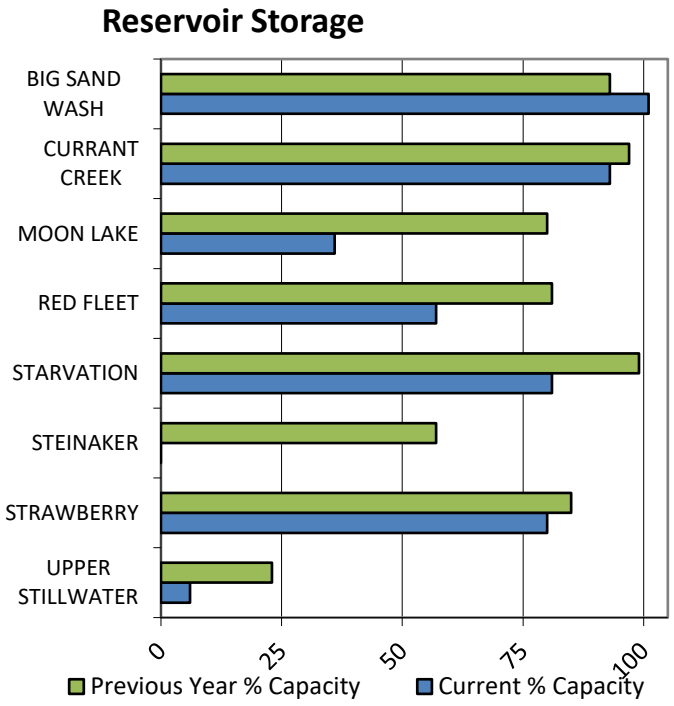
May 1, 2019

Snowpack in the Duchesne River Basin is much above average at 159% of normal, compared to 47% last year. Precipitation in April was above average at 119%, which brings the seasonal accumulation (Oct-Apr) to 133% of average. Soil moisture is at 77% compared to 71% last year. Reservoir storage is at 77% of capacity, compared to 85% last year. Forecast streamflow volumes range from 118% to 198% of average. The surface water supply index is 58% for the Western Uintas, 38% for the Eastern Uintas.









SNOTEL Data

Data Current as of: 5/7/2019 7:36:28 AM

Duchesne River
Streamflow Forecasts - May 1, 2019

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Duchesne River	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
WF Duchesne R at VAT Diversion								
	APR-JUL	22	25	28	151%	31	35	18.6
	MAY-JUL	21	24	27	156%	30	34	17.3
Duchesne R nr Tabiona [2]								
	APR-JUL	126	143	155	144%	167	186	108
	MAY-JUL	112	129	141	144%	153	172	98
Upper Stillwater Reservoir Inflow[2]								
	APR-JUL	88	97	104	141%	111	121	74
	MAY-JUL	84	93	100	141%	107	117	71
Rock Ck nr Mountain Home [2]								
	APR-JUL	104	115	122	139%	130	141	88
	MAY-JUL	97	108	115	137%	123	134	84
Duchesne R ab Knight Diversion [2]								
	APR-JUL	230	255	275	141%	295	330	195
	MAY-JUL	210	235	255	142%	275	310	179
Currant Ck Reservoir Inflow[2]								
	APR-JUL	23	27	30	150%	33	38	20
	MAY-JUL	19.6	24	27	158%	30	35	17.1
Strawberry R nr Soldier Springs [2]								
	APR-JUL	96	105	112	193%	119	128	58
	MAY-JUL	75	84	91	198%	98	107	46
Strawberry R nr Duchesne [2]								
	APR-JUL	146	173	194	173%	215	250	112
	MAY-JUL	112	139	160	176%	182	215	91
Lake Fork R ab Moon Lake Reservoir								
	APR-JUL	66	77	85	139%	93	106	61
	MAY-JUL	63	74	82	141%	90	103	58
Lake Fk R Bl Moon Lk nr Mountain Home[2]								
	APR-JUL	80	88	94	142%	100	109	66
	MAY-JUL	76	84	90	143%	96	105	63
Yellowstone R nr Altonah								
	APR-JUL	72	81	88	144%	94	105	61
	MAY-JUL	67	76	83	146%	89	100	57
Duchesne R at Myton [2]								
	APR-JUL	395	470	525	159%	580	670	330
	MAY-JUL	340	415	470	162%	525	615	290
Uinta R bl Powerplant Diversion nr Neola[2]								
	APR-JUL	85	99	109	147%	119	136	74
	MAY-JUL	81	95	105	148%	115	132	71
Whiterocks R nr Whiterocks								
	APR-JUL	47	56	63	117%	70	81	54
	MAY-JUL	44	53	60	118%	67	78	51
Duchesne R nr Randlett [2]								
	APR-JUL	435	530	600	156%	675	795	385
	MAY-JUL	380	475	545	158%	620	740	345
Ashley Ck nr Vernal								
	APR-JUL	42	51	58	116%	64	75	50
	MAY-JUL	41	50	57	121%	63	74	47
Big Brush Ck ab Red Fleet Reservoir								
	APR-JUL	17.1	21	24	114%	27	32	21
	MAY-JUL	15.2	19	22	120%	25	30	18.4

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Reservoir Storage End of April, 2019	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Steinaker Reservoir	-3.7	19.1	25.3	33.4
Red Fleet Reservoir	14.6	20.9	19.8	25.7
Big Sand Wash Reservoir	25.9	23.8		25.7
Upper Stillwater Reservoir	2.0	7.3	2.9	32.5
Starvation Reservoir	133.1	162.9	151.9	164.1
Moon Lake Reservoir	13.0	28.6	27.6	35.8
Currant Creek Reservoir	14.4	15.1	14.9	15.5
Strawberry Reservoir	883.4	941.2	678.4	1105.9
Basin-wide Total	1060.5	1176.1	895.5	1379.5
# of reservoirs	6	6	6	6

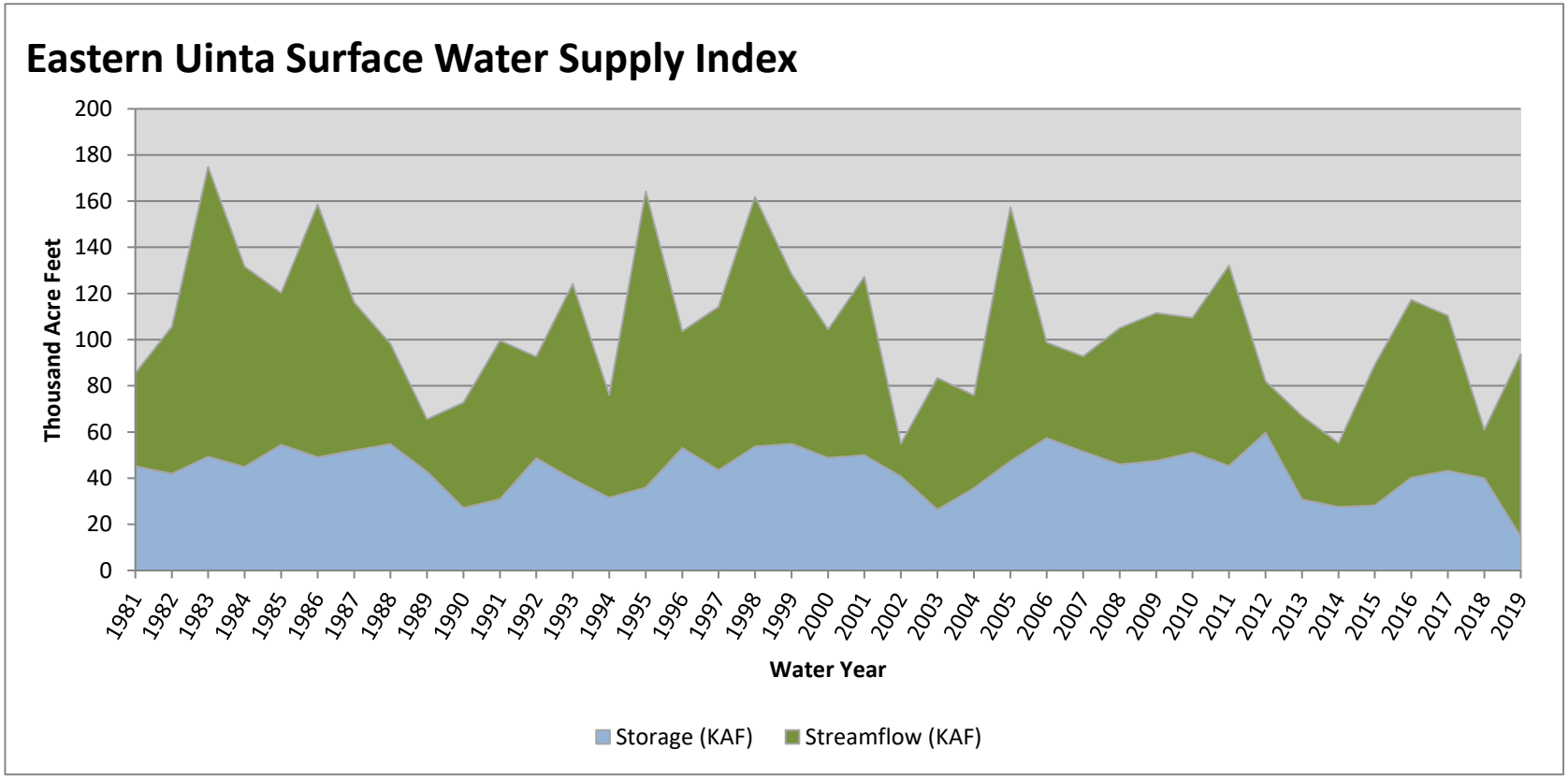
Watershed Snowpack Analysis May 1, 2019	# of Sites	% Median	Last Year % Median
Strawberry River	5	259%	0%
Lakefork Yellowstone Rivers	7	144%	63%
Uinta Whiterocks River	2	136%	18%

May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Eastern Uinta	**14.64**	**79.00**	**93.64**	**38**	**-1.04**	**92, 07, 88, 06**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.

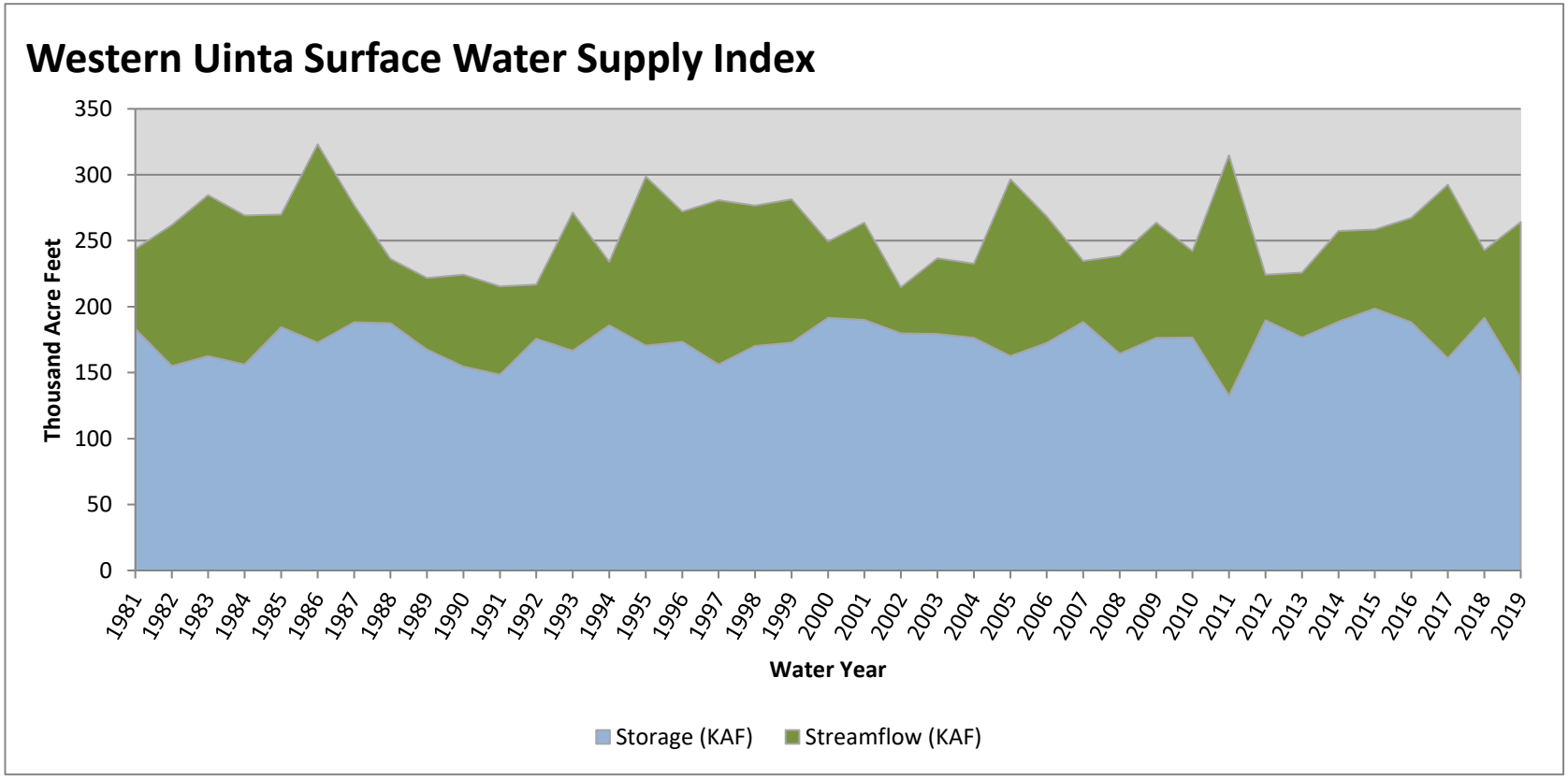


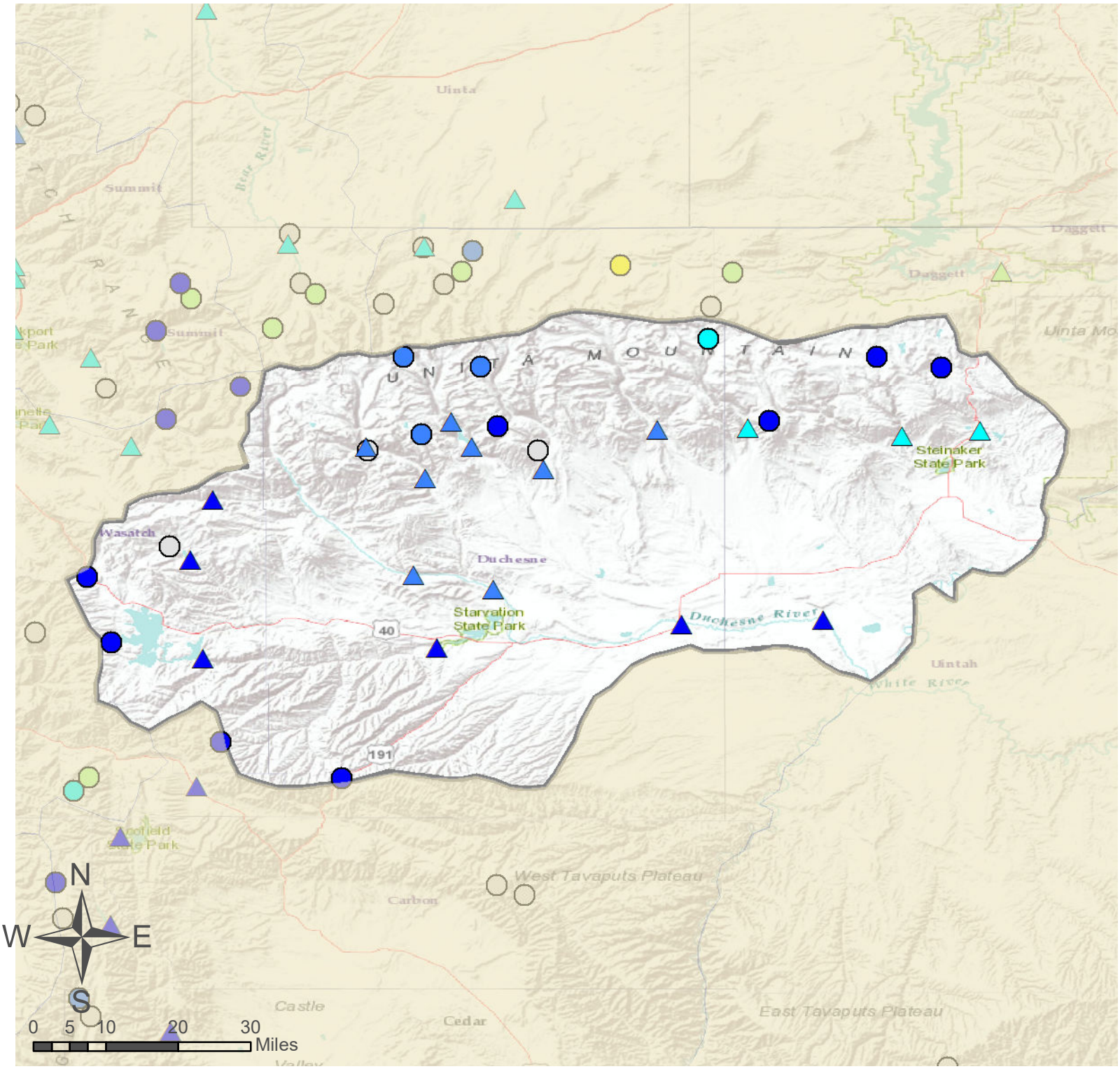
May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Western Uinta	**146.05**	**118.00**	**264.05**	**58**	**0.62**	**09, 01, 16, 06**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.





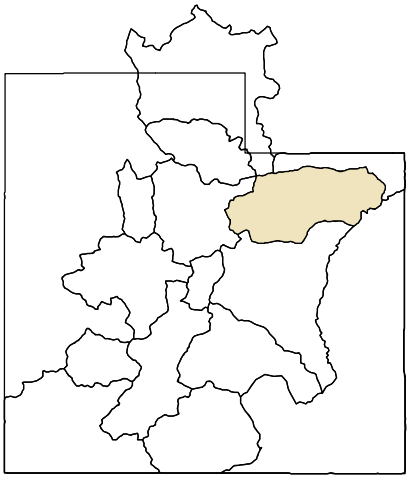
Duchesne River Basin

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



As of May 1, 2019:

159% of Normal SWE

133% of Normal Precipitation

119% of Normal Precipitation Last Month

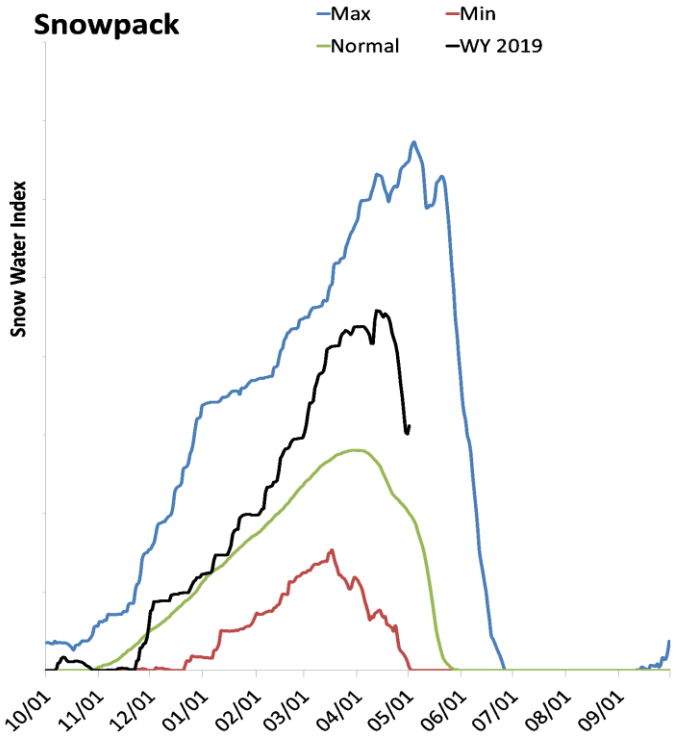
77% Saturation Soil Moisture

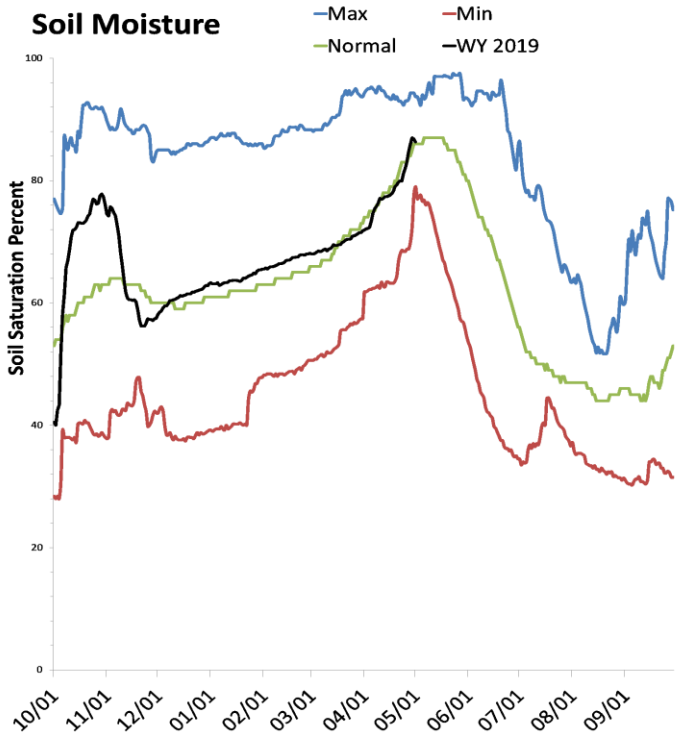
Duchesne River Basin

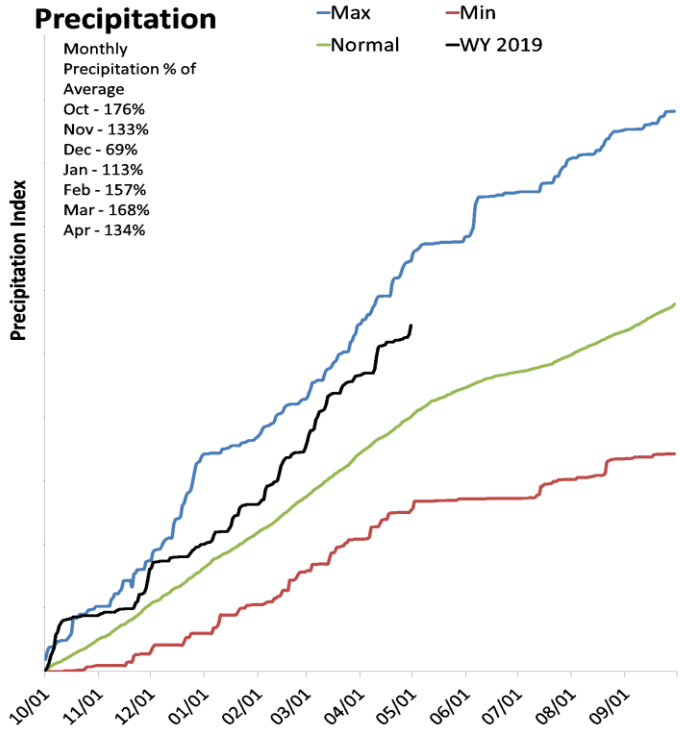
San Pitch River Basin

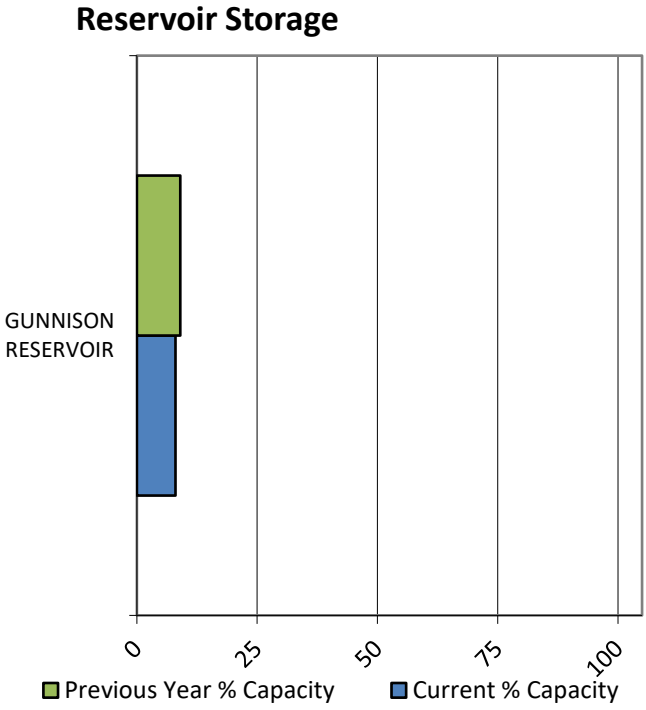
May 1, 2019

Snowpack in the San Pitch River Basin is much above normal at 156% of normal, compared to 8% last year. Precipitation in April was much above average at 135%, which brings the seasonal accumulation (Oct-Apr) to 136% of average. Soil moisture is at 87% compared to 84% last year. Reservoir storage is at 8% of capacity, compared to 9% last year. The forecast streamflow volume for Manti Creek is 135% of average. The surface water supply index is 38% for the San Pitch.









SNOTEL Data

Data Current as of: 5/7/2019 7:37:11 AM

San Pitch River
Streamflow Forecasts - May 1, 2019

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

San Pitch River	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Manti Ck bl Dugway Ck nr Manti								
	APR-JUL	17.8	21	23	138%	25	29	16.7
	MAY-JUL	16.1	18.9	21	135%	23	27	15.5
Sevier R nr Gunnison								
	APR-JUL	194	225	245	247%	265	295	99
	MAY-JUL	177	199	215	250%	230	255	86

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Reservoir Storage End of April, 2019	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Gunnison Reservoir	1.7	1.8	14.2	20.3
Basin-wide Total	1.7	1.8	14.2	20.3
# of reservoirs	1	1	1	1

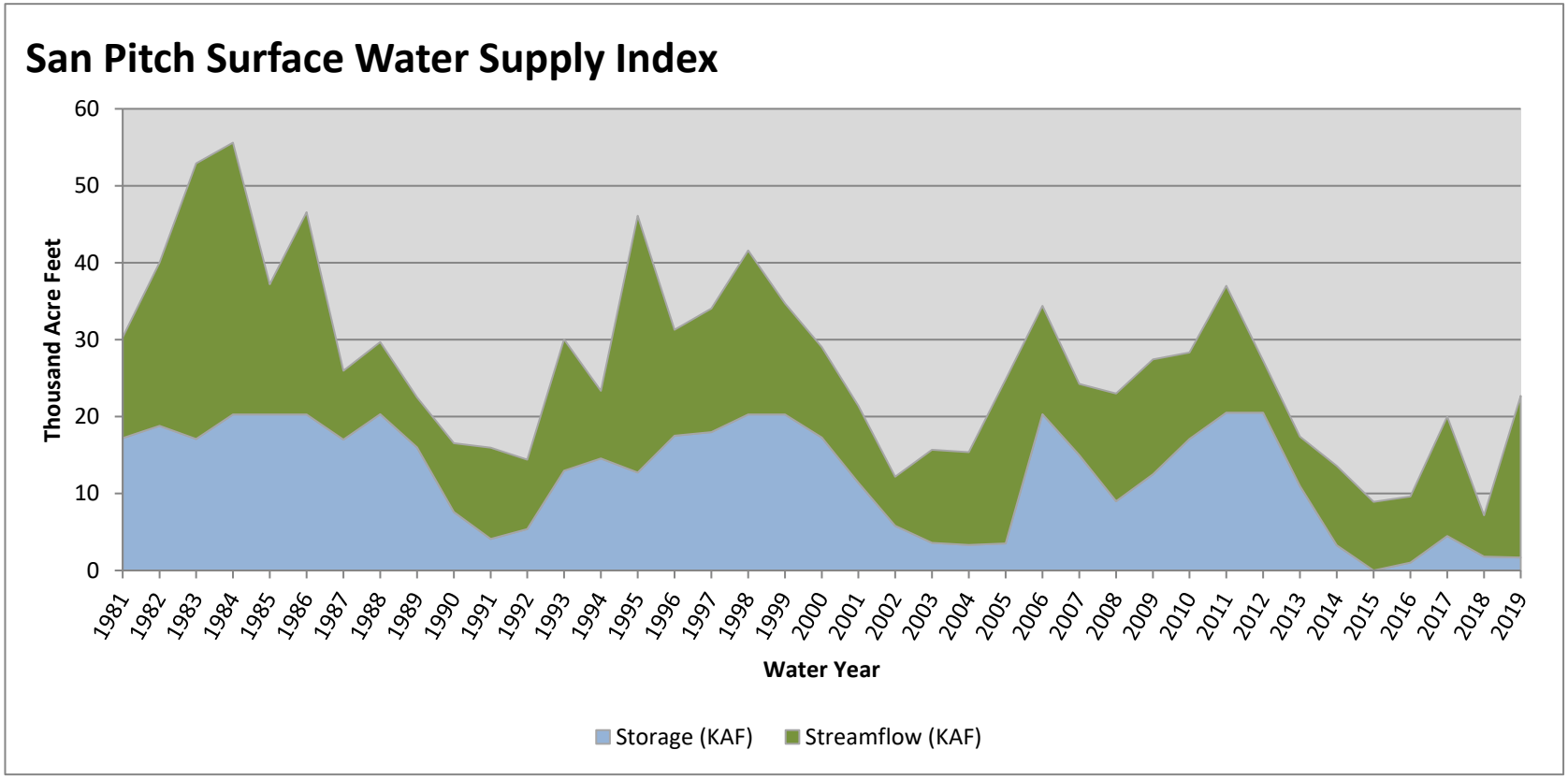
Watershed Snowpack Analysis May 1, 2019	# of Sites	% Median	Last Year % Median
Upper San Pitch	3	145%	20%
Lower San Pitch	6	139%	24%

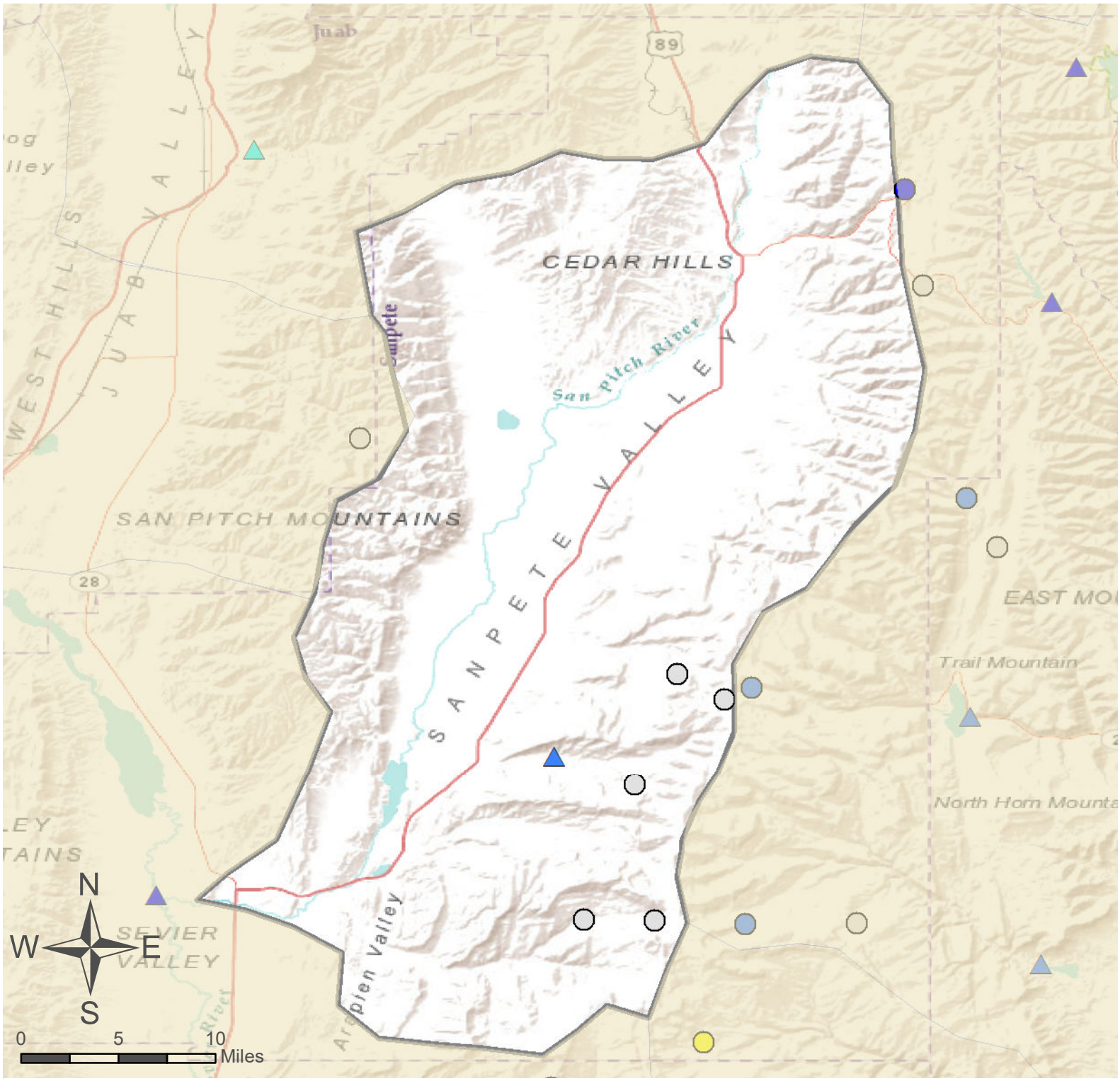
May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
San Pitch	**1.67**	**21.00**	**22.67**	**38**	**-1.04**	**01, 89, 08, 94**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.





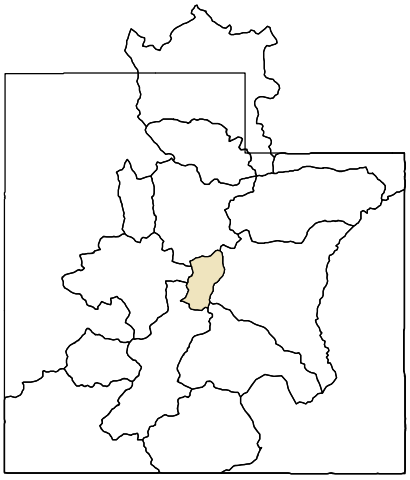
San Pitch River Basin

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



As of May 1, 2019:

156% of Normal SWE

136% of Normal Precipitation

135% of Normal Precipitation Last Month

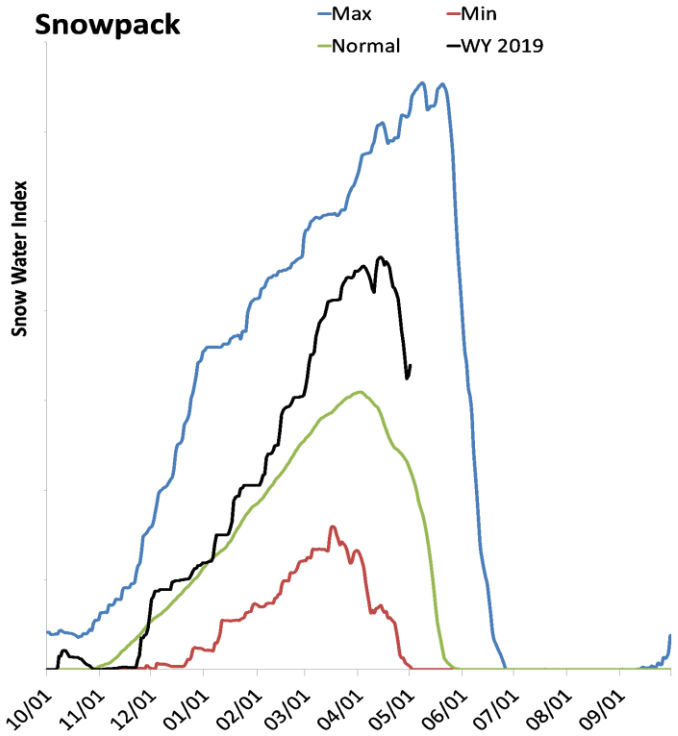
87% Saturation Soil Moisture

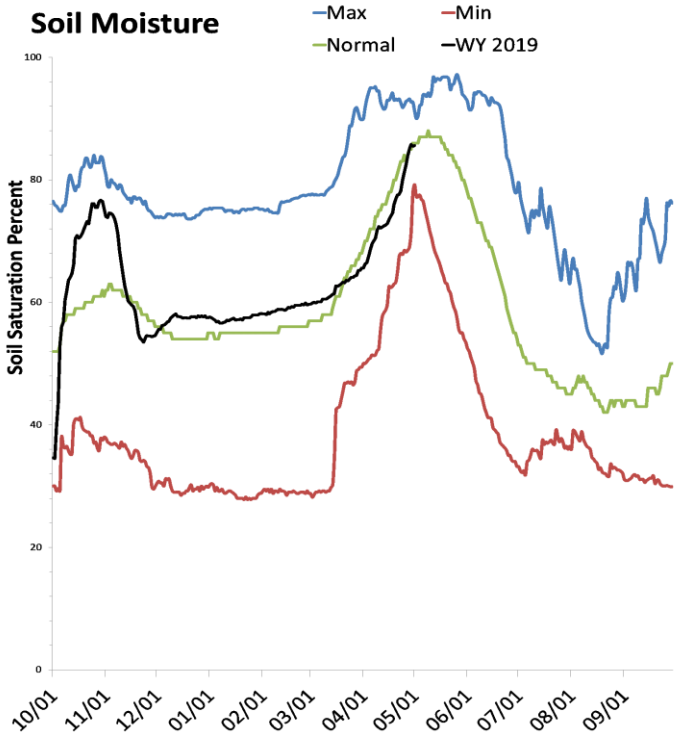
San Pitch River Basin

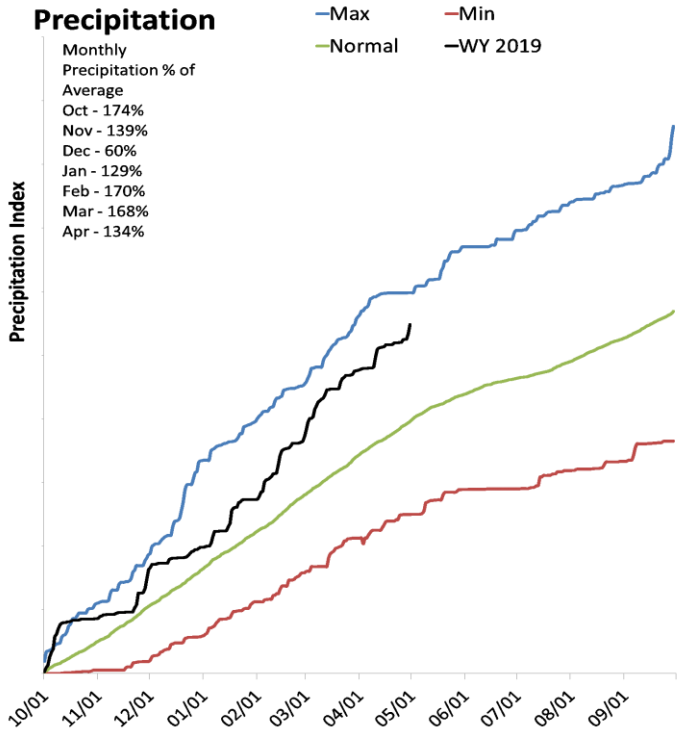
Price & San Rafael Basins

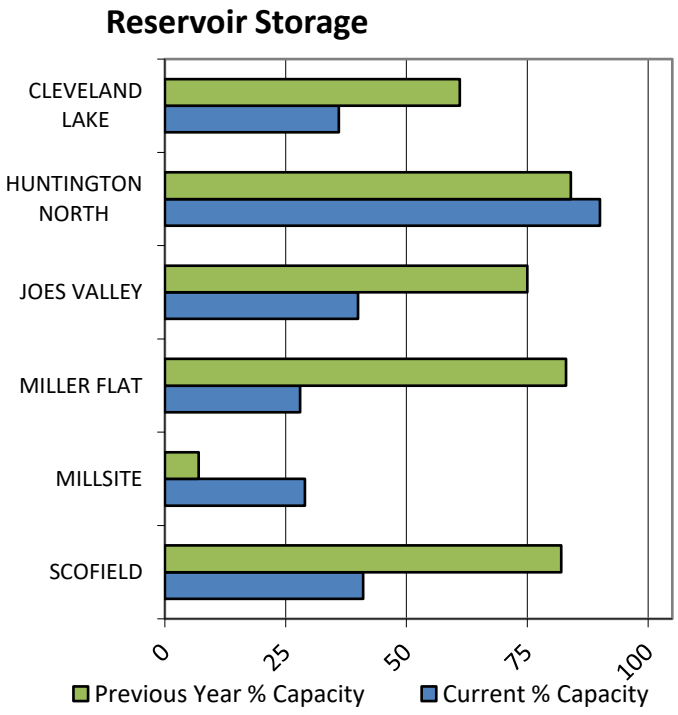
May 1, 2019

Snowpack in the Price & San Rafael Basins is much above normal at 153% of normal, compared to 9% last year. Precipitation in April was much above average at 134%, which brings the seasonal accumulation (Oct-Apr) to 138% of average. Soil moisture is at 86% compared to 85% last year. Reservoir storage is at 41% of capacity, compared to 71% last year. Forecast streamflow volumes range from 119% to 186% of average. The surface water supply index is 73% for the Price River, 65% for Joe's Valley, 73% for Ferron Creek.









SNOTEL Data

Data Current as of: 5/7/2019 7:36:42 AM

Price San Rafael Rivers
Streamflow Forecasts - May 1, 2019

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Price San Rafael Rivers	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Fish Ck ab Reservoir nr Scofield								
	APR-JUL	33	39	44	147%	48	56	30
	MAY-JUL	29	35	40	154%	44	52	26
Price R nr Scofield Reservoir[2]								
White R bl Tabbyune Creek								
	APR-JUL	23	26	28	181%	30	34	15.5
	MAY-JUL	16.8	19.8	22	185%	24	28	11.9
Green R at Green River, UT [2]								
	APR-JUL	2900	3280	3560	120%	3850	4300	2960
	MAY-JUL	2360	2740	3020	119%	3310	3760	2540
Electric Lake Inflow [2]								
	APR-JUL	19.1	21	23	173%	25	28	13.3
	MAY-JUL	17.8	20	22	186%	24	27	11.8
Huntington Ck nr Huntington [2]								
	APR-JUL	61	68	73	183%	77	85	40
	MAY-JUL	57	64	69	186%	73	81	37
Joes Valley Reservoir Inflow[2]								
	APR-JUL	62	71	78	139%	85	96	56
	MAY-JUL	57	66	73	140%	80	91	52
Ferron Ck (Upper Station) nr Ferron								
	APR-JUL	48	53	56	147%	59	64	38
	MAY-JUL	43	48	51	146%	54	59	35

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Reservoir Storage End of April, 2019	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Joes Valley Reservoir	24.8	46.1	40.1	61.6
Millsite	4.8	1.2	11.2	16.7
Huntington North Reservoir	3.8	3.5	3.9	4.2
Cleveland Lake	2.0	3.3		5.4
Miller Flat Reservoir	1.4	4.3		5.2
Scofield Reservoir	26.7	53.8	33.2	65.8
Basin-wide Total	60.1	104.6	88.4	148.3
# of reservoirs	4	4	4	4

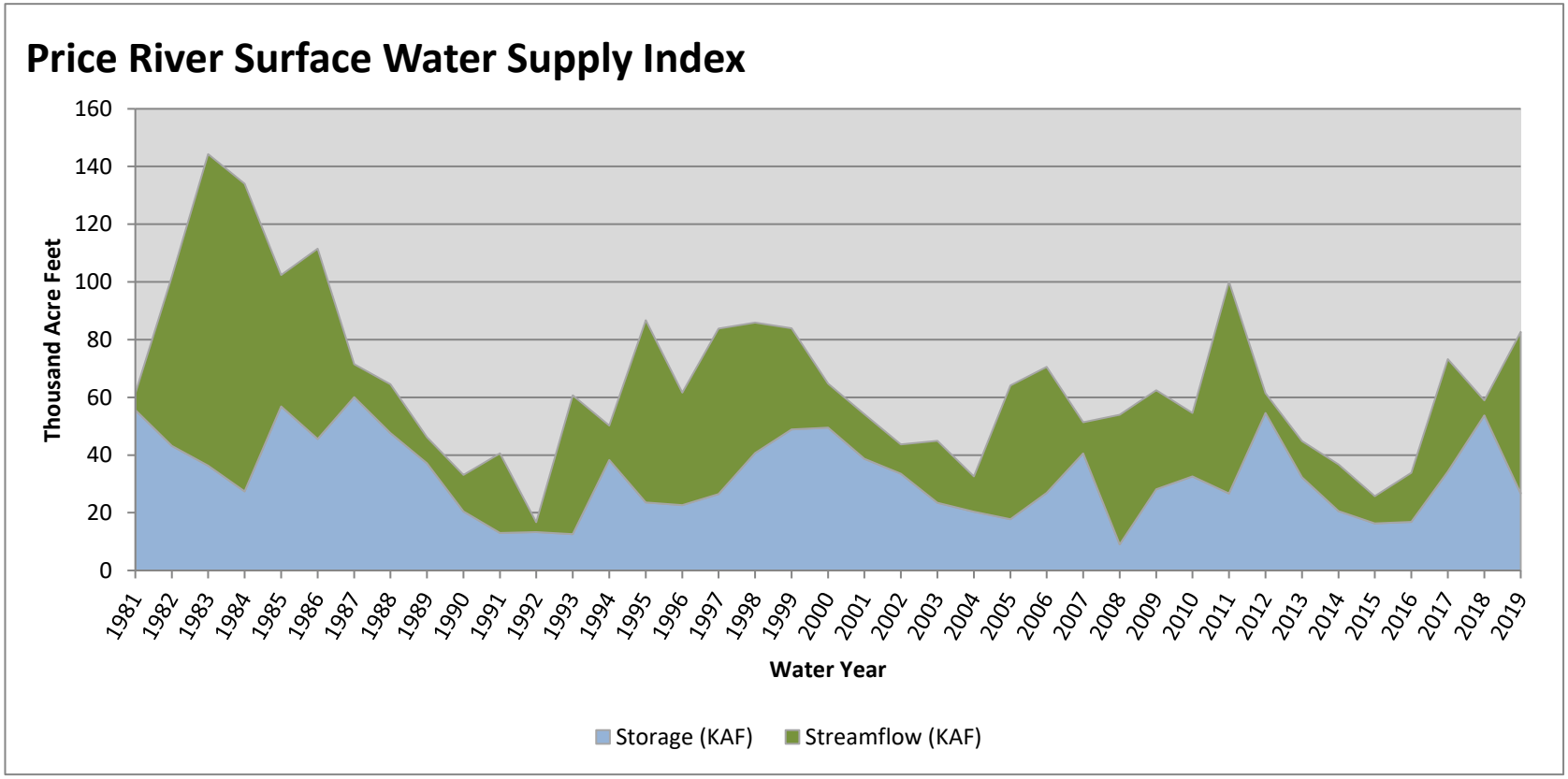
Watershed Snowpack Analysis May 1, 2019	# of Sites	% Median	Last Year % Median
Price River	4	174%	6%
San Rafael	6	142%	27%

May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Price River	**26.65**	**56.00**	**82.65**	**73**	**1.88**	**87, 17, 97, 99**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.

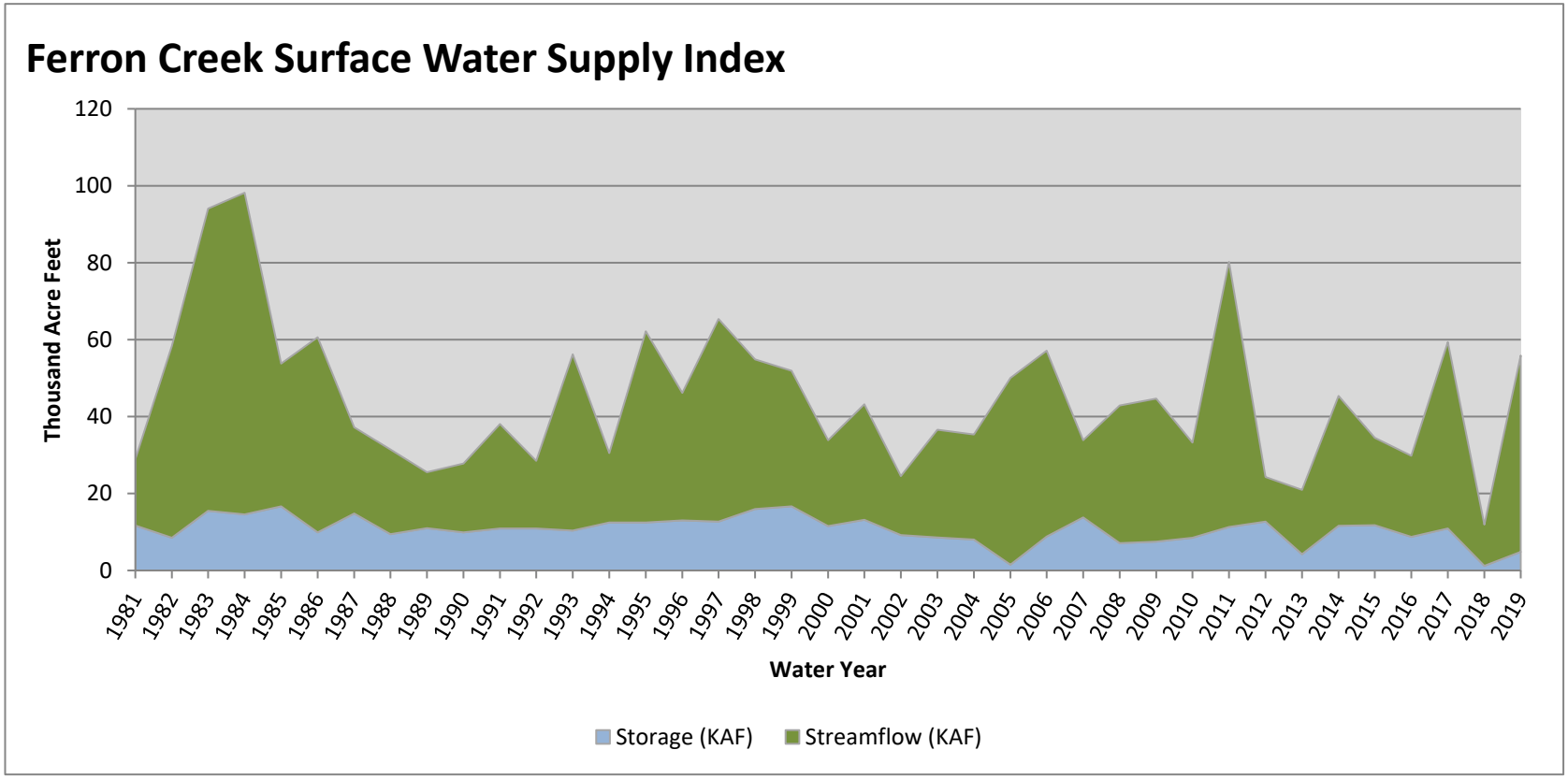


May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Ferron Creek	**4.84**	**51.00**	**55.84**	**73**	**1.88**	**85, 98, 93, 06**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.

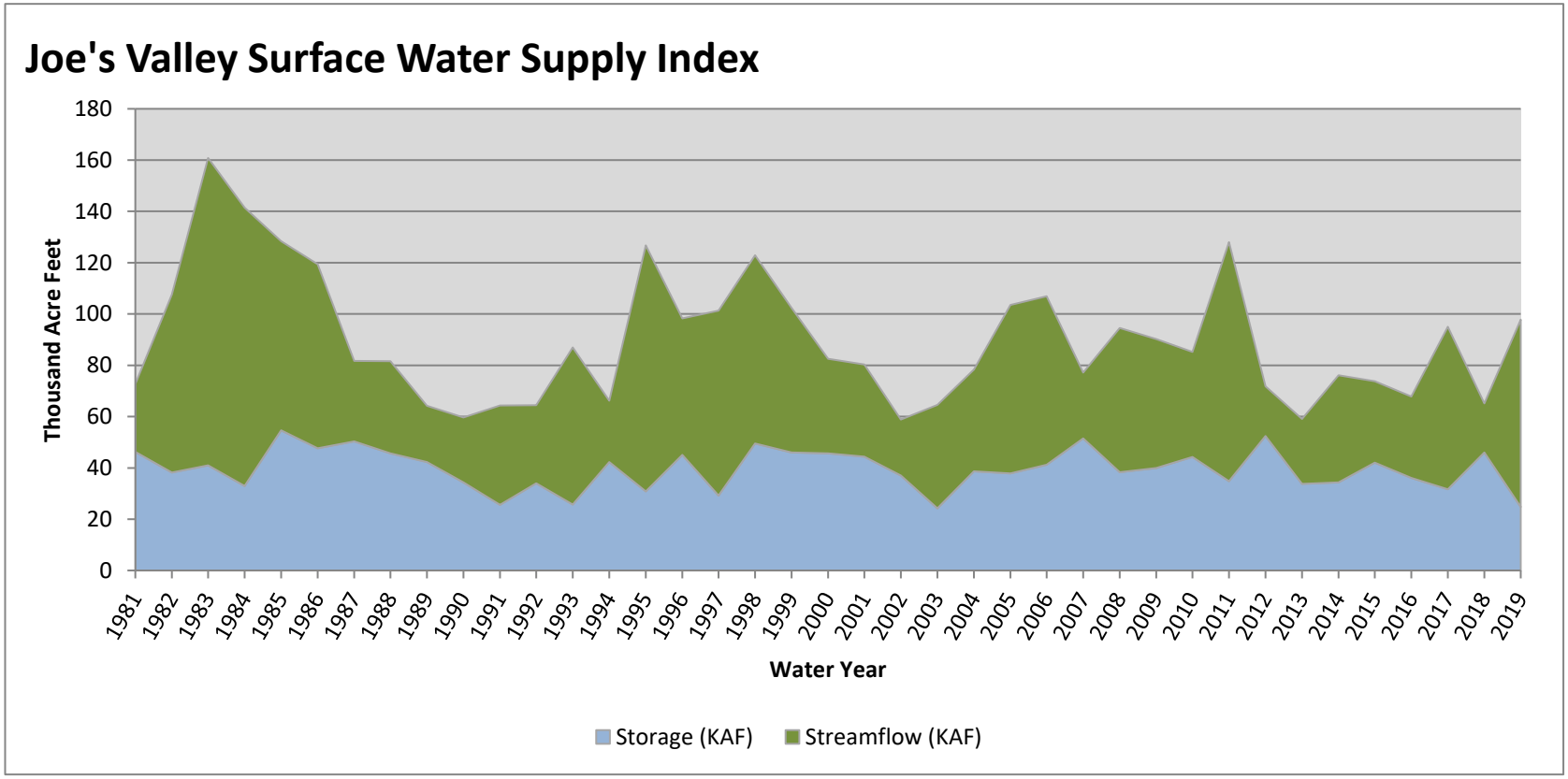


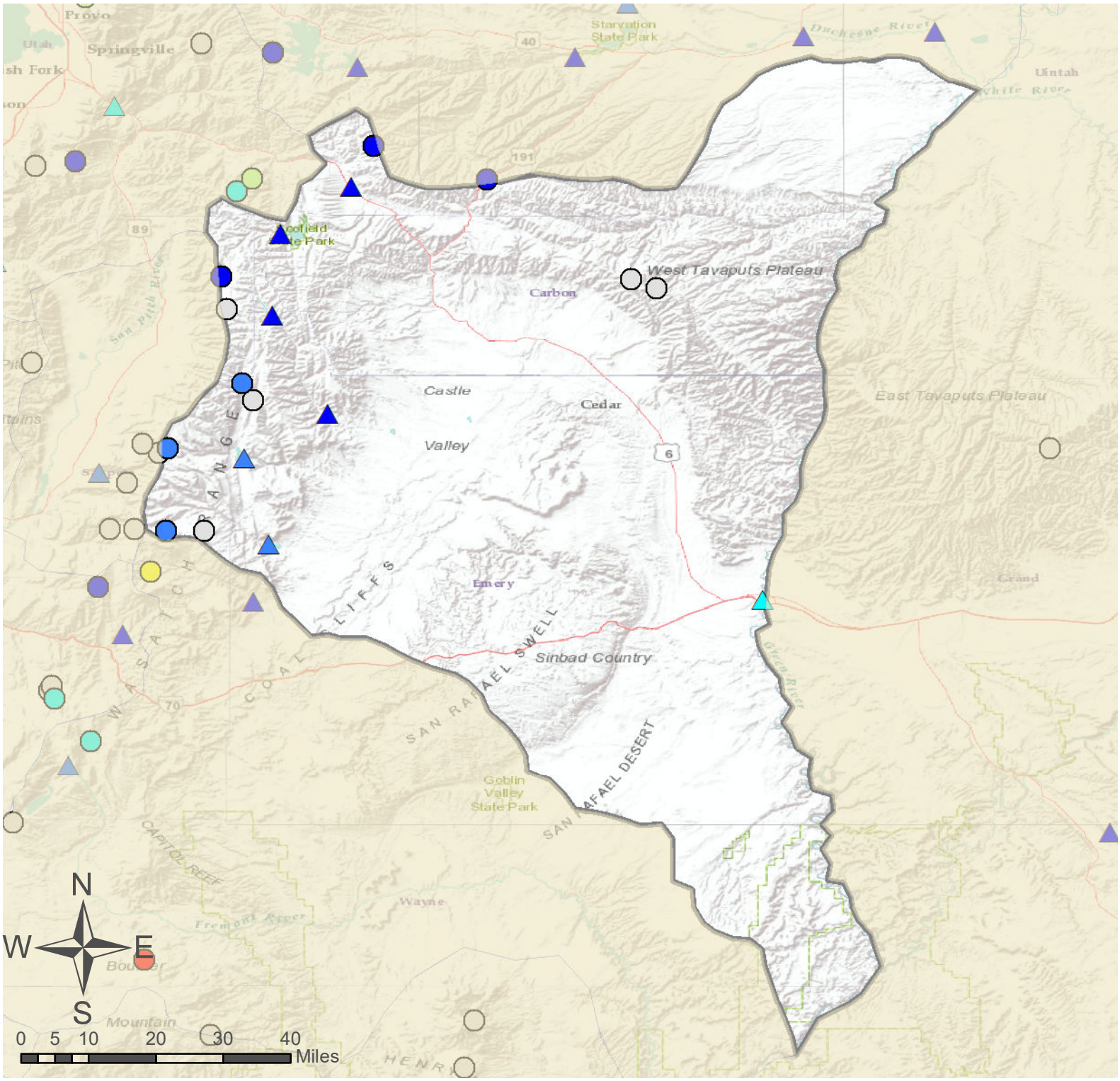
May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Joe's Valley	**24.83**	**73.00**	**97.83**	**65**	**1.25**	**08, 17, 96, 97**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.





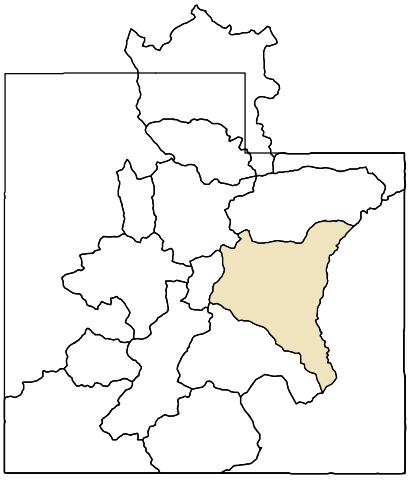
Price & San Rafael Basins

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



<u>As of May 1, 2019:</u>

153% of Normal SWE

138% of Normal Precipitation

134% of Normal Precipitation Last Month

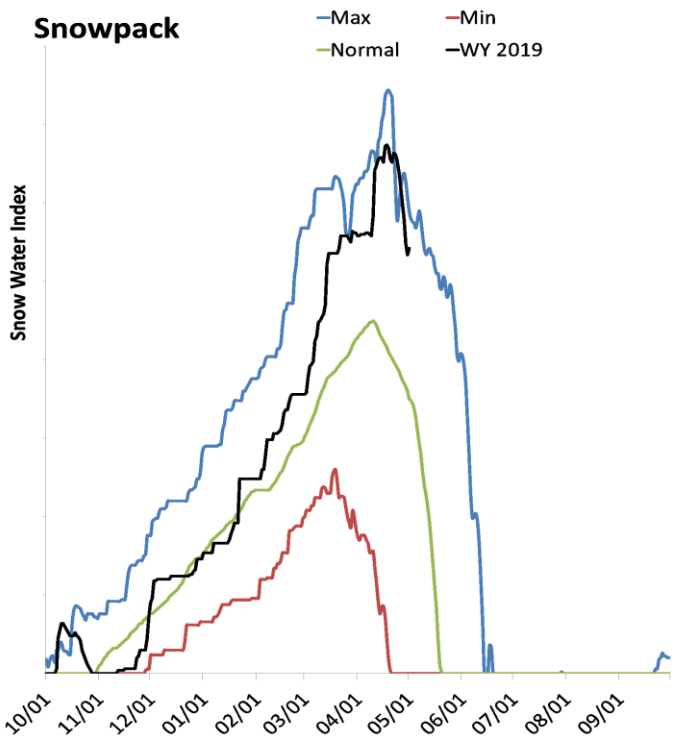
86% Saturation Soil Moisture

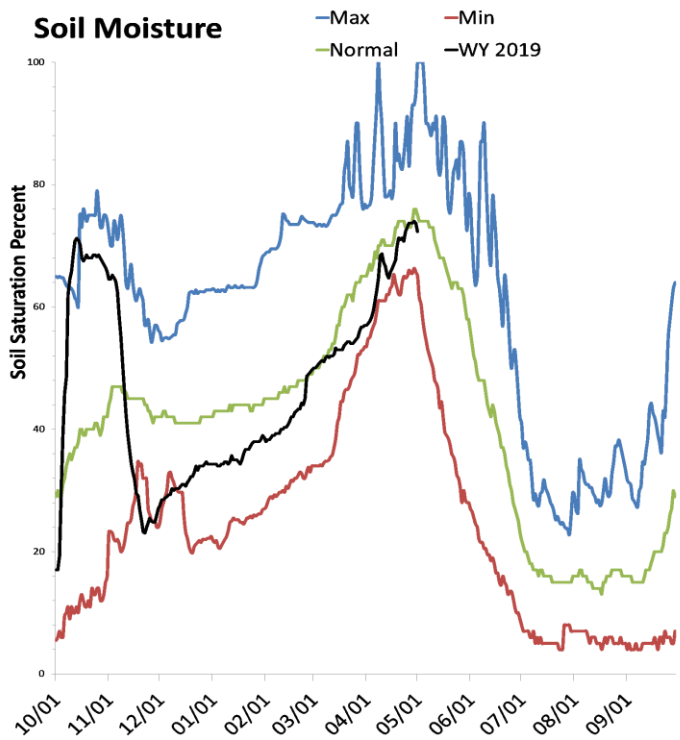
Price & San Rafael Basins

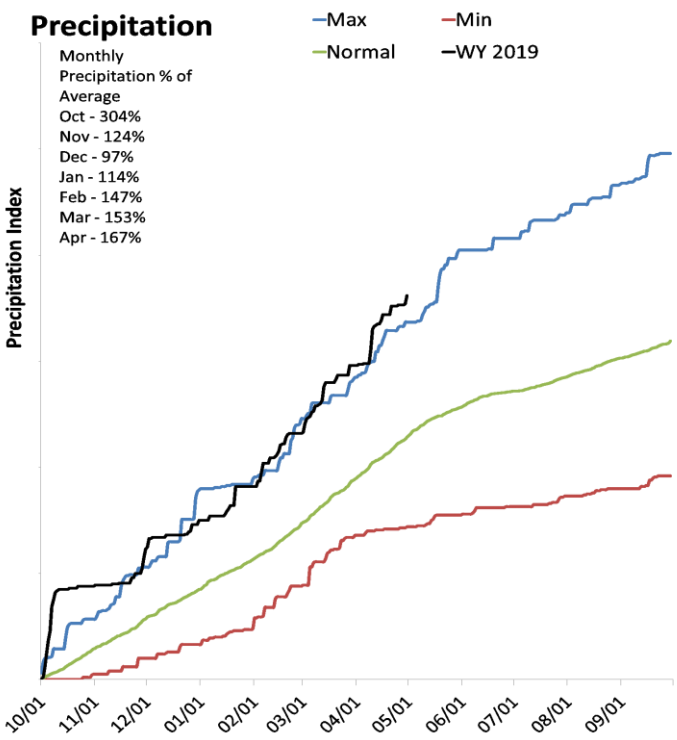
Lower Sevier Basin

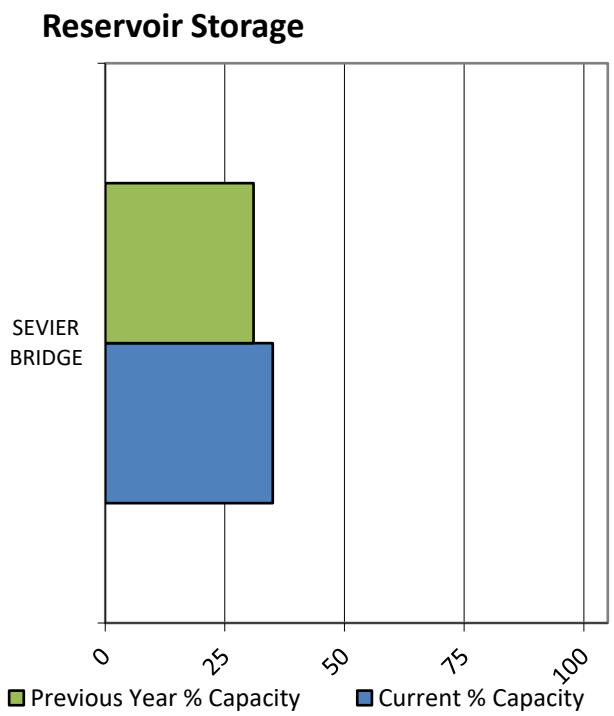
May 1, 2019

Snowpack in the Lower Sevier Basin is much above normal at 155% of normal, compared to 9% last year. Precipitation in April was much above average at 169%, which brings the seasonal accumulation (Oct-Apr) to 159% of average. Soil moisture is at 73% compared to 71% last year. Reservoir storage is at 35% of capacity, compared to 31% last year. Forecast streamflow volume for the Sevier River is 250% of average. The surface water supply index is 75% for the Lower Sevier.









SNOTEL Data

Data Current as of: 5/7/2019 7:37:18 AM

Lower Sevier
Streamflow Forecasts - May 1, 2019

Lower Sevier	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Chicken Ck nr Levan								
Sevier R nr Gunnison								
	APR-JUL	194	225	245	247%	265	295	99
	MAY-JUL	177	199	215	250%	230	255	86
Oak Ck nr Oak City								

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Reservoir Storage End of April, 2019	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Sevier Bridge Reservoir	82.9	72.3	172.9	236.0
Basin-wide Total	82.9	72.3	172.9	236.0
# of reservoirs	1	1	1	1

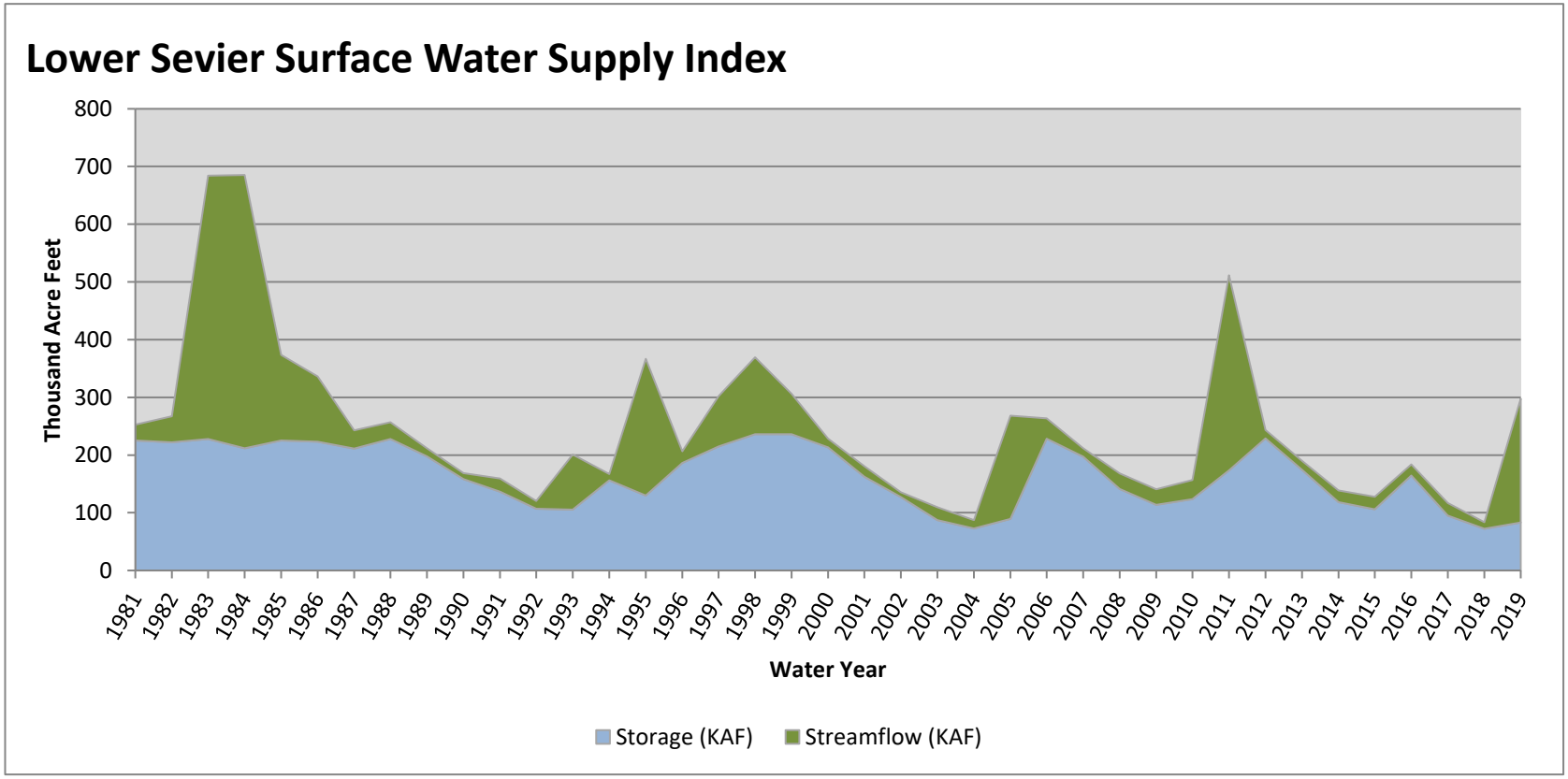
Watershed Snowpack Analysis May 1, 2019	# of Sites	% Median	Last Year % Median
Lower Sevier	1	155%	9%

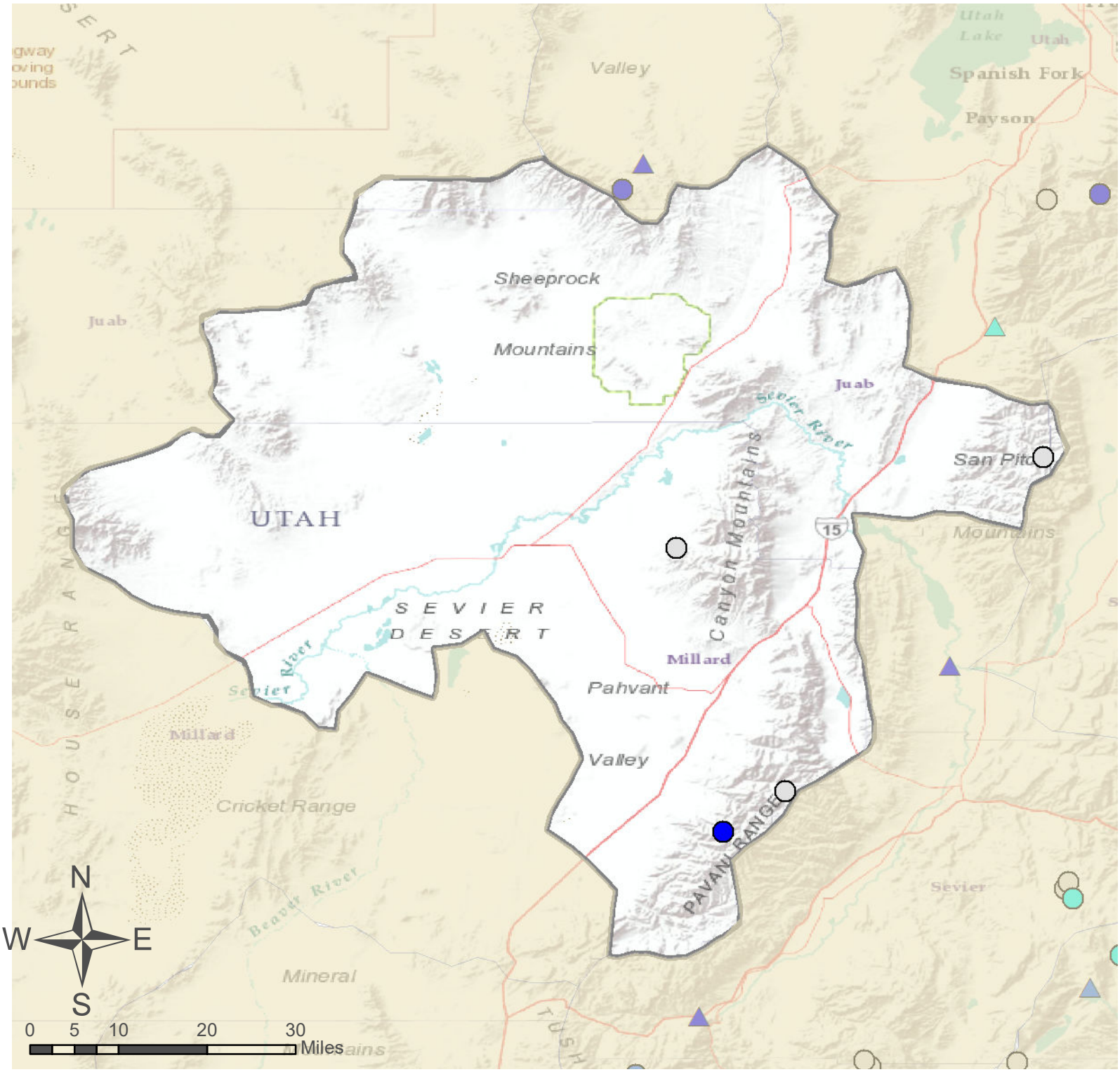
May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Lower Sevier	**82.95**	**215.00**	**297.95**	**75**	**2.08**	**82, 05, 97, 99**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.





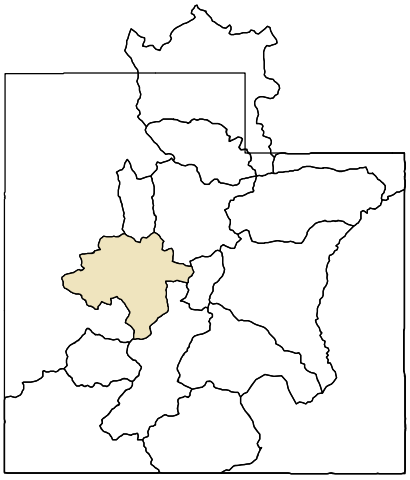
Lower Sevier Basin

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



As of May 1, 2019:

155% of Normal SWE

159% of Normal Precipitation

169% of Normal Precipitation Last Month

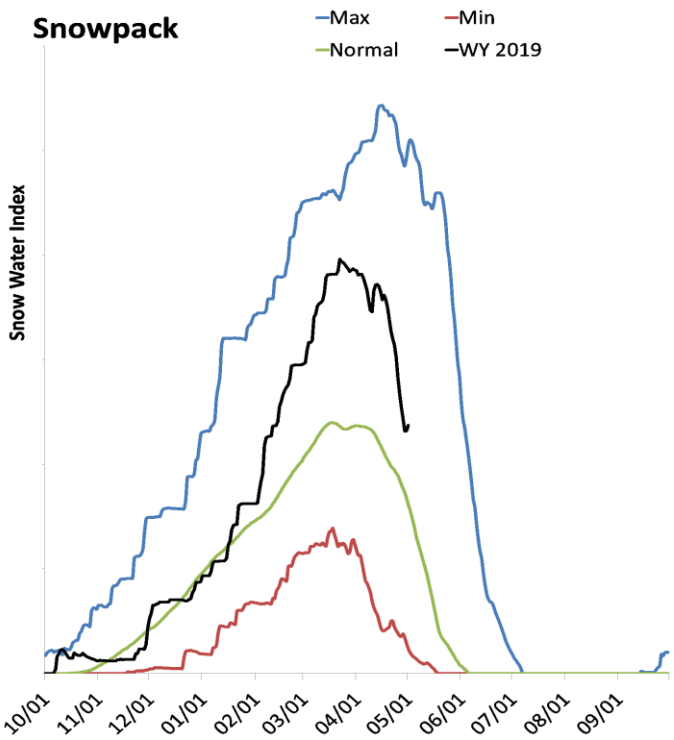
73% Saturation Soil Moisture

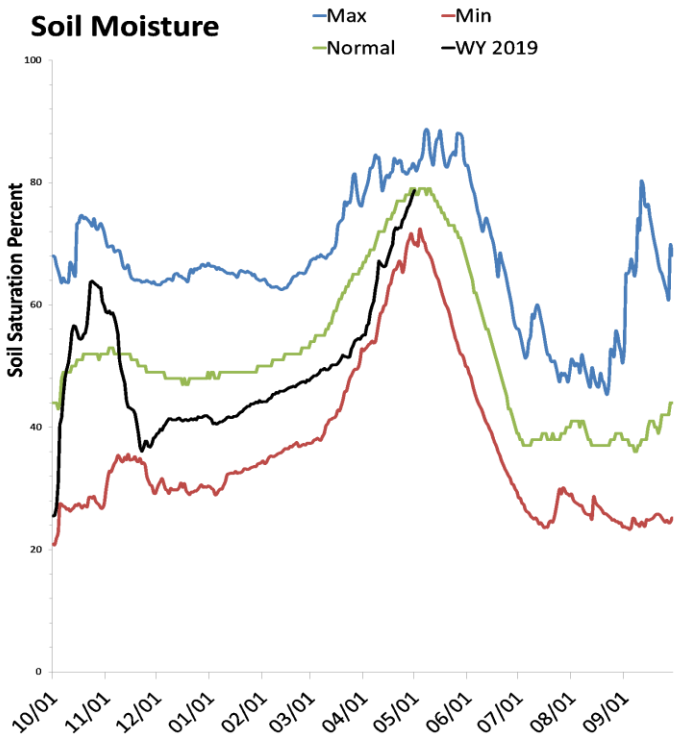
Lower Sevier Basin

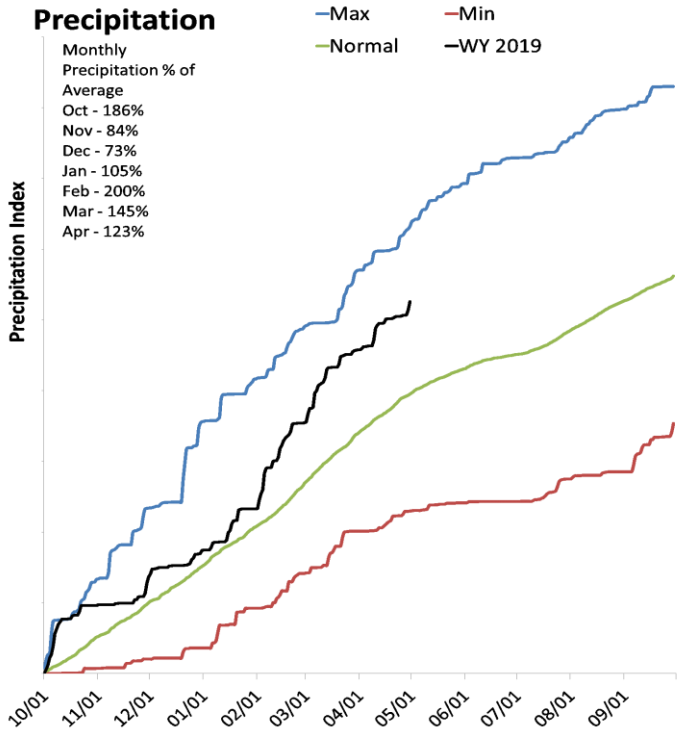
Upper Sevier Basin

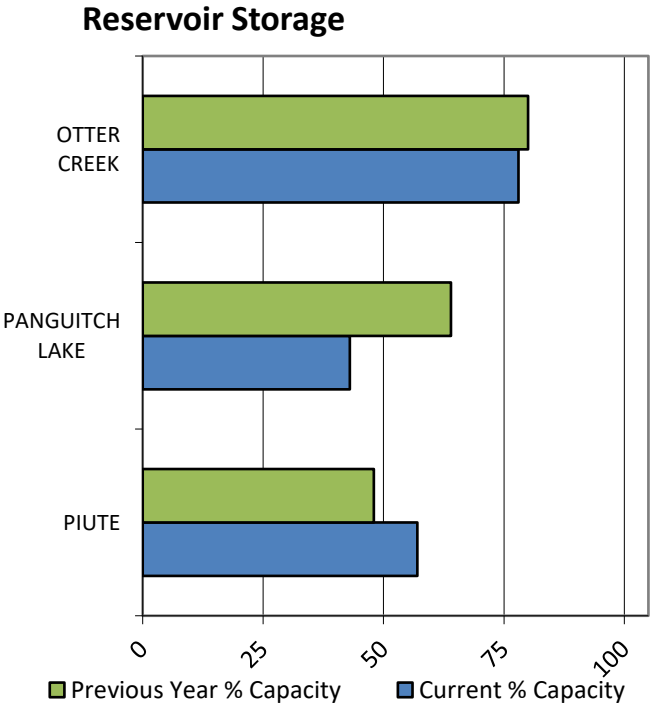
May 1, 2019

Snowpack in the Upper Sevier Basin is much above normal at 147% of normal, compared to 22% last year. Precipitation in April was above average at 123%, which brings the seasonal accumulation (Oct-Apr) to 133% of average. Soil moisture is at 78% compared to 76% last year. Reservoir storage is at 62% of capacity, compared to 62% last year. Forecast streamflow volumes range from 138% to 219% of average. The surface water supply index is 83% for the Upper Sevier.









SNOTEL Data

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Upper Sevier
Streamflow Forecasts - May 1, 2019

Upper Sevier	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Mammoth Ck nr Hatch								
	APR-JUL	8.1	32	49	181%	66	90	27
	MAY-JUL	10.9	31	44	176%	57	77	25
Sevier R at Hatch								
	APR-JUL	95	104	110	229%	116	125	48
	MAY-JUL	81	87	92	219%	97	103	42
EF Sevier R nr Kingston								
	APR-JUL	34	45	52	149%	59	70	35
	MAY-JUL	24	36	44	147%	52	64	30
Sevier R nr Kingston								
	APR-JUL	25	37	46	139%	55	67	33
	MAY-JUL	15.8	28	36	138%	44	56	26
Sevier R bl Piute Dam								
	APR-JUL	81	108	127	192%	146	173	66
	MAY-JUL	72	91	104	189%	117	136	55
Clear Ck ab Diversions nr Sevier								
	APR-JUL	31	35	38	181%	41	45	21
	MAY-JUL	23	27	30	176%	33	37	17
Salina Ck nr Emery								
	APR-JUL	9.3	11.7	13.3	168%	14.9	17.3	7.9
	MAY-JUL	8	10.1	11.6	166%	13.1	15.2	7

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Reservoir Storage **End of April, 2019**	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Piute Reservoir	40.7	34.3	54.4	71.8
Otter Creek Reservoir	40.9	42.2	44.8	52.5
Panguitch Lake	9.7	14.3	15.9	22.3
Basin-wide Total	91.2	90.8	115.1	146.6
# of reservoirs	3	3	3	3

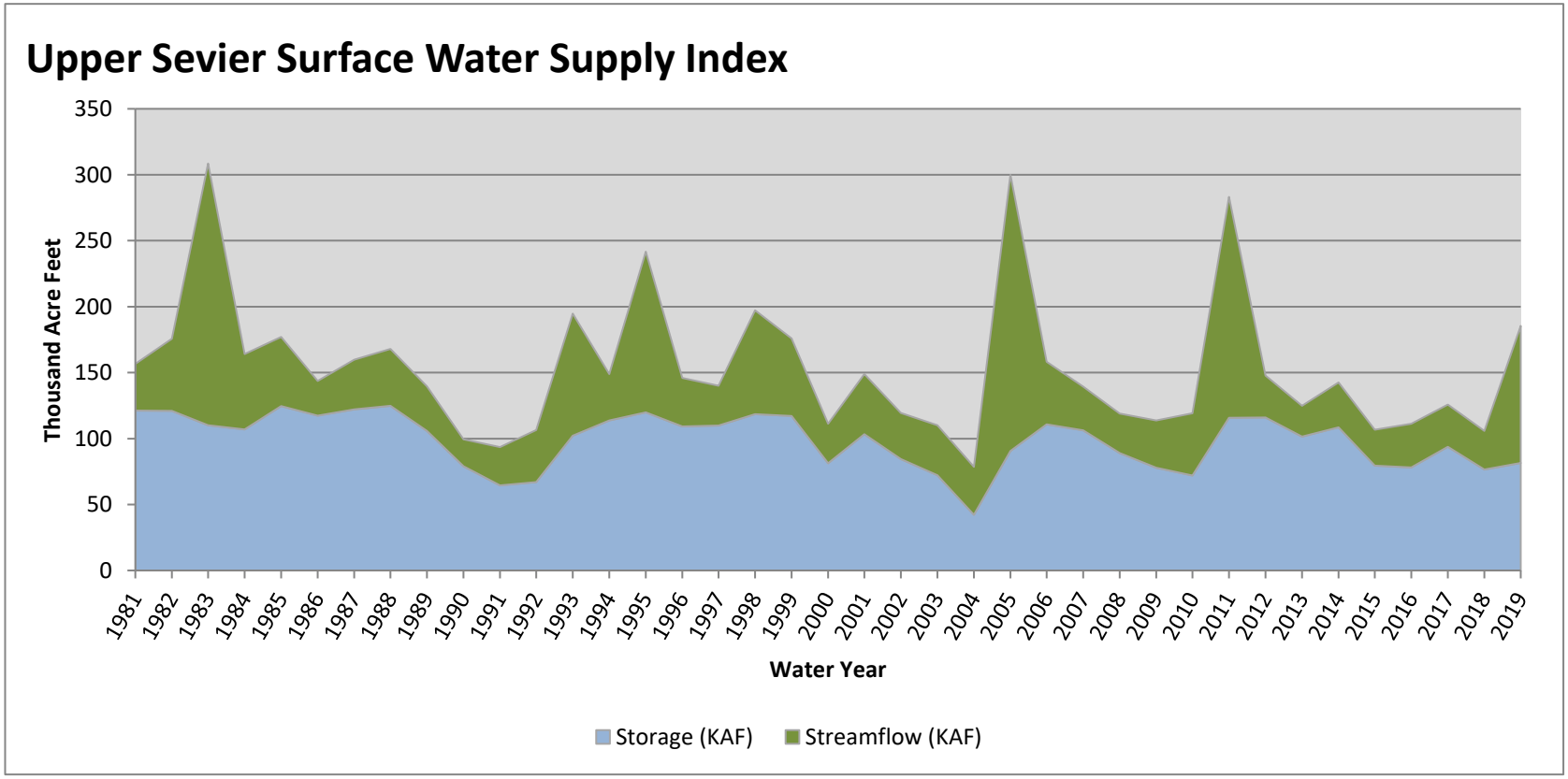
Watershed Snowpack Analysis **May 1, 2019**	# of Sites	% Median	Last Year % Median
Upper Sevier	12	147%	22%
Middle Sevier	8	137%	21%
East Fork Sevier River	5	179%	0%

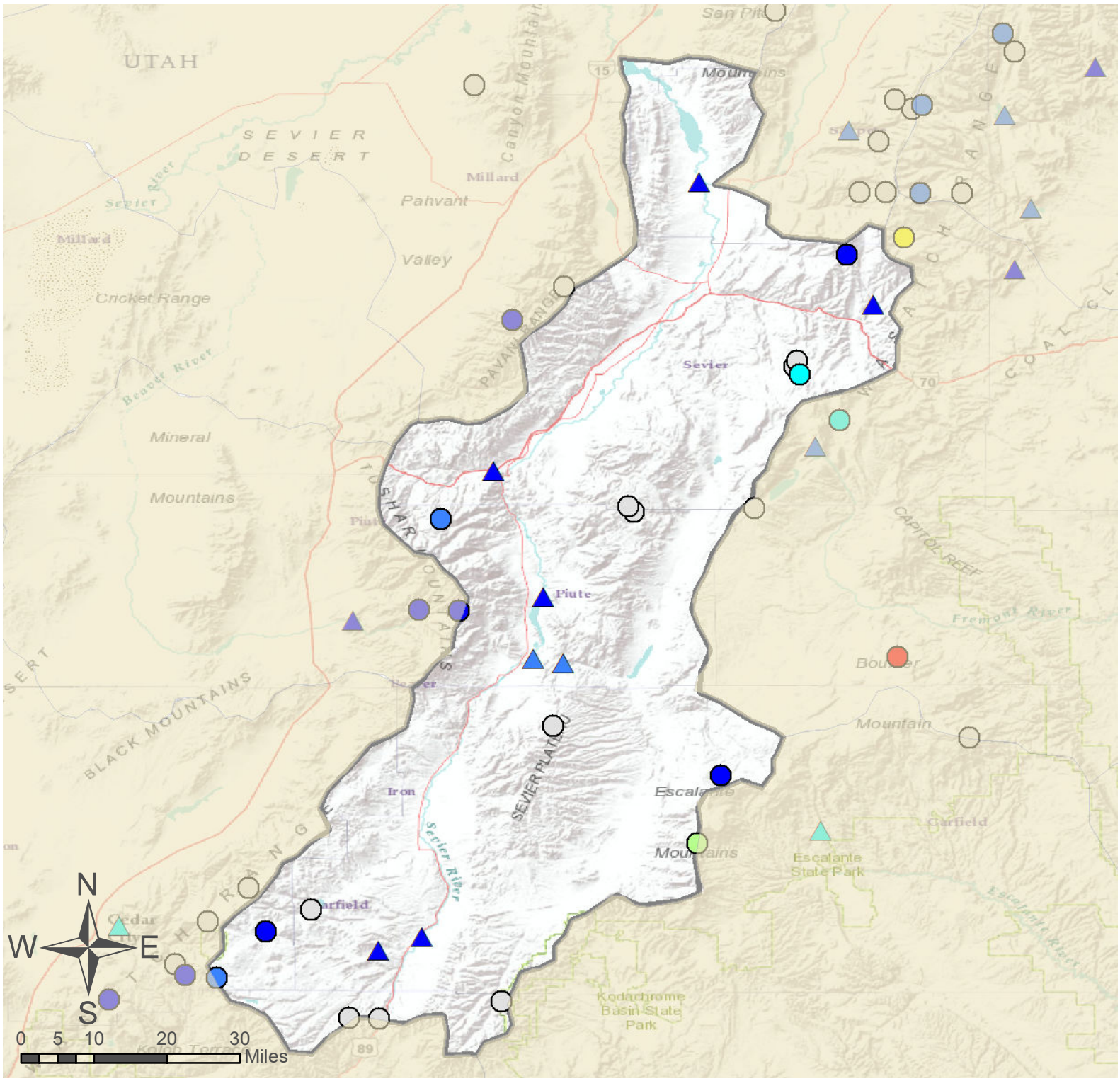
May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Upper Sevier	**81.54**	**104.00**	**185.54**	**83**	**2.71**	**99, 85, 93, 98**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.





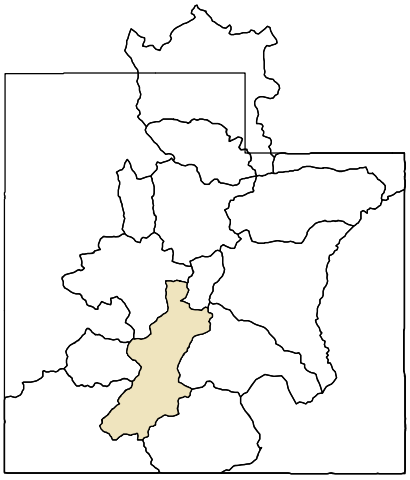
Upper Sevier Basin

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



As of May 1, 2019:

147% of Normal SWE

133% of Normal Precipitation

123% of Normal Precipitation Last Month

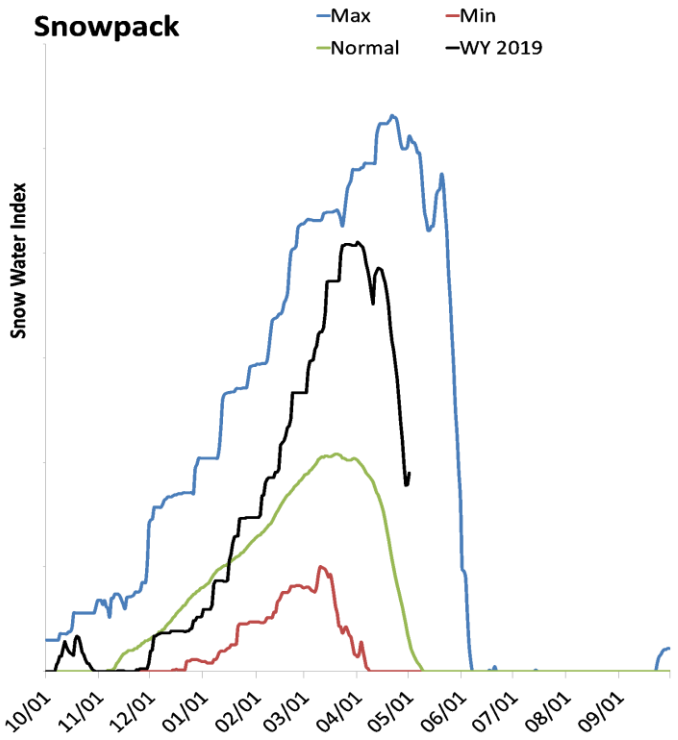
78% Saturation Soil Moisture

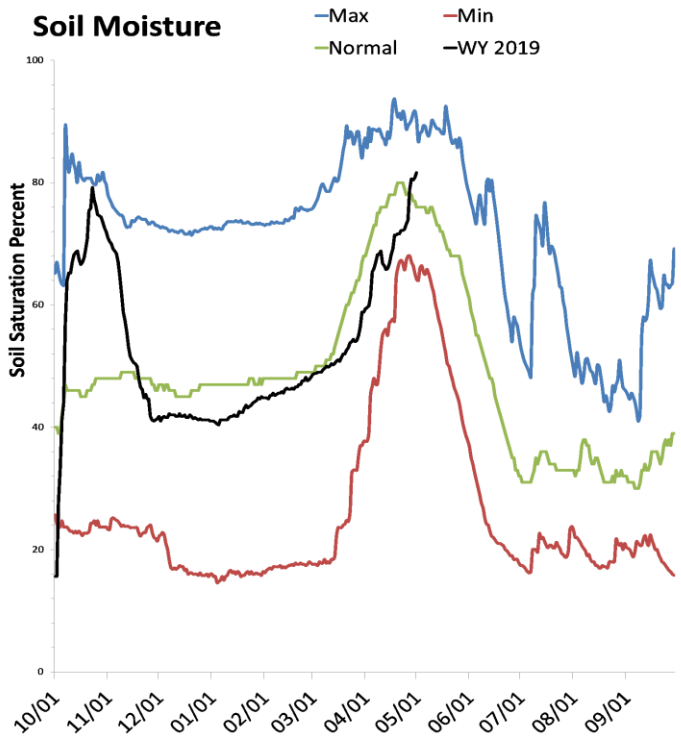
Upper Sevier Basin

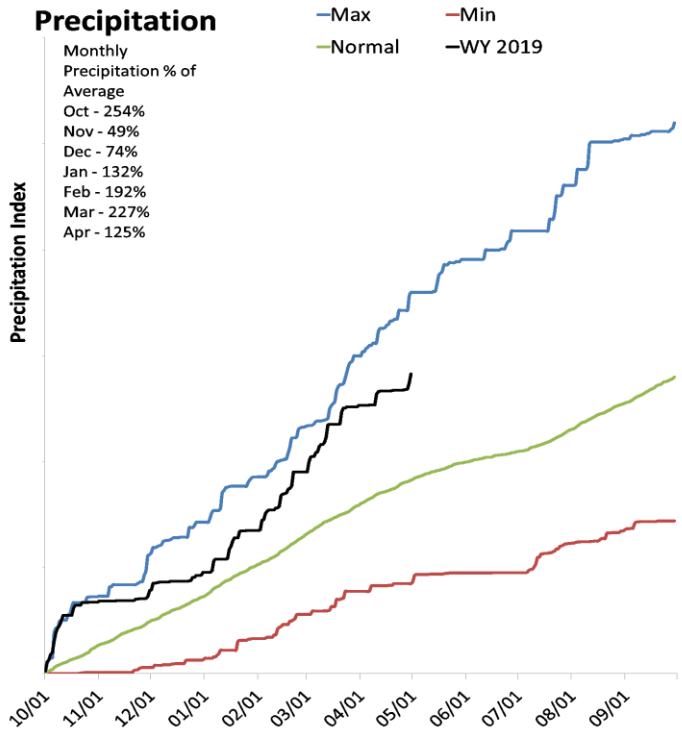
Southeastern Utah

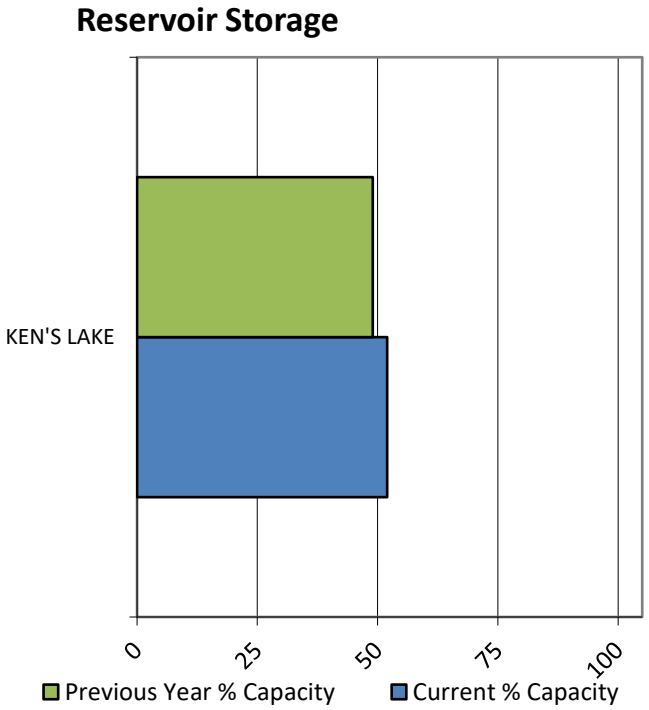
May 1, 2019

Snowpack in the Southeastern Utah is much above normal at 648% of normal, compared to 0% last year. Precipitation in April was above average at 124%, which brings the seasonal accumulation (Oct-Apr) to 155% of average. Soil moisture is at 81% compared to 64% last year. Reservoir storage is at 52% of capacity, compared to 49% last year. Forecast streamflow volumes range from 139% to 270% of average. The surface water supply index is 94% for Moab.









SNOTEL Data

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Southeastern Utah
Streamflow Forecasts - May 1, 2019

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Southeastern Utah	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Mill Ck at Sheley Tunnel nr Moab								
	APR-JUL	8.8	10	11	256%	12	13.4	4.3
	MAY-JUL	7.8	9.1	10	270%	11	12.5	3.7
South Ck ab Resv nr Monticello								
	MAR-JUL	2.1	2.5	2.8	257%	3.2	3.8	1.09
	MAY-JUL	1.02	1.42	1.74	252%	2.1	2.7	0.69
Colorado R nr Cisco [2]								
	APR-JUL	5060	5570	5920	138%	6300	6870	4280
	MAY-JUL	4300	4810	5160	139%	5540	6110	3720
San Juan R near Bluff [2]								
	APR-JUL	1380	1530	1630	148%	1740	1920	1100
	MAY-JUL	1040	1190	1290	151%	1400	1580	855

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Reservoir Storage End of April, 2019	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Ken's Lake	1.2	1.1	1.5	2.3
Basin-wide Total	1.2	1.1	1.5	2.3
# of reservoirs	1	1	1	1

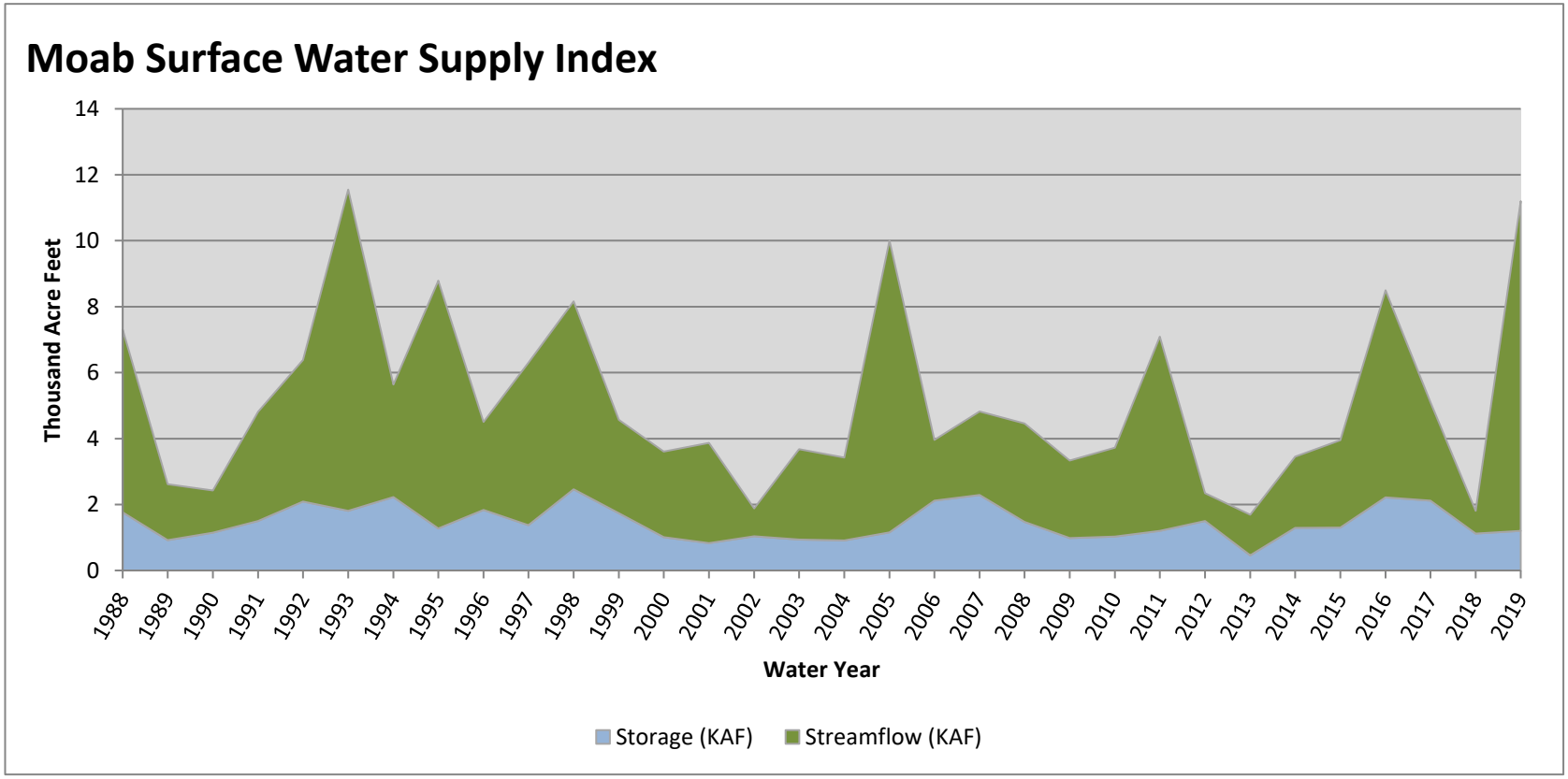
Watershed Snowpack Analysis May 1, 2019	# of Sites	% Median	Last Year % Median
Lasal Mountains	2	551%	0%
Lower San Juan	2	376%	0%
Lower Green	2	298%	0%
Henry Mountains	0		

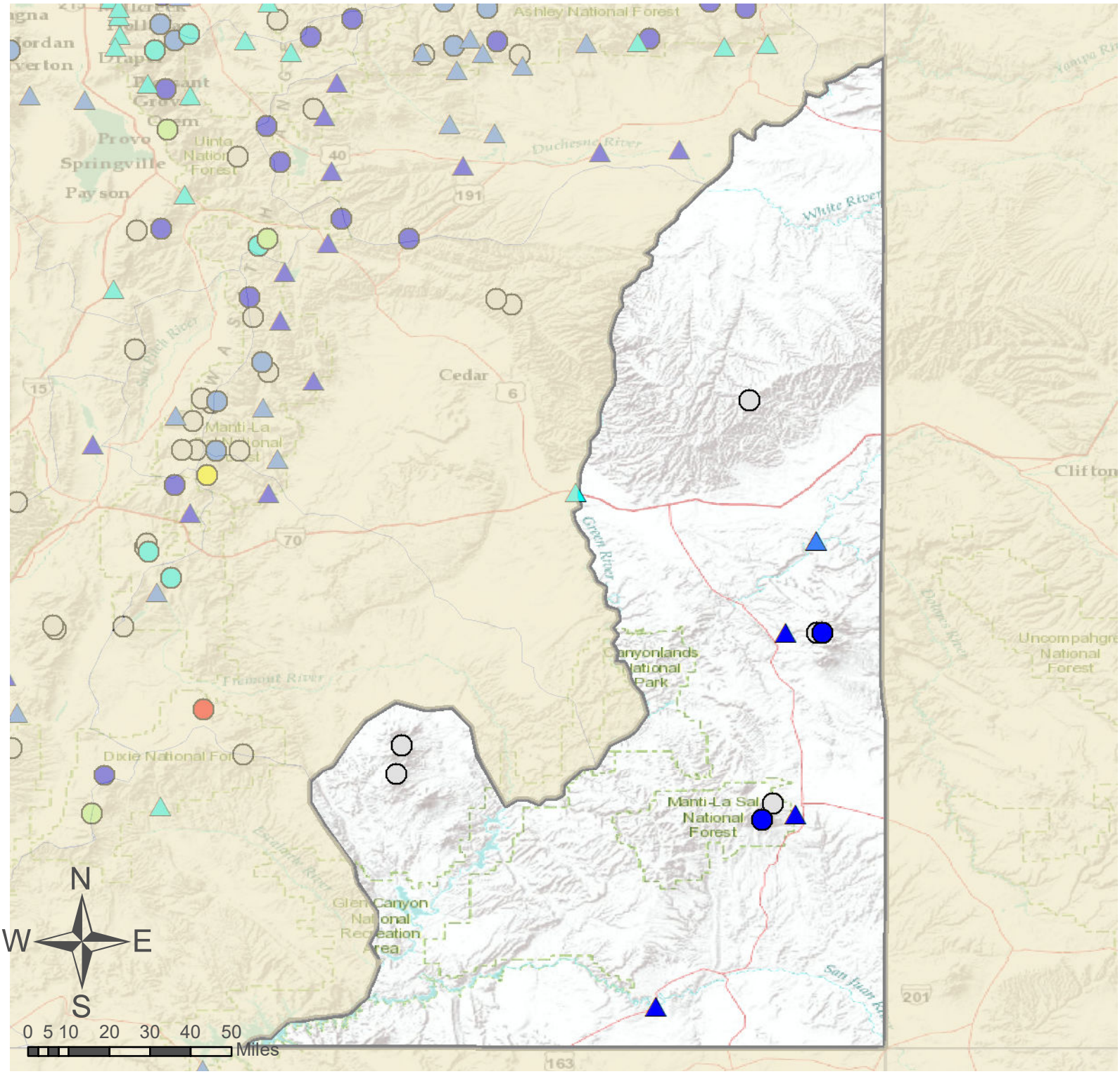
May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Moab	**1.20**	**10.00**	**11.20**	**94**	**3.66**	**93, 05, 95, 16**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.





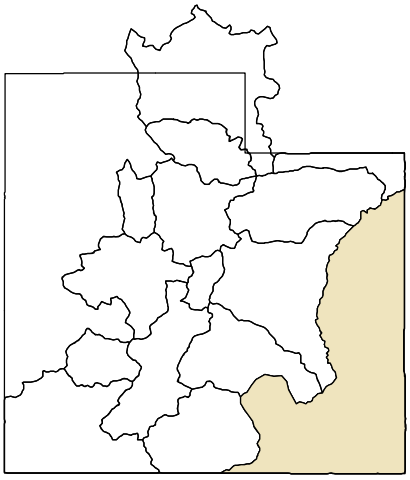
Southeastern Utah

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



As of May 1, 2019:

648% of Normal SWE

155% of Normal Precipitation

124% of Normal Precipitation Last Month

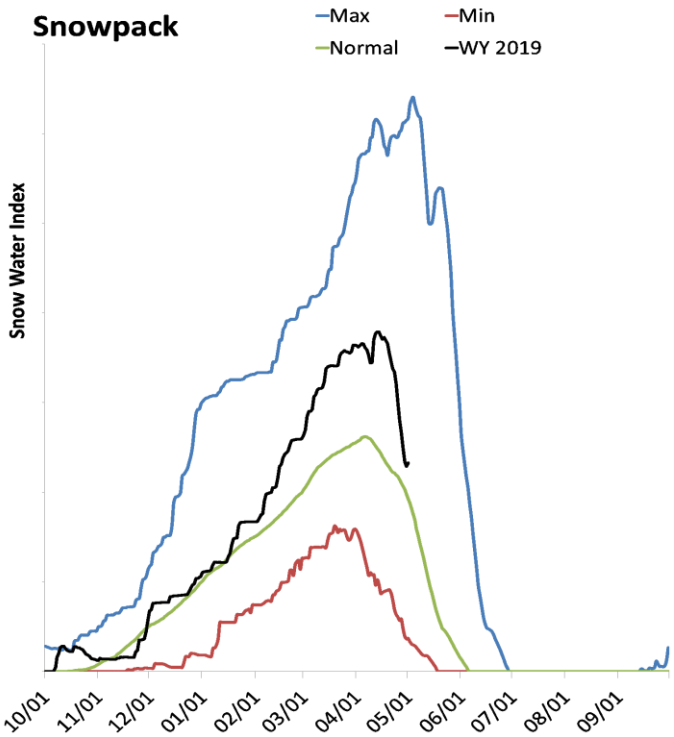
81% Saturation Soil Moisture

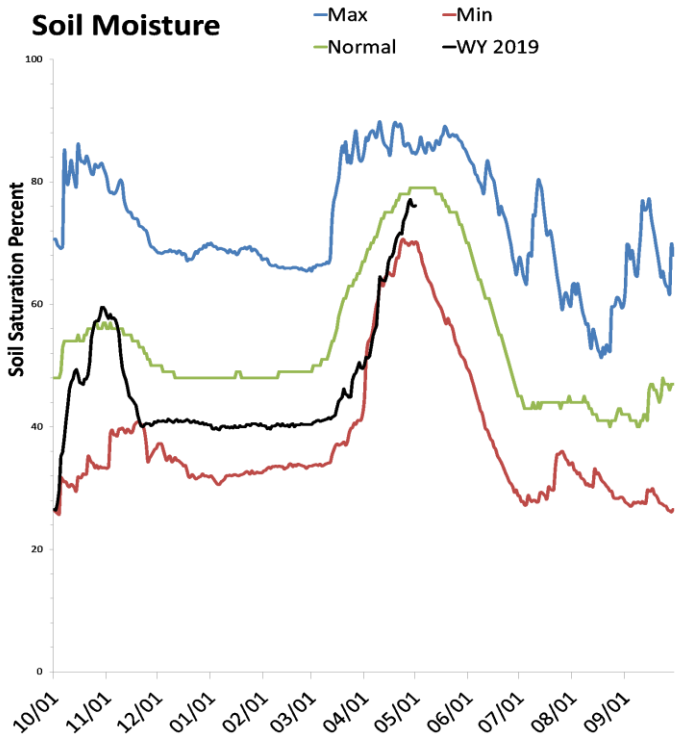
Southeastern Utah

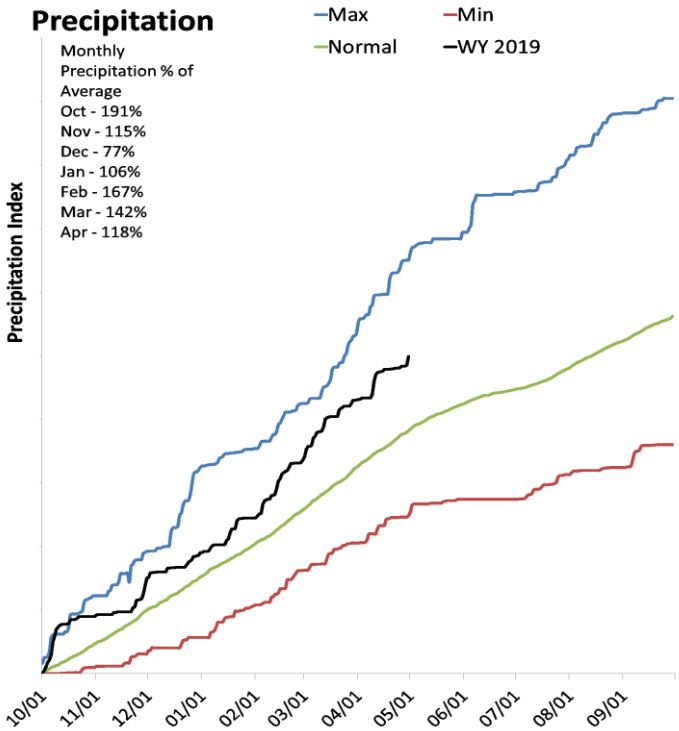
Dirty Devil Basin

May 1, 2019

Snowpack in the Dirty Devil Basin is above normal at 121% of normal, compared to 19% last year. Precipitation in April was above average at 120%, which brings the seasonal accumulation (Oct-Apr) to 131% of average. Soil moisture is at 75% compared to 75% last year. Forecast streamflow volumes range from 137% to 149% of average.







SNOTEL Data

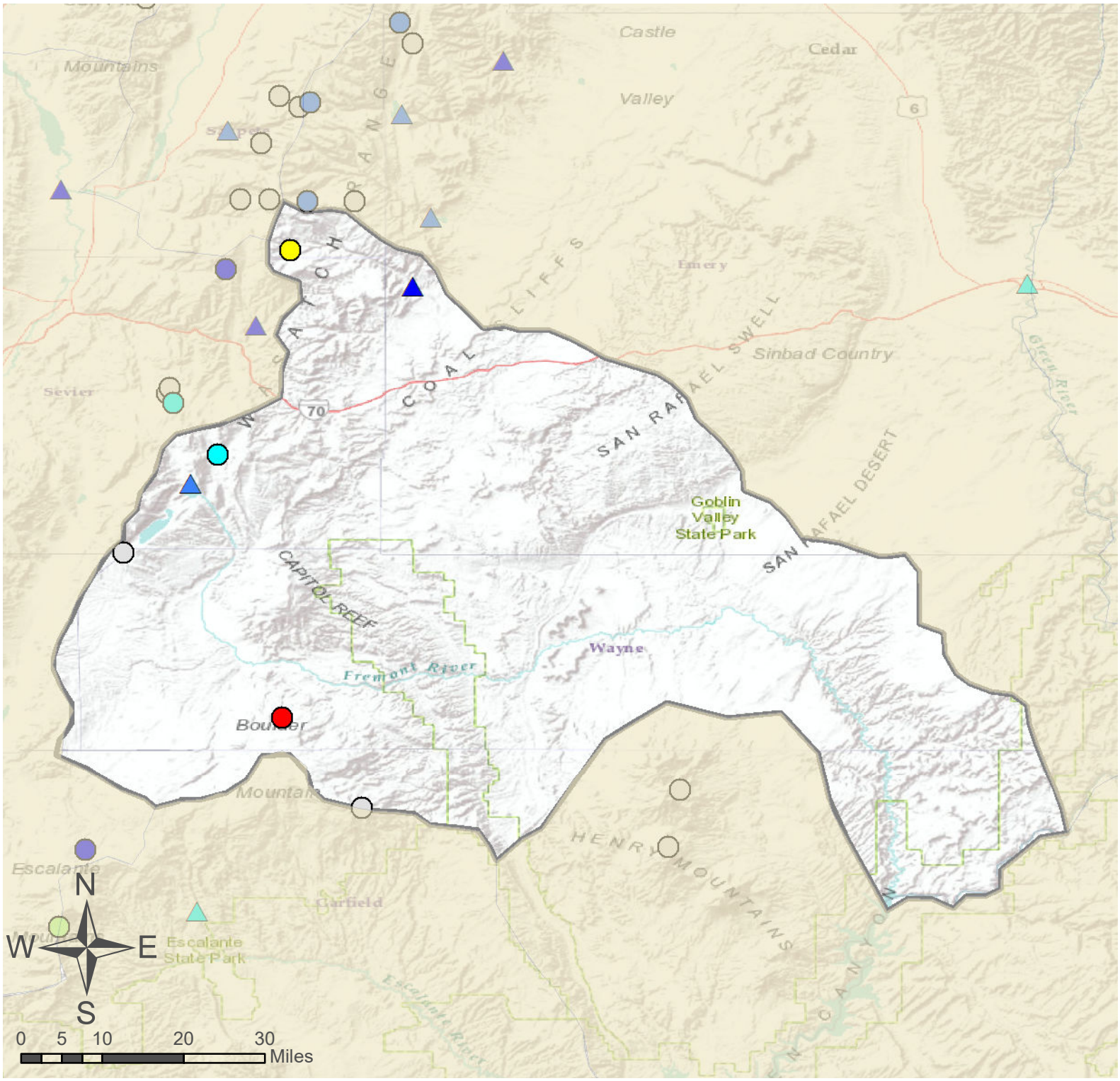
Data Current as of: 5/7/2019 7:36:48 AM

Dirty Devil
Streamflow Forecasts - May 1, 2019

Dirty Devil	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Muddy Ck nr Emery								
	APR-JUL	21	25	29	146%	32	38	19.9
	MAY-JUL	18.8	23	27	149%	30	36	18.1
Seven Mile Ck nr Fish Lake								
	APR-JUL	7.4	8.7	9.6	132%	10.6	12.1	7.3
	MAY-JUL	6.4	7.7	8.6	137%	9.6	11.1	6.3

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Watershed Snowpack Analysis May 1, 2019	# of Sites	% Median	Last Year % Median
Muddy Creek	3	133%	0%
Fremont River	4	120%	39%
Henry Mountains	0		



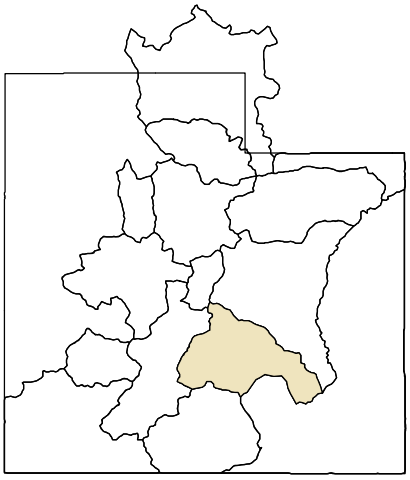
Dirty Devil Basin

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



As of May 1, 2019:

121% of Normal SWE

131% of Normal Precipitation

120% of Normal Precipitation Last Month

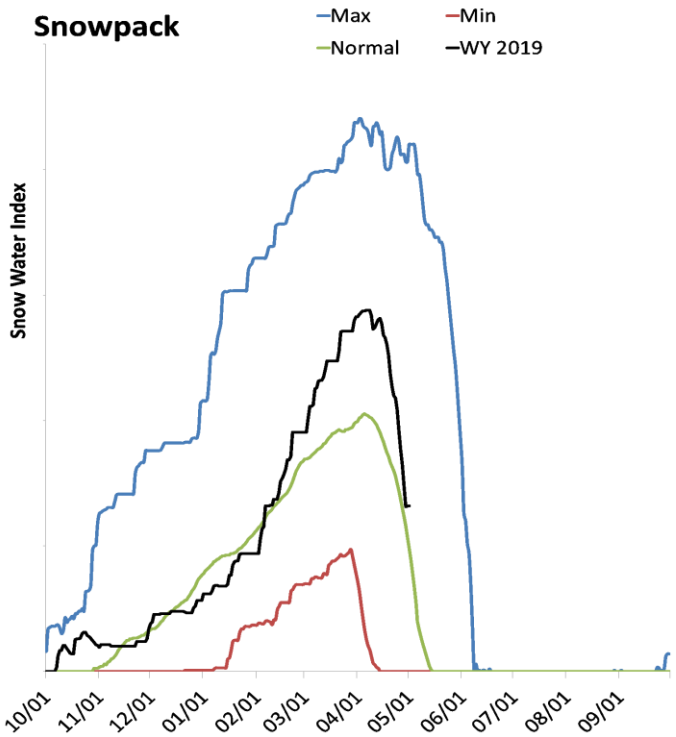
75% Saturation Soil Moisture

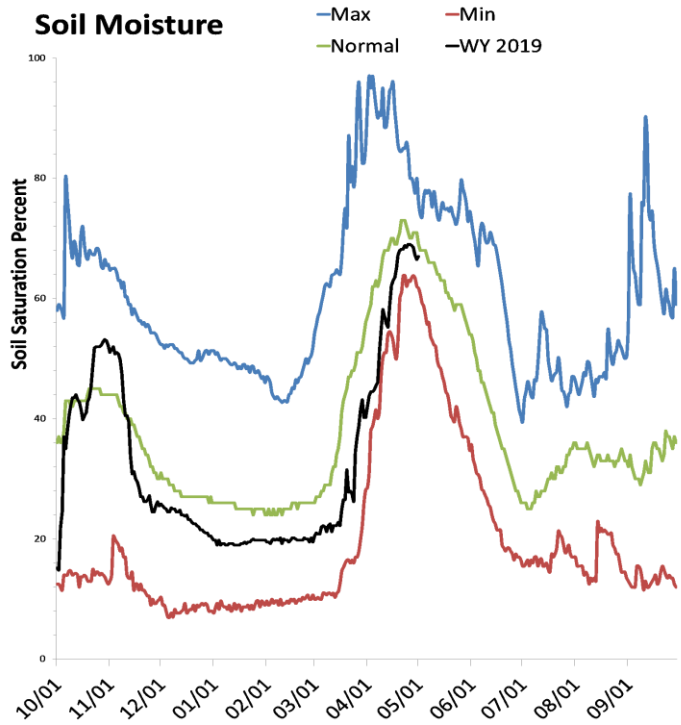
Dirty Devil Basin

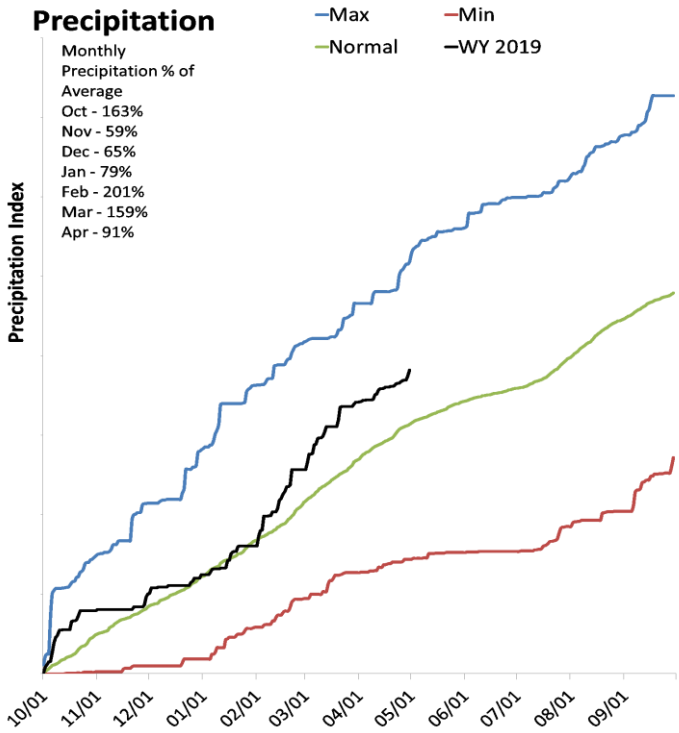
Escalante River Basin

May 1, 2019

Snowpack in the Escalante River Basin is much above normal at 135% of normal, compared to 0% last year. Precipitation in April was near average at 91%, which brings the seasonal accumulation (Oct-Apr) to 122% of average. Soil moisture is at 66% compared to 63% last year. The forecast streamflow volume for Pine Creek is 113% of average.







SNOTEL Data

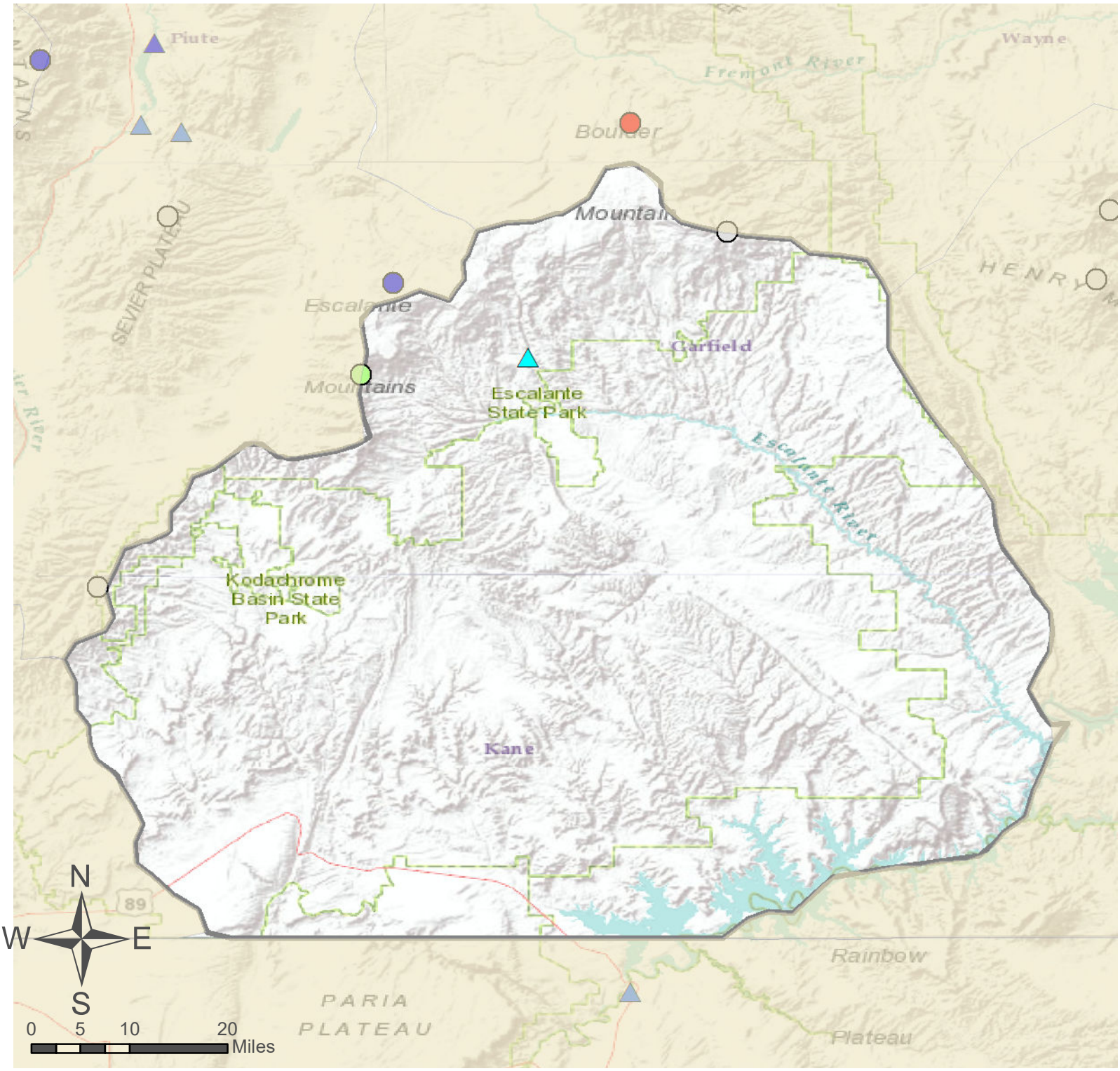
Data Current as of: 5/7/2019 7:37:32 AM

Escalante River
Streamflow Forecasts - May 1, 2019

Escalante River	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Pine Ck nr Escalante								
	APR-JUL	1.79	2.3	2.8	117%	3.2	4	2.4
	MAY-JUL	1.1	1.64	2.1	113%	2.5	3.3	1.86

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Watershed Snowpack Analysis May 1, 2019	# of Sites	% Median	Last Year % Median
Escalante River	3	135%	0%
Paria River	3	104%	0%



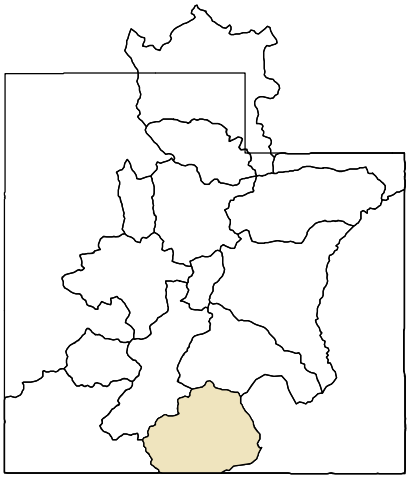
Escalante River Basin

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



As of May 1, 2019:

135% of Normal SWE

122% of Normal Precipitation

91% of Normal Precipitation Last Month

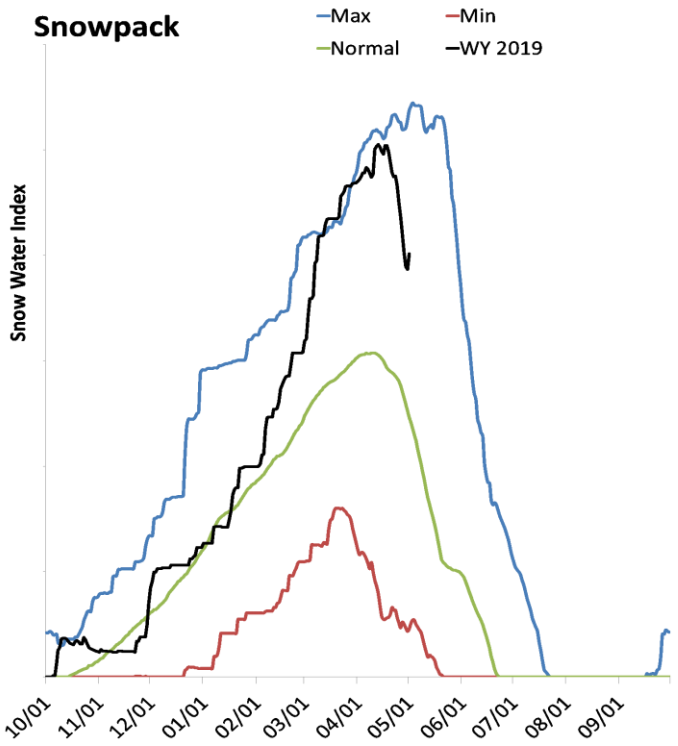
66% Saturation Soil Moisture

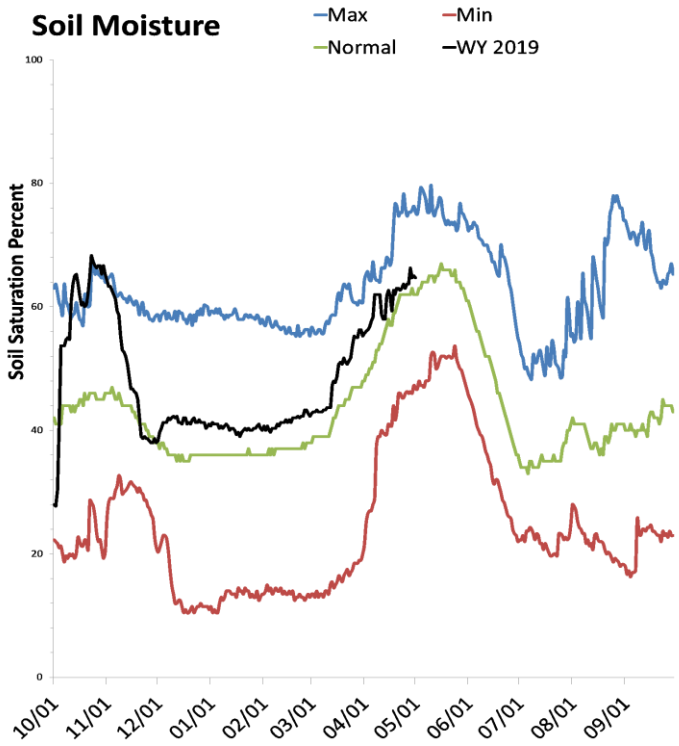
Escalante River Basin

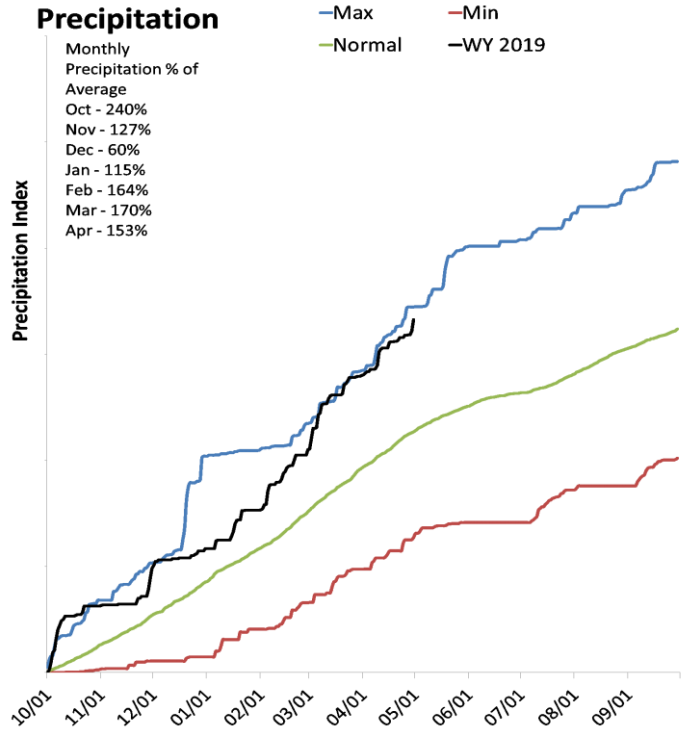
Beaver River Basin

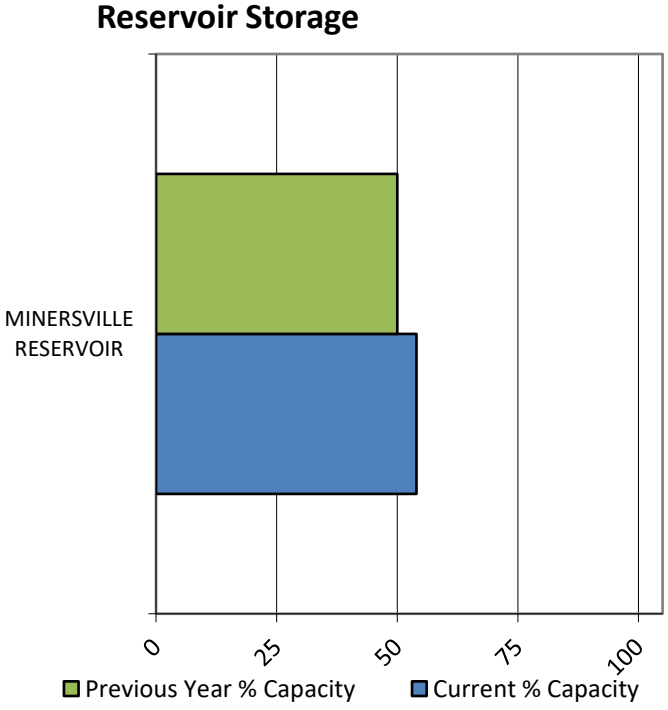
May 1, 2019

Snowpack in the Beaver River Basin is much above normal at 163% of normal, compared to 18% last year. Precipitation in April was much above average at 153%, which brings the seasonal accumulation (Oct-Apr) to 147% of average. Soil moisture is at 64% compared to 69% last year. Reservoir storage is at 54% of capacity, compared to 50% last year. The forecast streamflow volume for the Beaver River is 165% of average. The surface water supply index is 78% for the Beaver River.









SNOTEL Data

Data Current as of: 5/7/2019 7:37:25 AM

Beaver River
Streamflow Forecasts - May 1, 2019

Beaver River	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Beaver R nr Beaver								
	APR-JUL	32	39	44	169%	49	56	26
	MAY-JUL	25	33	38	165%	43	51	23

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Reservoir Storage End of April, 2019	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Minersville Reservoir	12.6	11.6	16.5	23.3
Basin-wide Total	12.6	11.6	16.5	23.3
# of reservoirs	1	1	1	1

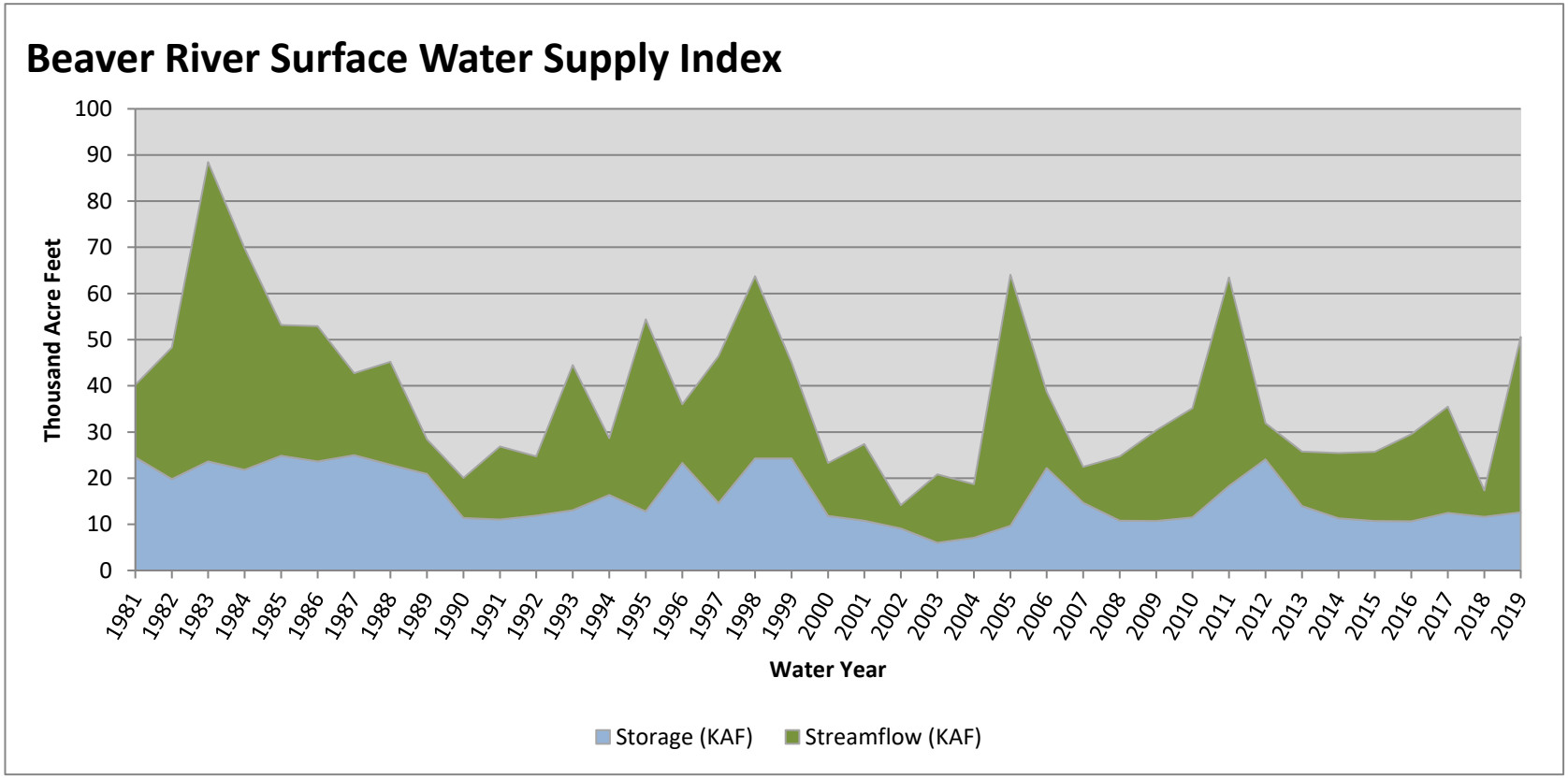
Watershed Snowpack Analysis May 1, 2019	# of Sites	% Median	Last Year % Median
Beaver River	3	163%	18%

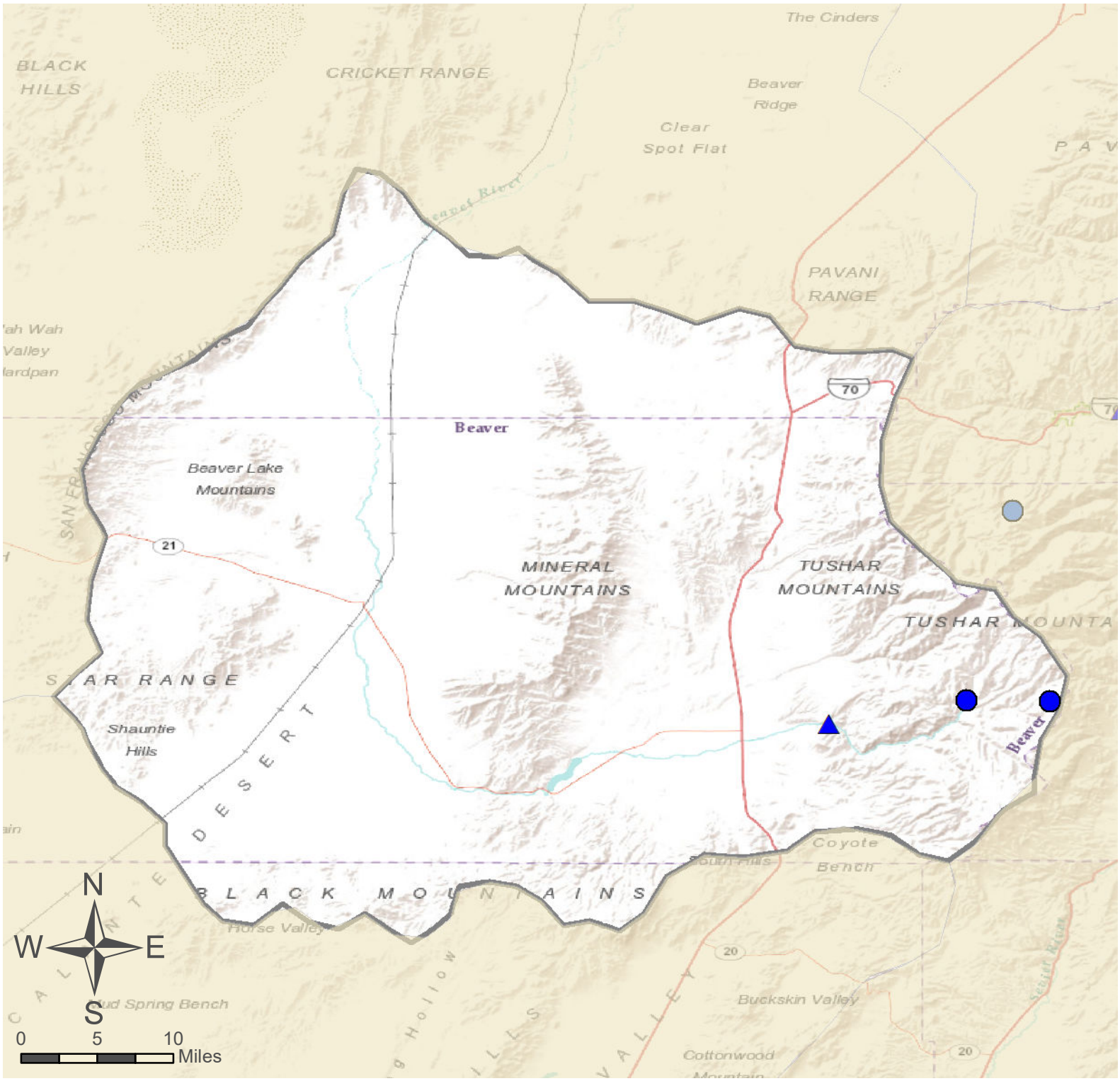
May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Beaver River	**12.60**	**38.00**	**50.60**	**78**	**2.29**	**97, 82, 86, 85**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.





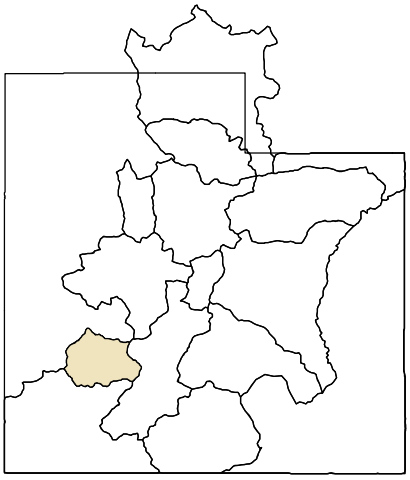
Beaver River Basin

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



As of May 1, 2019:

163% of Normal SWE

147% of Normal Precipitation

153% of Normal Precipitation Last Month

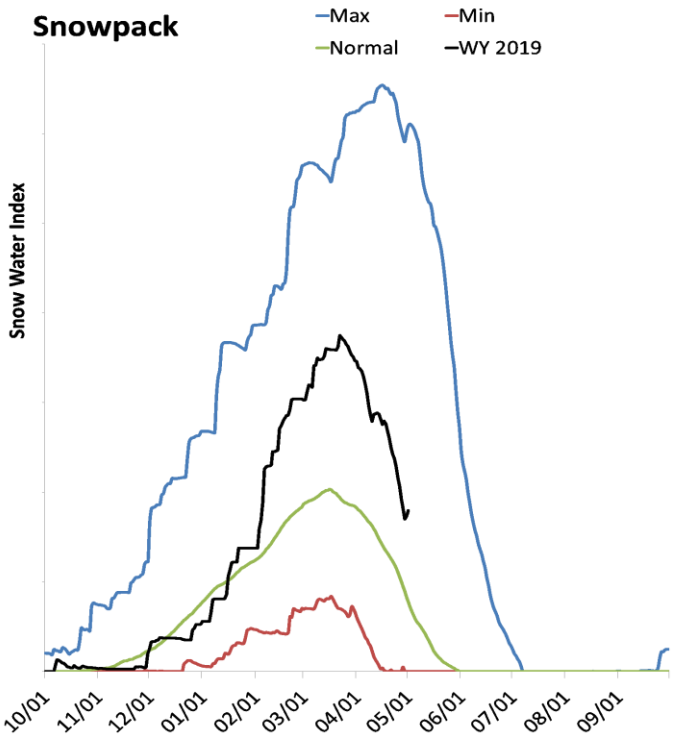
64% Saturation Soil Moisture

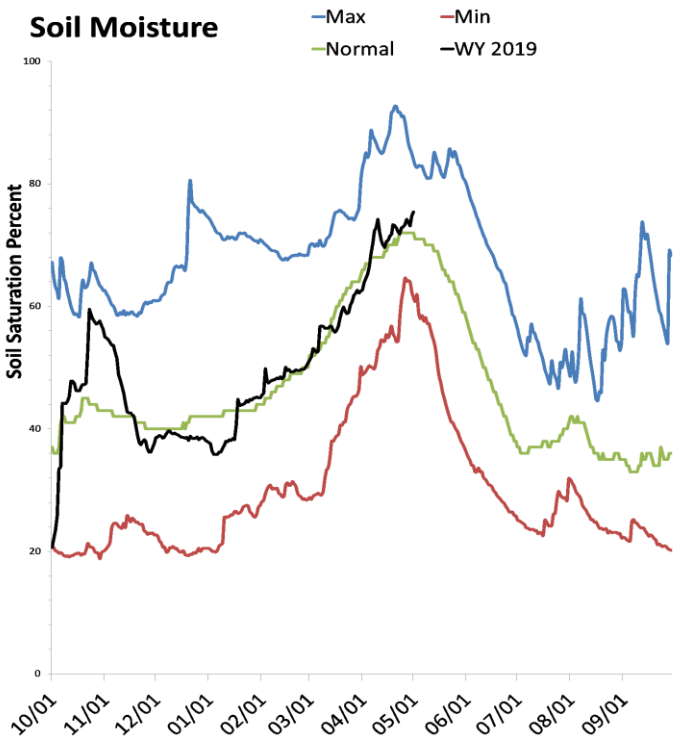
Beaver River Basin

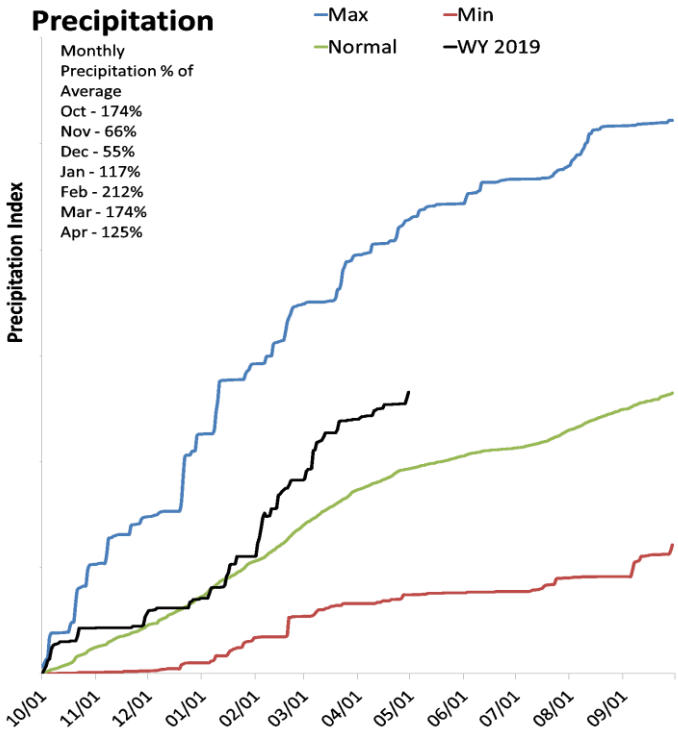
Southwestern Utah

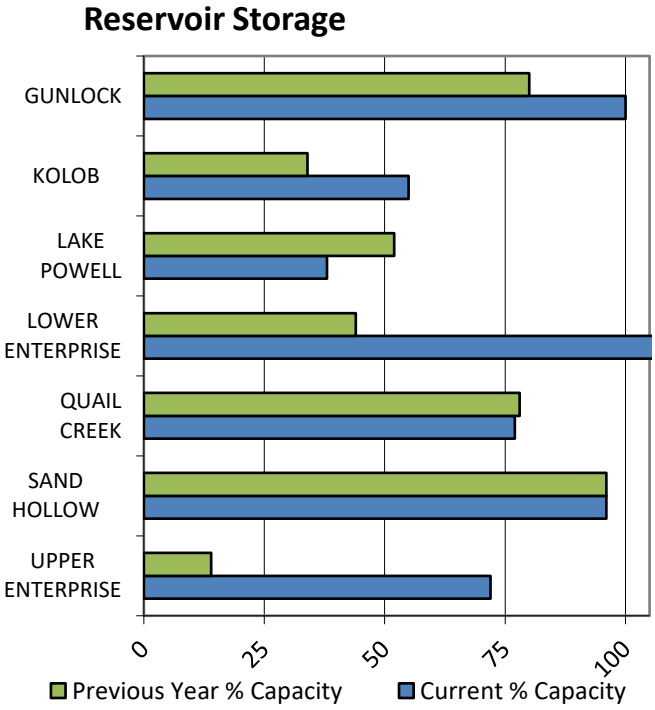
May 1, 2019

Snowpack in the Southwestern Utah is much above normal at 230% of normal, compared to 22% last year. Precipitation in April was above average at 125%, which brings the seasonal accumulation (Oct-Apr) to 137% of average. Soil moisture is at 74% compared to 62% last year. Reservoir storage is at 38% of capacity, compared to 52% last year. Forecast streamflow volumes range from 118% to 159% of average. The surface water supply index is 79% for the Virgin River.









SNOTEL Data

Data Current as of: 5/7/2019 7:37:41 AM

Southwestern Utah
Streamflow Forecasts - May 1, 2019

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Southwestern Utah	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Lake Powell Inflow [2]								
	APR-JUL	7970	8970	9690	135%	10400	11600	7160
	MAY-JUL	6730	7730	8450	139%	9190	10400	6100
Virgin R nr Hurricane								
	APR-JUL	71	87	98	156%	108	124	63
	MAY-JUL	46	57	65	159%	73	85	41
Virgin R at Virgin								
	APR-JUL	74	84	90	155%	97	107	58
	MAY-JUL	47	55	60	158%	66	74	38
Santa Clara R nr Pine Valley								
	APR-JUL	4.3	5.2	5.8	116%	6.5	7.5	5
	MAY-JUL	3.4	4.1	4.7	118%	5.3	6.2	4
Coal Ck nr Cedar City								
	APR-JUL	21	23	24	124%	25	27	19.4
	MAY-JUL	15.1	17.6	19.3	122%	21	24	15.8

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Reservoir Storage End of April, 2019	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Lake Powell	9197.9	12669.0	17123.0	24322.0
Lower Enterprise	2.8	1.2	1.4	2.6
Upper Enterprise	7.2	1.4	5.0	10.0
Kolob Reservoir	3.1	1.9		5.6
Gunlock	10.4	8.3	6.8	10.4
Sand Hollow Reservoir	48.0	48.0		50.0
Quail Creek	30.8	31.2	31.6	40.0
Basin-wide Total	9249.1	12711.0	17167.8	24385.0
# of reservoirs	5	5	5	5

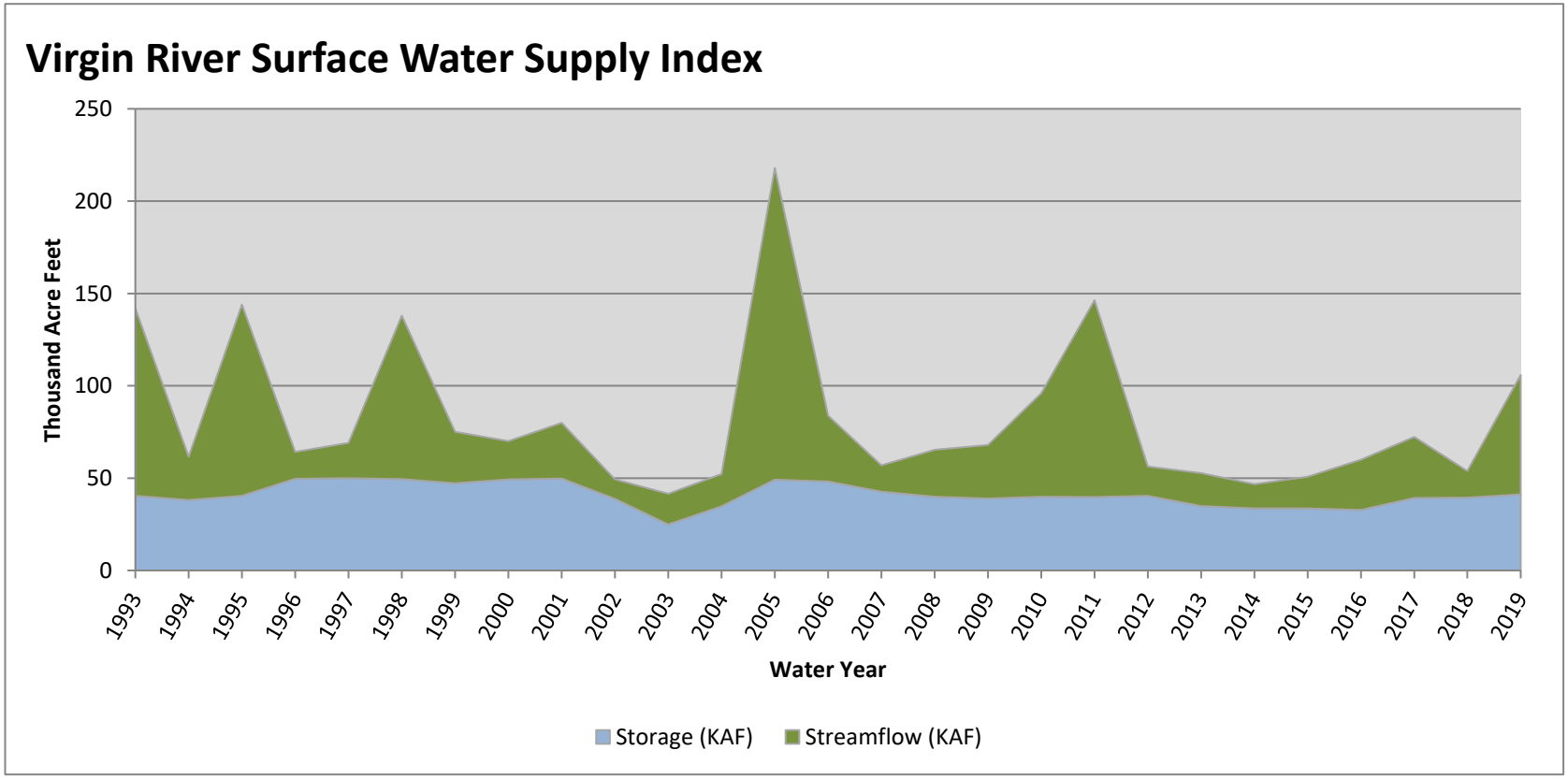
Watershed Snowpack Analysis May 1, 2019	# of Sites	% Median	Last Year % Median
Upper Virgin	8	198%	24%
Lower Virgin	2		
Coal Parowan Creeks	4	207%	23%

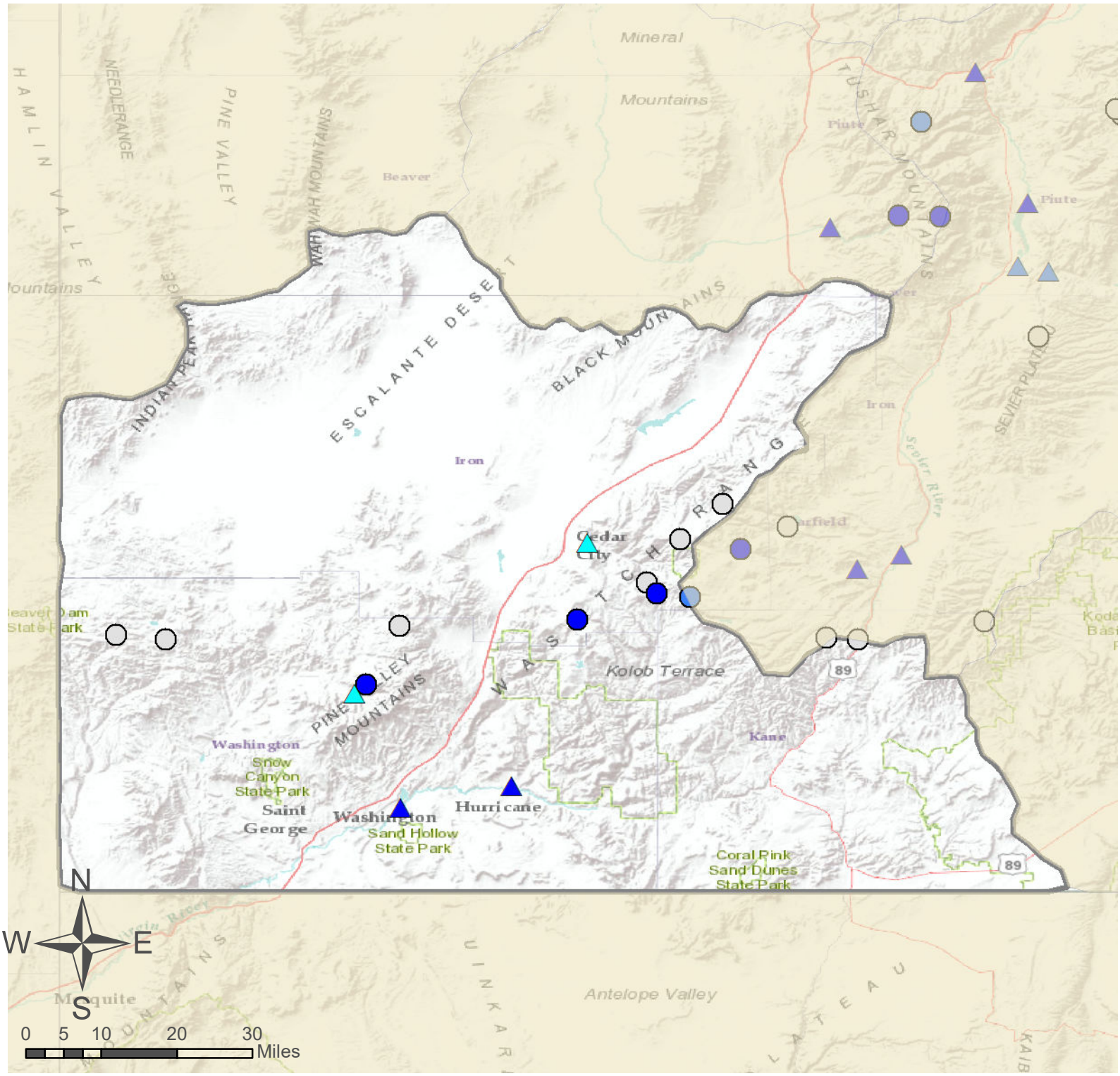
May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF^	KAF^	KAF^	%		
Virgin River	**41.20**	**64.70**	**105.90**	**79**	**2.38**	**06, 10, 98, 93**

*EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.





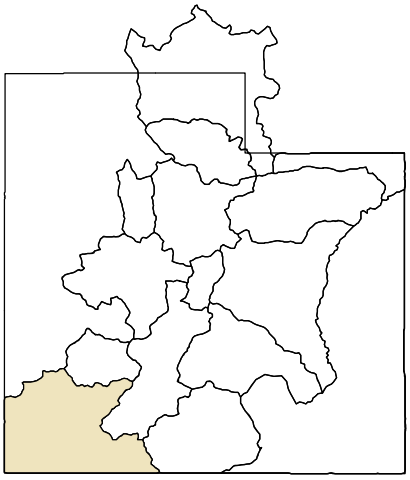
Southwestern Utah

SNOTEL Site

Forecast Point

% of Normal

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%
- No Normal



As of May 1, 2019:

230% of Normal SWE

137% of Normal Precipitation

125% of Normal Precipitation Last Month

74% Saturation Soil Moisture

Southwestern Utah

May 1, 2019

Surface Water Supply Index

Basin or Region	Apr EOM* Storage	MAY-JUL Forecast	Storage + Forecast	Percentile	SWSI#	Years with similiar SWSI
	KAF ^	*KAF ^*	*KAF ^*	*%*		
Bear River	**917.2**	**165.0**	**1082.2**	**70**	**1.67**	**87, 12, 18, 11**
Woodruff Narrows	**58.0**	**118.0**	**176.0**	**68**	**1.46**	**16, 85, 09, 96**
Little Bear	**13.0**	**38.0**	**51.0**	**71**	**1.79**	**93, 96, 17, 05**
Ogden River	**86.6**	**93.0**	**179.6**	**63**	**1.04**	**16, 85, 06, 09**
Weber River	**355.7**	**295.0**	**650.7**	**75**	**2.08**	**09, 82, 05, 98**
Provo River	**995.9**	**109.0**	**1104.9**	**38**	**-0.96**	**18, 13, 17, 95**
Western Uinta	**146.1**	**118.0**	**264.1**	**58**	**0.62**	**09, 01, 16, 06**
Eastern Uinta	**14.6**	**79.0**	**93.6**	**38**	**-1.04**	**92, 07, 88, 06**
Blacks Fork	**11.9**	**100.0**	**111.9**	**70**	**1.69**	**10, 85, 93, 96**
Smiths Fork	**5.5**	**31.0**	**36.5**	**70**	**1.69**	**05, 96, 87, 15**
Price River	**26.7**	**56.0**	**82.7**	**73**	**1.88**	**87, 17, 97, 99**
Joe's Valley	**24.8**	**73.0**	**97.8**	**65**	**1.25**	**08, 17, 96, 97**
Ferron Creek	**4.8**	**51.0**	**55.8**	**73**	**1.88**	**85, 98, 93, 06**
Moab	**1.2**	**10.0**	**11.2**	**94**	**3.66**	**93, 05, 95, 16**
Upper Sevier	**81.5**	**104.0**	**185.5**	**83**	**2.71**	**99, 85, 93, 98**
San Pitch	**1.7**	**21.0**	**22.7**	**38**	**-1.04**	**01, 89, 08, 94**
Lower Sevier	**83.0**	**215.0**	**298.0**	**75**	**2.08**	**82, 05, 97, 99**
Beaver River	**12.6**	**38.0**	**50.6**	**78**	**2.29**	**97, 82, 86, 85**
Virgin River	**41.2**	**64.7**	**105.9**	**79**	**2.38**	**06, 10, 98, 93**

**EOM, end of month; # SWSI, surface water supply index; ^KAF, thousand acre-feet.*

What is a Surface Water Supply Index?

The Surface Water Supply Index (SWSI) is a predictive indicator of total surface water availability within a watershed for the spring and summer water use seasons. The index is calculated by combining pre-runoff reservoir storage (carryover) with forecasts of spring and summer streamflow which are based on current snowpack and other hydrologic variables. SWSI values are scaled from +4.1 (abundant supply) to -4.1 (extremely dry) with a value of zero (0) indicating median water supply as compared to historical analysis. SWSI's are calculated in this fashion to be consistent with other hydroclimatic indicators such as the Palmer Drought Index and the Precipitation index.

Utah Snow Surveys has also chosen to display the SWSI value as well as a PERCENT CHANCE OF NON-EXCEEDANCE. While this is a cumbersome name, it has the simplest application. It can be best thought of as a scale of 1 to 99 with 1 being the drought of record (driest possible conditions) and 99 being the flood of record (wettest possible conditions) and a value of 50 representing average conditions. This rating scale is a percentile rating as well, for example a SWSI of 75% means that this years water supply is greater than 75% of all historical events and that only 25% of the time has it been exceeded. Conversely a SWSI of 10% means that 90% of historical events have been greater than this one and that only 10% have had less total water supply. This scale is comparable between basins: a SWSI of 50% means the same relative ranking on watershed A as it does on watershed B, which may not be strictly true of the +4 to -4 scale.

For more information on the SWSI go to: www.ut.nrcs.usda.gov/snow/ on the water supply page. The entire period of historical record for reservoir storage and streamflow is available.

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https://www.nrcs.usda.gov/wps/portal/nrcs/main/ut/snow/

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Utah Water Supply Outlook Report

Natural Resources Conservation Service
Salt Lake City, UT