River Watch Items for the October 2023 UWP Board Meeting

- River Watch items of interest:
  - October sampling includes nutrient samples at five of our higher sites. Samples will be collected on October 13th and 15th, weather permitting. Five of the lower sites (without nutrients) were sampled on September 30th and October 1st.
  - Nutrient samples will be collected at our six lower sites in November. We also plan to collect a macroinvertebrate sample on the Uncompahgre below Ridgway Reservoir in November.
  - Our last River Watch and E Coli samples for 2023 were collected at and below Lower Blue Lake on September 26th. The Project 7 lab performed the wrong analysis on three of six samples collected on the 26th, resulting in having only one quantitative E Coli result for each of the three E Coli sampling sites, rather than also having a duplicate for each site. They will be refunding UWP $60 for the three mishandled samples.
  - The River Watch QA/QC site visit with Bradley Boileau from River Science and five UWP volunteers was completed on September 29th. Our overall grade in evaluating unknowns and reviewing sampling protocols was "Awesome".
  - I gave a presentation on water quality sampling during the UWP tour on September 30th, while Ali Dahl and Ronna Edgett-Underwood did a River Watch sampling demonstration at the Ridgway Town site. Thanks to Phil and Carl for providing discussions of stream morphology and habitat.
  - Mary, Taylor Poynor and I met with Rigs, Science on the Fly, and Ridgway HS people on September 20th to discuss collaboration on water quality sampling. Ridgway HS would like to form a River Watch group and also provide volunteers for Science on the Fly sampling. We will assist when able with these efforts. Allie Cunningham with Science on the Fly accompanied our RW volunteers during their site visits to Cow Creek, Blw Ridgway Reservoir, and CR24 on October 1st. Science on the Fly collects monthly nutrient samples at Blw Ridgway Reservoir and CR24, the same as two of our River Watch sites.
- Precipitation and Streamflow:
  - The 2024 Water Year began on October 1st and as of October 6th the Idarado SNOTEL site had received 1.2 inches of precipitation (400% of the median for that date). Streamflow on the Uncompahgre at the CR24 gauge, as of October 6th, was about 72 cfs, somewhat below the median of 90 cfs. Dallas Creek was flowing at 20-24 cfs, also slightly below the median of ~29 cfs.
- Irregularities in pH measurements at several River Watch sites:

Prompted by a question from a Plaindealer reporter about trends in water quality data, I looked at time histories of water quality parameters on Canyon Creek. The first parameter I looked at was pH. Figure 1 shows pH data from River Watch site 4134 (Campbird Rd – FS853) on Canyon Creek between 2006 and 2022. For a period of about 3½ years from mid-2014 through early 2018 the running average of pH was about one unit (10 times) lower than the running average for the eight years before and the 3+ years after low-pH period. There was also a 6-month period centered on November 2021 when pH values were lower than "normal".

The pH data from a second River Watch site upstream of Canyon Creek on the Uncompahgre River was plotted for comparison. Figure 2 shows the data from River Watch site 3582 (Abv Rec Mtn Conf)

which is above the confluences of both Red Mtn Creek and Canyon Creek. At this location natural influences, or human-caused events affecting pH on Canyon Creek, should not be evident. However, Figure 2 shows a time history with reduced periods of pH at nearly identical times as in Figure 1. One other River Watch site below Ouray, analyzed with the same pH instrument, produced the same pH pattern. The data from all these sites was used in the WQCD evaluation of impairment for 2022. The red arrow in Figures 1 and 2 represents the WQCD evaluation period and the overlap with the reduced pH periods. All three sites I reviewed were listed as impaired for non-attainment of the minimum aquatic life standard for pH in the 2022 303(d) list. I have sent this information to River Watch for their review.

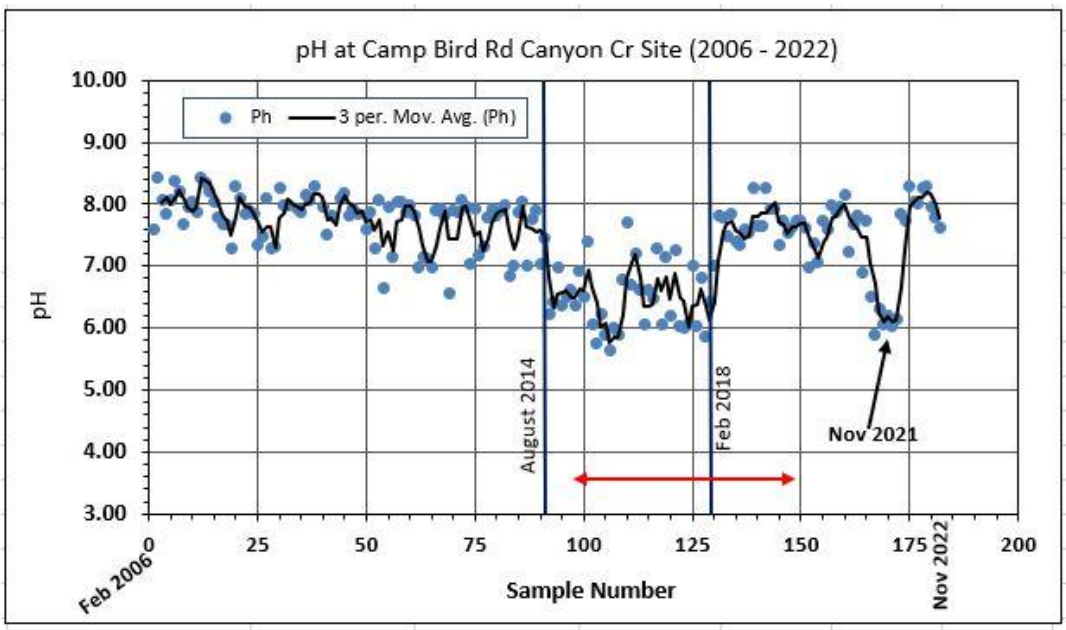

Figure 1. pH data (blue circles) from RW site 4134 for the period February 2006 through November 2022. Black line is a 3-period running average of the data. Vertical black lines encompass a > 3-year period of lower pH values. The red arrow shows the period (2015-2019) used by WQCD to

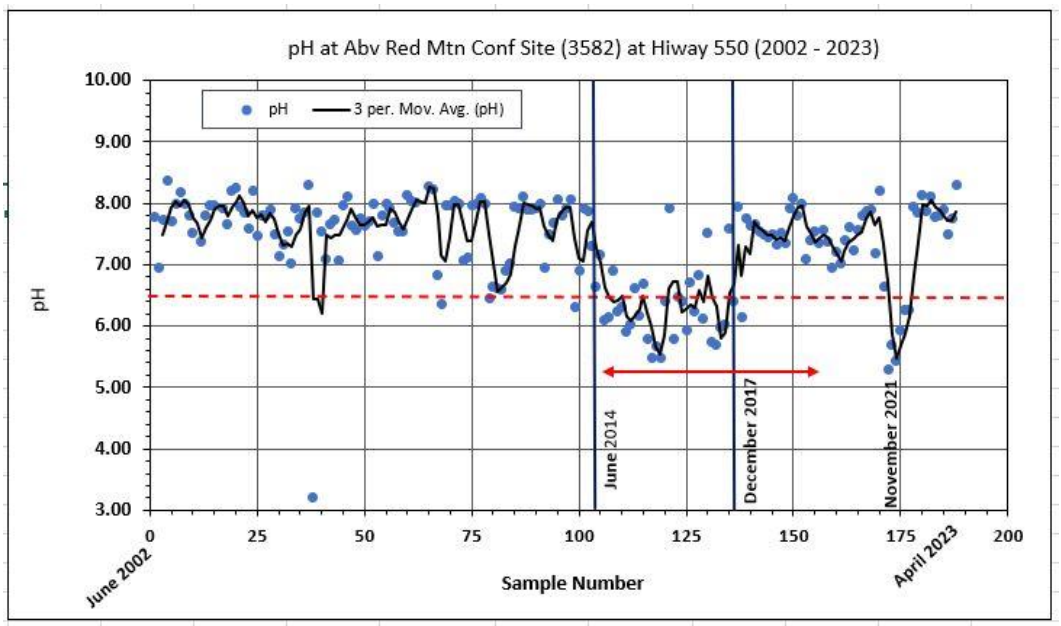

Figure 2. As in Figure 1, except showing pH data from RW site 3582 on the Uncompahgre River above its confluence with Red Mtn Creek.