River Watch Items for January 2022 UWP Board Meeting

- In January 2022 River Watch samples were collected and analyzed for six sites between December 31st and January 5th. Our semi-annual site visit scheduled for January 12th was postponed due to COVID concerns.
- Streamflow from late December to early January is summarized as follows:
  - At the USGS gauge near Ouray daily flow was consistent at values between 25-27 cfs. The historical median flow was 26 cfs.
  - At the USGS gauge near Ridgway flow was about 46 cfs through Jan 1st but then the gauge was iced up through Jan 6th. The historical median flow was about 50 cfs.
  - At the USGS gauge below Ridgway Reservoir there was a constant release of 46 cfs, somewhat lower than the median of 50 cfs.
  - Dallas Creek flow decreased from 28 to 15 cfs by Jan 1st, then iced up through Jan 6th . The median was about 17 cfs.
  - Over the same period Cow Creek flow decreased from 11 to 8 cfs on Jan 2nd. The data appear to be bad after that.
- A change in the storm track in late December brought significant snowfall to the mountains of Colorado. The Gunnison Basin snowpack increased from 51% of the 30-year median in early December to 149% in early January. The northern part of the basin had the highest snow totals with Park Reservoir on Grand Mesa showing 21" of SWE, about 200% of its median. The Red Mtn Pass SNOTEL increased to 119% (12.0" SWE) of its long-term median and Idarado increased to 95% (5.3" SWE).
- I looked at some water quality measurements from Ridgway Reservoir. River Watch does not sample in Ridgway Reservoir, but CDPHE (WQCD) routinely monitors water quality at several locations in the lake. Figures 1, 2 and 3 show water quality parameters from the Uncompahgre above the reservoir (Potters Ranch and CR24), three locations in the reservoir, and one

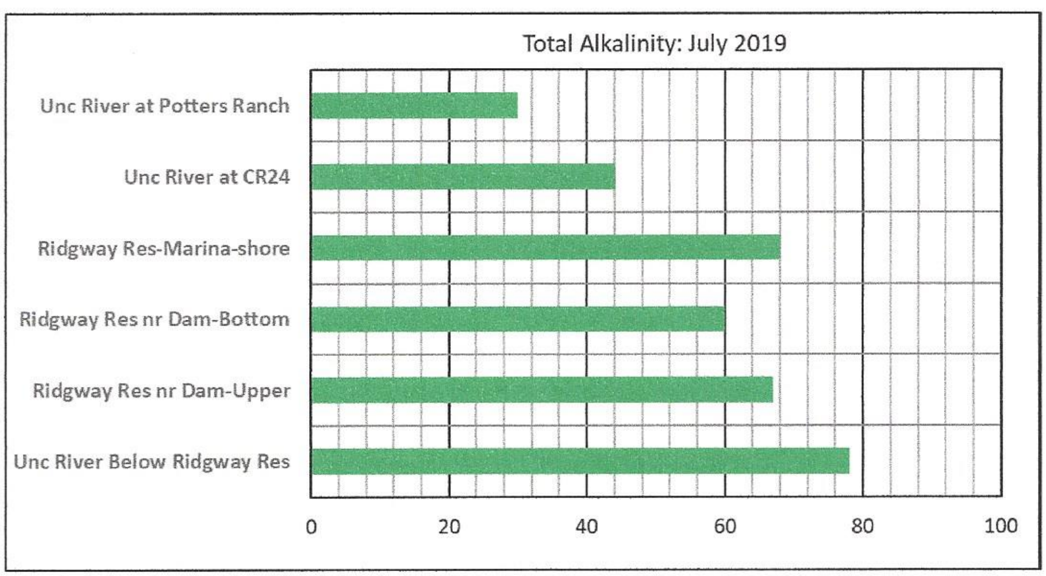

Figure 1. Total alkalinity measured in July 2019 from Potters Ranch about 5 miles above Ridgway Reservoir to a site about a half mile below Ridgway Reservoir. In order from the top, the reservoir sampling sites were a surface sample at the marina, a bottom sample near the dam, and a surface sample near the dam.

Uncompahgre site below the reservoir.

Figure 1 shows that total alkalinity in July 2019, during relatively high flow, increased steadily from the upstream sites to the site below the dam with the marina site having the highest value among

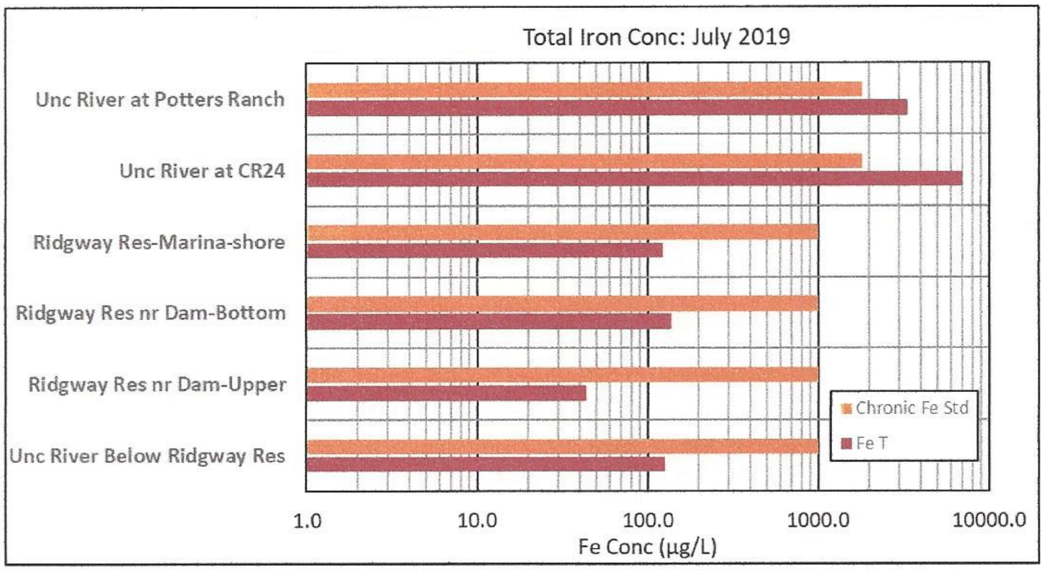

Figure 2. As in Figure 1, except showing total iron concentrations (red bars) in July 2019. The orange bars are the aquatic life chronic standards for iron.

the lake sites. In August 2019 (not shown), at lower flow, alkalinity was nearly constant at about 70 mg/L from site CR24 to the site below the reservoir.

Total iron concentrations in July 2019 are shown in Figure 2. Typical of high flow periods, iron concentration increased between Potters Ranch and CR24, likely from resuspension of iron particles. Both sites had values that exceeded the chronic standard for aquatic life. Iron concentrations then dropped markedly at all lake sites and in the river below the dam, with values well below the chronic standard. The pattern in August 2019 was similar to July, but with lower values at the upstream sites (less resuspension), and with the bottom sample at the dam being much greater than the other lake samples and slightly greater than the chronic standard.

Dissolved zinc concentrations in July 2019 are shown in Figure 3. Unlike total metal concentrations like iron, dissolved zinc (and other dissolved metals) tend to decrease downstream of the source in the upper regions of the Uncompahgre watershed as flow and pH both increase. In this example lake samples had similar relatively constant concentrations. The site below the lake had a

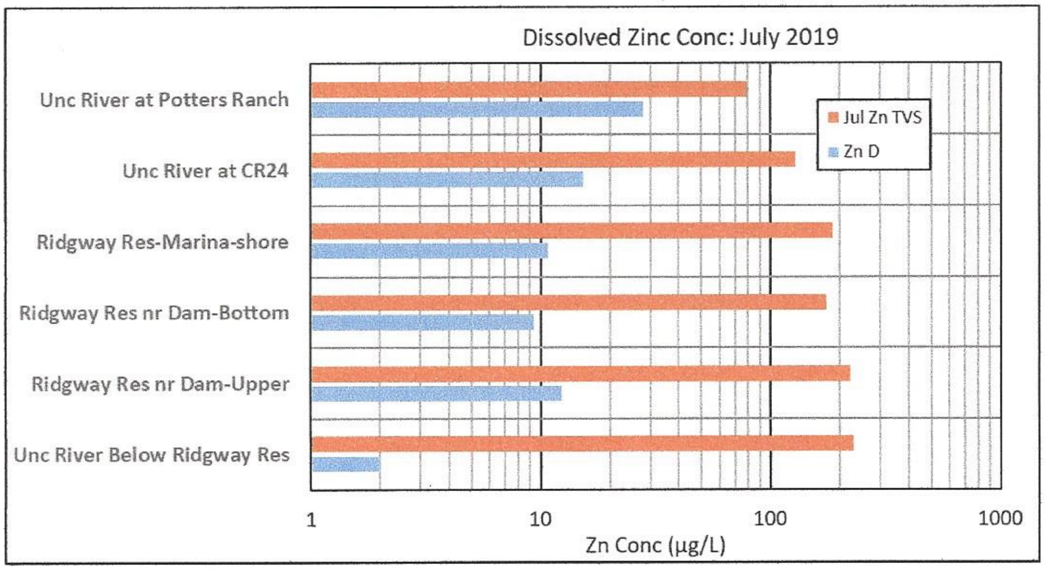

Figure 3. As in Figure 1, except showing dissolved zinc concentrations (blue bars) for July 2019. The orange bars are aquatic life table value standards for dissolved zinc.

concentration nearly 5 times lower than samples from the lake. The August concentration pattern was similar to July, except Potters Ranch had a higher concentration, likely due to lower flow, and dissolved zinc below the dam was not detected. In both months dissolved zinc concentration was much lower in the river below the dam than at than any of the three locations in the reservoir.