

STATE OF UTAH GENERAL OUTLOOK

May 1, 2003

SUMMARY

April showers bring May flowers the saying goes. This year April brought extremely windy conditions and the wind, put a nail in this snowpack coffin. Sublimation is the scientific term for changing a solid to a gas bypassing the liquid phase. It requires phenomenal energy, 8 times more than to just melt snow. Lots of steady, strong wind with warm temperatures is the primary mechanism to deliver that energy to a snowpack. In a normal melt season, Utah loses 10 to 20% of its snowpack to sublimation, it is a natural process with very little we can do to prevent it. From about the 10th of April to the 14th, there were steady 10 to 40 mph winds with extremely warm temperatures. During this time, what was left of the low elevation snowpack disappeared. Nearly 50% of the mid elevation snowpack, consistently a big water producer, also disappeared. That is a significant amount of snow over a vast geographic region and that kind of snowloss would normally produce a lot of streamflow, but not in this case. An analysis of the event showed that many SNOTEL sites lost between 4 and 6 inches of snow water equivalent over the 5 day period. Most sites gained about 1 to 2 inches of soil moisture during the same period indicating about 1/3 of the snow lost, melted and infiltrated the soil. Calculating runoff from streamflow values indicated that a paltry 0.2 to 0.35 inches of loss made it to the stream. The remaining 2 to 4 inches of snow loss was due to sublimation. To put it simply, a third or more of our snowpack is now completely lost from the system and will not contribute to runoff. In the meantime, the other normal loss rates must still be satisfied, such as the soil moisture deficit. Now the soil moisture deficit becomes a big issue again, because there is only marginally enough snow left to fill it to saturation at most locations. This is being reflected in observed streamflows across the state with most areas still well below average. It is difficult to quantify just how much water was lost across the state during that wind episode. For example, on the Weber River above Oakley, between one quarter and one third (25,000 to 35,000 AF) of the normal April-July runoff was lost during those 4 days. In a year when runoff was expected to be extremely low already, that loss is devastating. As a consequence of that loss combined with struggling streamflows across the state, water supply forecasts have tumbled. Snowpacks now range from 40% to 50% in the north and from 50% to 70% in southern Utah. Precipitation for April was much below to below normal in northern Utah (50%-75%), in the south it was below to near average (65%-90%), bringing seasonal precipitation, (Oct-Apr) to 75%. Reservoir storage in 41 major reservoirs across the state is at 55% of capacity, up only a meager 2% from last month and down 601,000 acre feet from last year, out of a total capacity of 5, 470,000, or about 11 %. Reservoir storage is down 1,200,000 acre feet (22%) from 2001 levels, reflecting the persistent nature of this drought.

SNOWPACK

March first snowpacks as measured by the NRCS SNOTEL system range from 50% to 68% of average in southern Utah. The Sevier has the highest snowpacks at 68% of average and southeast Utah has the lowest at 50% of average. In northern Utah, snowpacks range from a low of 40% on the Weber to 49% on the Provo. Low elevation snowpacks have melted out. Mid elevation snowpacks are nearly gone. Snowmelt is 4 to 6 weeks ahead of average melt and this will simply lengthen summer by a commensurate amount. Statewide, snowpacks are at 50% of average.

PRECIPITATION

Mountain precipitation during April was much below to below normal (50%-80%) in the north and much below to near normal (65%-90%) in southern Utah. This brings the seasonal accumulation (Oct-Apr) to 75% of average statewide.

RESERVOIRS

Storage in 41 of Utah's key irrigation reservoirs is at 55% of capacity. This is down substantially from last year indicating heavy use of reservoir storage to make up the streamflow deficit. Most reservoir operators are utilizing a conservative strategy, storing as much water as possible.

STREAMFLOW

Snowmelt streamflows are expected to be much below to below average across the entire state of Utah this year. Low snowpacks tend to melt earlier and produce proportionately less runoff. Streams may peak early, have significantly less volume and have short recessions back to base flow. Overall water supply conditions are much below normal.

