NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

July 3, 2012

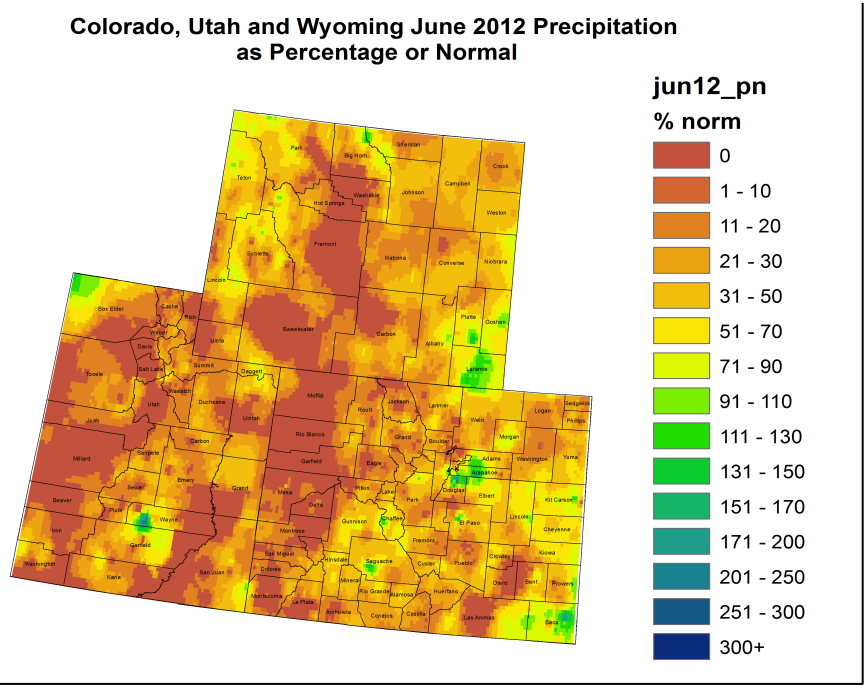


Fig. 1: June precipitation as a percent of average.

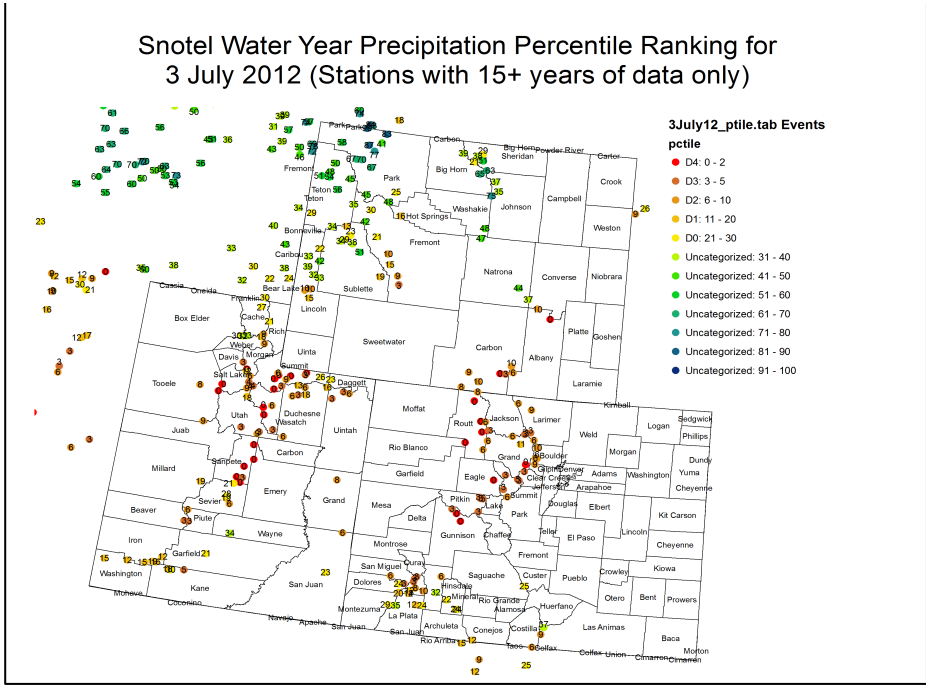


Fig. 2: SNOTEL WYTD precipitation percentiles (50% is median, 21 – 30% is Drought Monitor D0 category).

Precipitation

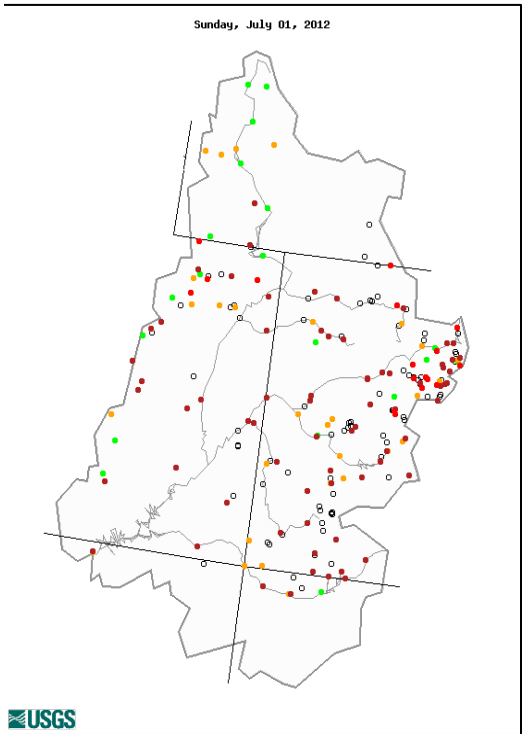
For the month of June, most of the Upper Colorado River Basin (UCRB) experienced below average precipitation (Fig. 1). Much of the west slope of Colorado and along the Colorado River valley above Lake Powell in southern Utah saw 0% of normal precipitation for the month. Other scattered areas throughout the basin received some precipitation, but generally between 10% and 50% of average for the month. East of the basin, the rest of CO also saw below average precipitation for the month with most areas ranging between 0% and 70% of average. Only a couple isolated areas received near average precipitation.

Water-year-to-date (WYTD), SNOTEL precipitation percentiles are low for the Yampa and Gunnison basins in CO, and the Wasatch range in UT, with many sites reporting in the lowest 5th percentile or below (Fig. 2). The northern mountains of CO are also dry, with all of the sites reporting below the 10th percentile for precipitation. SNOTEL percentiles in the Upper Green basin in WY are around the 30th percentile, and percentiles in the San Juan basin are in the teens and 20s.

Streamflow

As of July 1st, 14% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) 7-day average streamflows (Fig. 3). There are no gages in the UCRB recording above normal flows, while about 65% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows. The gages on the Upper Green River are showing near normal and below normal flows. Most gages on the Yampa, Colorado, Gunnison, Dolores and San Juan rivers are currently recording flows below the 10th percentile. Low flows are mainly concentrated in headwater regions on the east side of the basin.

Flows on two of the three key gages in the UCRB saw slight increases last week (Fig. 4). Flows on the Colorado River at the CO-UT state line and the San Juan River near Bluff, UT reported at the 4th and 8th percentiles, respectively. Flows on the Green River at Green River, UT continued to see large decreases last week and is currently recording at the 1st percentile, primarily due to low flows from the Yampa River. Flows on all three key gages are much below normal for this time of year.



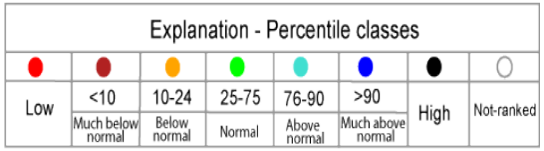


Fig. 3: 7-day average discharge compared to historical discharge for July 1st.

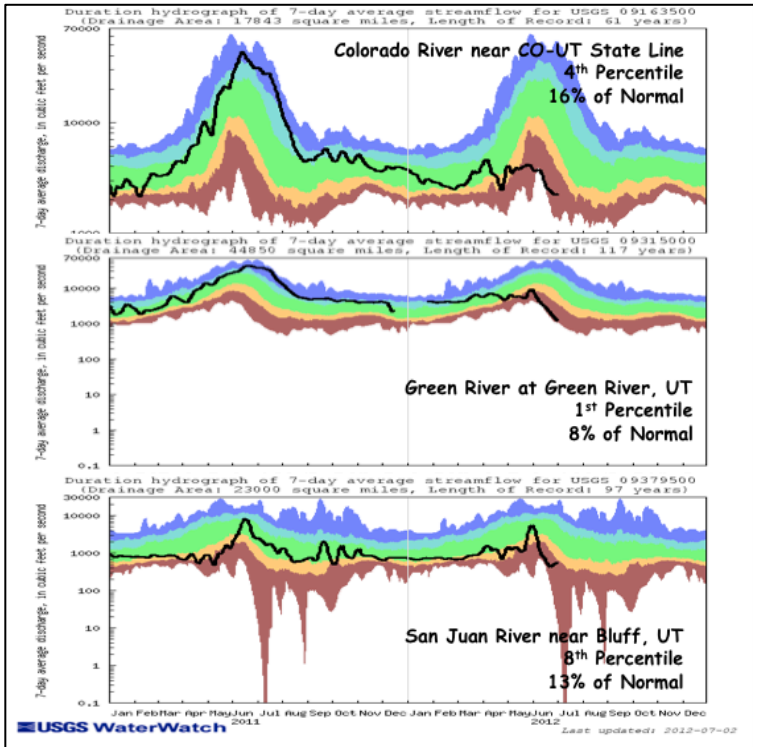


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

All of the UCRB experienced warmer than average temperatures for the month of June. Temperature anomalies ranged from 2 to 8 degrees above average. The rest of CO saw temperatures 4 to 8 degrees above average last month. Satellite vegetation conditions show the driest vegetation over northwest CO and northeast UT, with dry conditions extending into southern WY and into the Four Corners region (Fig. 5). Very dry vegetation is also showing up over northeast CO and along the Arkansas valley in southeast CO. Reference ET rates throughout the basin are very high, with CoAgMet stations in western CO reporting some of their highest ET rates on record (Fig. 6). Daily reference ET rates are ranging from between .30 to .50 inches, meaning that smaller amounts of precipitation will provide only minimal relief to crops and soils, and the majority of precipitation can quickly evaporate back into the atmosphere.

All of the major reservoirs in the UCRB, with the exception of Flaming Gorge and Green Mountain, saw volume decreases for the month of June. All of the major reservoirs are below their July storage averages, with Blue Mesa at 68% of average, Green Mountain at 73% of average, and Lake Powell currently at 74% of average. Daily inflows into the major reservoirs in the basin are much below average for this time of year.

Precipitation Forecast

An early season monsoonal pattern will set up over the UCRB through the first part of the week as a strong ridge of high pressure becomes anchored over the southern plains. Persistent southerly flow on the west side of this feature will begin to pump sub-tropical moisture across the Four Corners region on Wednesday, and spread northward through Friday. Several upper level disturbances caught up in the flow will aid in convective development and lead to an extended period of widespread showers and thunderstorms over most of the UCRB. Expect rainfall amounts to gradually increase throughout the week as deeper moisture becomes entrenched across the region with the focus of the activity beginning over the southern CO mountains and gradually expanding over eastern UT and northern CO. By Sunday widespread accumulations of 0.25 to 0.5 inches will be possible across much of the basin, with isolated areas over central CO approaching 2 inches of rain.

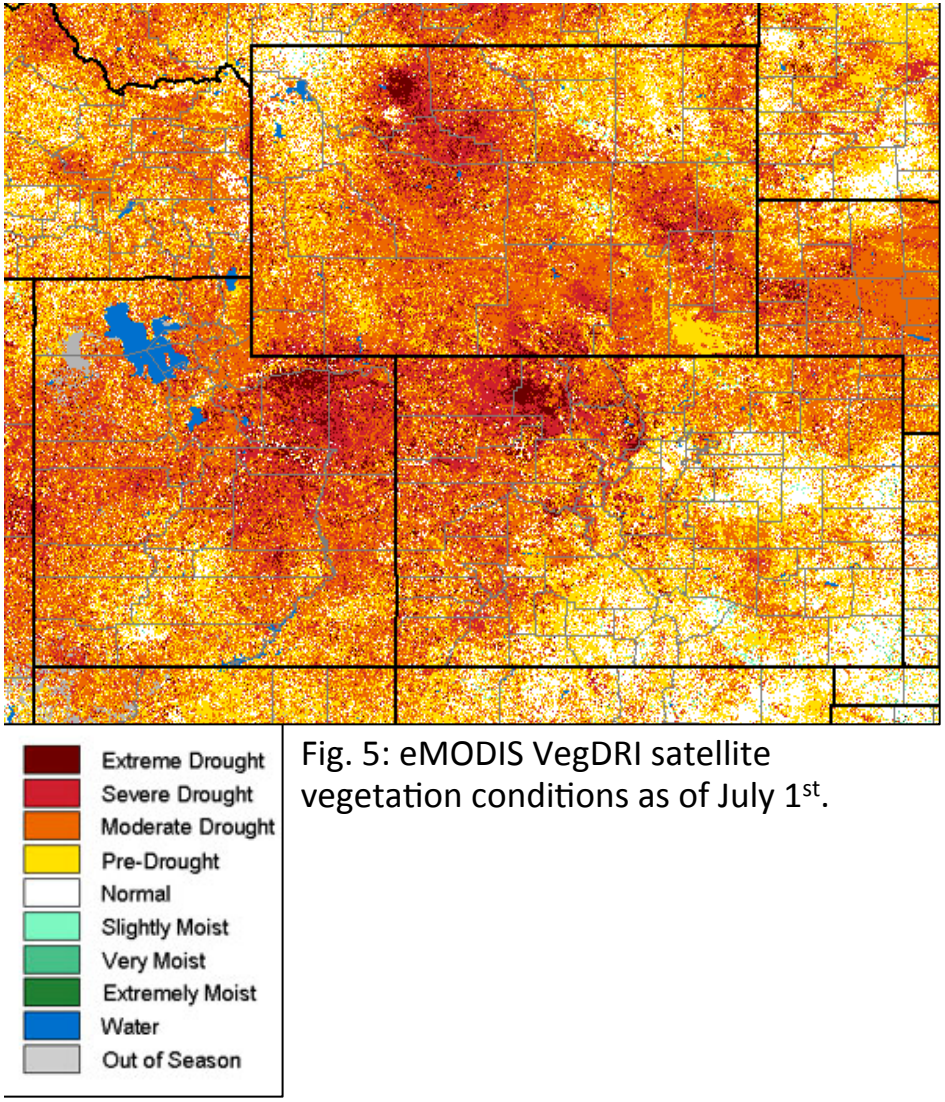


Fig. 5: eMODIS VegDRI satellite vegetation conditions as of July 1st.

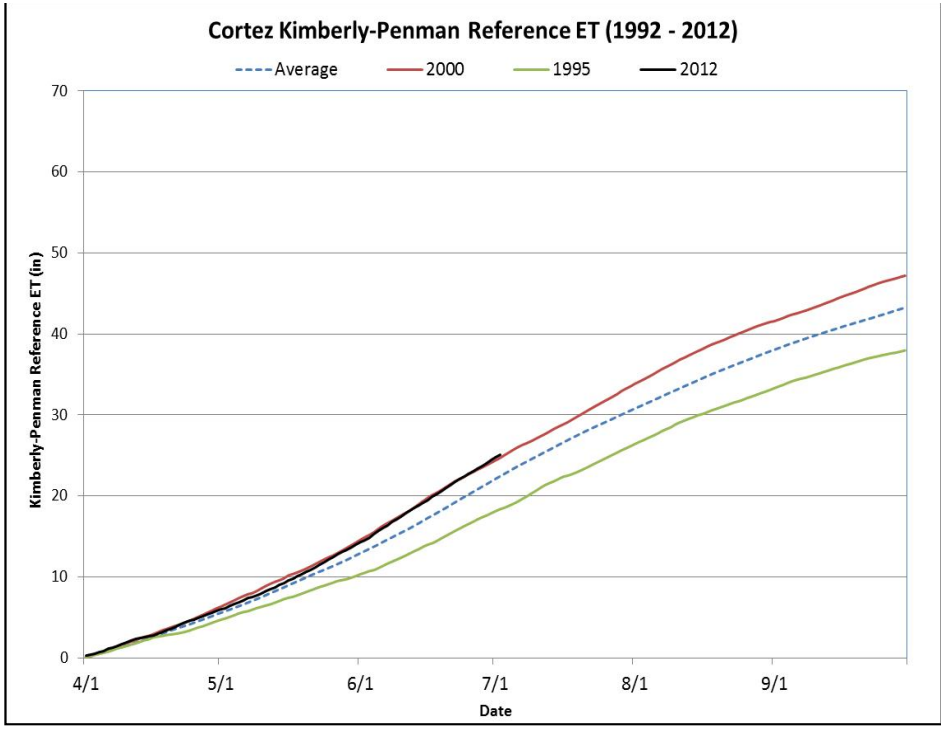
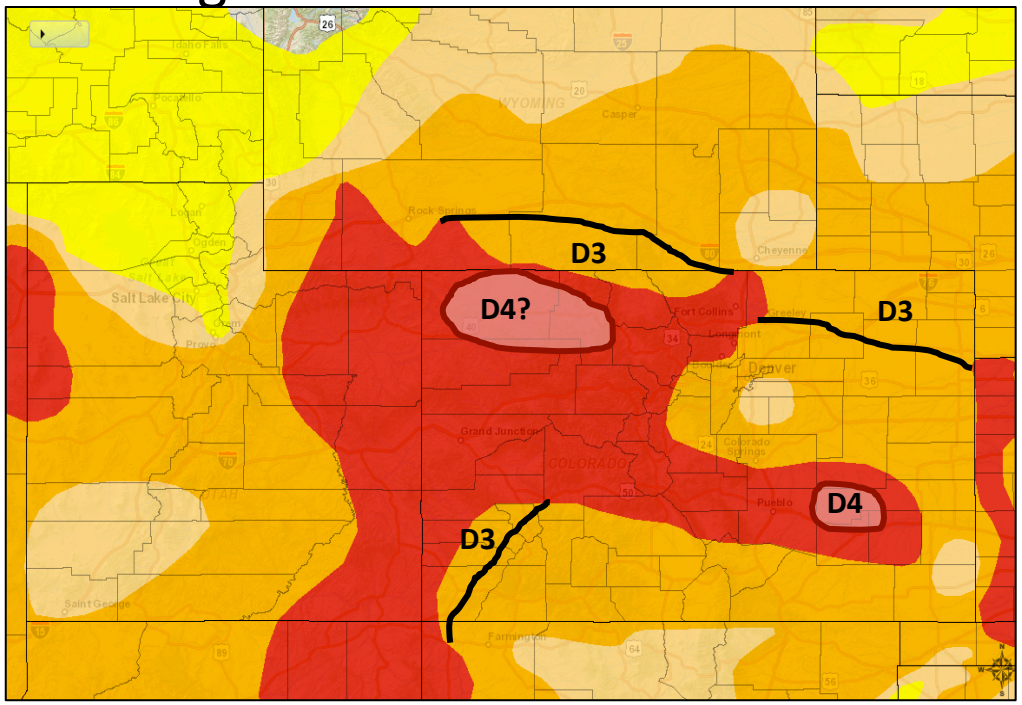
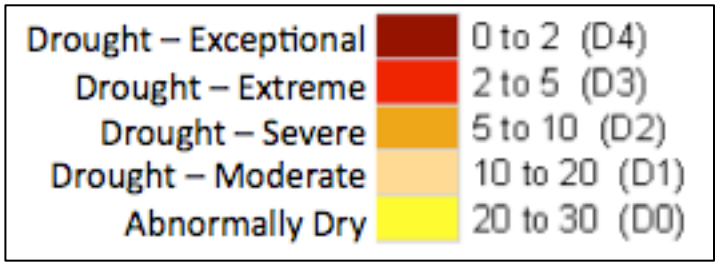


Fig. 6: Accumulated reference ET (black line) at Cortez, CO near the Four Corners, compared to the max year (red), min year (green), and average (dashed line).

Drought and Water Discussion





Drought categories and their associated percentiles

Fig. 7: June 26th release of U.S. Drought Monitor for the UCRB.

Eastern Colorado:

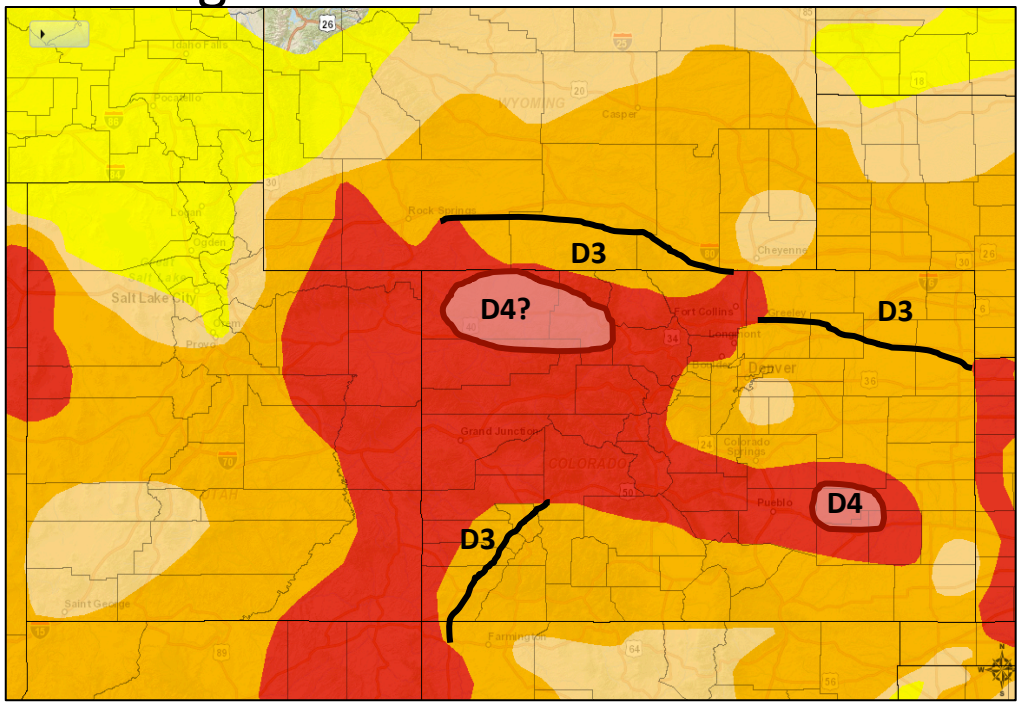
D3 – A D3 expansion is recommended in northeast CO to cover the very poor conditions in the far northeast and also reported very dry conditions throughout Weld County. The delineation follows the VegDRI depiction (Fig. 7, black line).

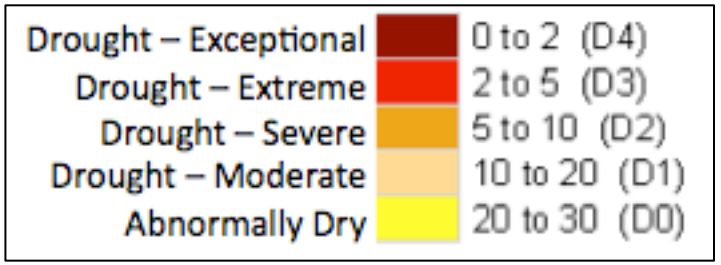
D4 – An introduction of D4 is recommended around Crowley County where it is reported that the conditions are the worst ever seen and they are now suffering through their 2nd year of drought (Fig. 7, maroon shape).

UCRB:

D3—expansion of D3 is recommended in southwest CO to cover some of the lower elevations that are showing very dry conditions (Fig. 7, black line). A D3 expansion is also recommended for the extreme northeastern portion of the basin to cover the rest of the Yampa watershed. This D3 expansion will cover parts of northern CO and southern WY that show standardized precipitation indices (SPIs) that are around -2 on the short and longer timescales.

Drought and Water Discussion





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UCRB:

D4 — There is disagreement on whether D4 should be introduced in the Yampa basin (Fig. 7, maroon shape). Reports from Moffat and Routt counties are pasture losses of 75-90%, with reported losses even in irrigated crops; SPIs at a couple of sites are less than -2.5, streamflows are in the 1st or 2nd percentiles; high winds and low humidities are exacerbating the situation; Steamboat has reported several impacts including water restrictions (their first time ever), and summer recreation is being heavily impacted. However, some argue that it can still get worse, that water supply is in good condition, some irrigated crops are still okay, and that these conditions are not unprecedented. There are strong opinions that D4 should not be introduced, and that what the USDM describes as D3 fits for the entire region. Others feel strongly that it's about as bad as it can get, and that D4 would be more representative for the Yampa basin at this time. There is ultimate confusion on the actual delineation between D3 and D4 in terms of descriptions (not percentiles), so we must defer to the current USDM author on what they feel is most representative for the area, given the data and input.