

Barr Lake/Milton Reservoir Watershed Association
Technical Committee Meeting
Thursday March 31st, 2022 (9:00am – 10:00am)
 Virtual

Draft MINUTES

In attendance:

Curt Bauers – FRICO
 Erin Sandos – South Platte Renew
 Brad Cox – Denver
 Jon Novick – Denver
 John Stednick – FRICO
 Jim Dorsch – Metro

Zach Trabold – Aurora
 Bethany Green – Aurora

Guests:

Amy Conklin – Coordinator
 Craig Wolf - GEI

Technical Items to Discuss

Approve January Meeting Minutes – Proposed changes to the minutes will be circulated for review and approval at the next meeting. **Curt** will send Amy his changes.

2021 Stormwater Update – Craig Wolf with GEI will presented results from the 2021 stormwater sampling data. He reminded the group that the monitoring station had to be moved from the South Platte River to the Burlington Canal due to construction at the site related to the National Western. It is planned to be moved back to the South Platte later this year. The intent of the monitoring is to characterize the nutrient loads into Barr Lake and Milton Reservoir. While GEI conducts stormwater monitoring, Steve Lundt also conducts weekly monitoring at the site.

As part of analyzing the stormwater data, precipitation data from a rain gage at the 19th Street bridge and from a gage on the top of the Mile High Flood District (MHFD) are used. Craig watches the weather and makes sure the stations turn on when they're supposed to which is usually around midnight to 2 am. He monitors the MHFD alert system. He looks for 0.25 inches or larger precipitation event before he triggers the sampling. He tries to time the samples to collect the rising limb of the hydrograph. He prefers to sample a storm event where the storm hydrograph is three times baseflow. He triggers until the falling limb of the hydrograph nears baseflow numbers. The hydrograph dictates the sampling.

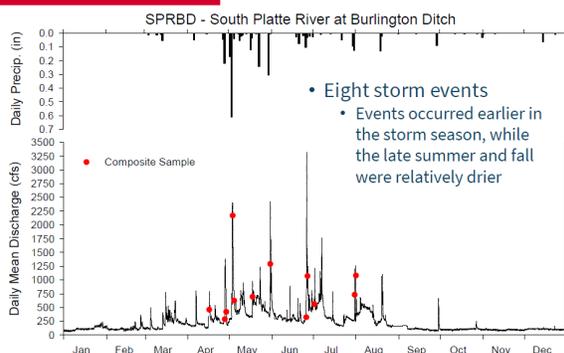
Steve uses the station year round. GEI collects one sample per hour and three samples per bottle, yielding 8 bottles with 3 hours of sampling per bottle. Samples used to be sent to Metro for analyses but that is changing. They calculate an event mean concentration. Sample results are calculated over the course of the storm to yield one result. The precipitation data from MHFD is typically used and flows upstream of the BMW are station are also monitored.

Storm Event Sample Collection

- Seasonally (Apr-Oct)
- Automatic water samplers collect time-weighted composite samples
 - One sample per hour
 - Three samples per bottle
- Collected by GEI and analyzed by Metro
 - Total suspended solids
 - Nutrients
 - Anions/cations
 - Dissolved and total metals
 - Basic physicochemical parameters



Precipitation and Discharge



In 2021, there were 8 storm events. The events occurred earlier in the storm season, while the late summer and fall were relatively drier. Some of the storms were longer than 24 hours. The last sampling event was in early August. That was similar to other sites they monitor as part of the Joint Task Force (JTF, Denver, Aurora, Lakewood and MHFD).

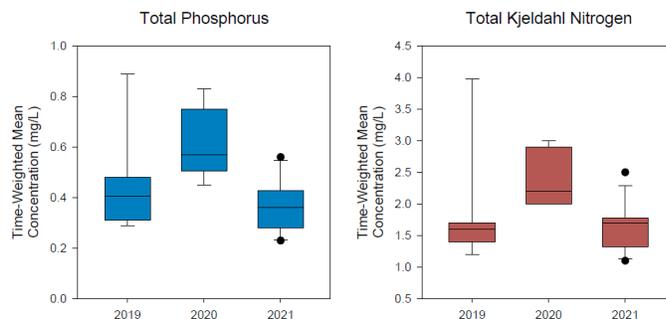
The median of the Total Phosphorus (P) in the samples was 0.36 mg/L and the total Kjeldahl Nitrogen median was 1.7 mg/L. Concentrations

of constituents tend to be higher in the rising limb of the hydrograph than the falling limb. The first two sampling events, occurring early in the season, tend to be higher than the rest of the year and characterize first flush conditions. Over the course of the year, concentrations are typically uniform and lower than the first flush.

Craig showed the last 3 years of data. 2020 was the Covid year and sampling didn't start until later in the year. Also, 2020 was a dry year compared to 2019 and 2021.

Water Quality

Concentrations are higher in the low flow years, especially for Nitrogen (N) and P. He showed a box and whisker plot of the P and N concentrations. They show higher concentrations in the low flow year of 2020. He compares the BMW data to the JTF data. The first flush condition makes a long whisker.



When asked about differences in results from samples collected when there is snow or rain on snow, Craig responded that usually represents first flush conditions and the concentrations tend to be higher, create a longer whisker. There is a direct correlation between total suspended solids and P. Currently an optical sensor isn't used but it could be added. Different P sensors are available that would measure P concentrations continuously. GEI also calculates pounds of nutrient loading per event and they've been doing similar calculations for the JTF for more than 20 years.

Sub-Basin Modeling/Mass Balance Discussion – Based on discussions at the last meeting, Erin reached out to Joni Nuttle, CDPHE, but hasn't heard back yet. We want Joni's input about if we can model one sub basin and extrapolate it to the whole basin. We still need a baseline load. Denver has been having internal discussions about modeling. The green infrastructure group has some modeling information that we may be able to use. Their data is rough. They want to talk more about it with us. **Brad** will invite them to the next Technical Committee meeting. They're interested in learning more about the SWAT model. They're using a consultant to help them.

The Stormwater Council produced a report in 2013 in regards to Regulation 85 hearings, about stormwater quality and monitoring. The report concluded that there was plenty of data already being collected to calculate nutrient loading from stormwater. Jane Clary was the principle working on the study and may be willing to present the results of that study at the next meeting.

First, Second and Third Creek Loads - Based on annual streamflow for the past three years and limited nutrient data, John Stednick calculated loads from First Creek at about 1,000 lbs of P per year; Second Creek at about 60 lbs of P per year; and Third Creek at about 110 lbs of P per year. There are no stormflow data.

Jon Novick reported that the Corps of Engineers received full funding for the improvements in the South Platte River from before 6th Avenue to the county line. The funding is \$350 million over the next 10-20 years. Press conference at. There should be opportunities for stakeholders to comment on the propose habitat restoration, flood reduction, and additional recreation access improvements.

Next Meeting

Tech. Committee: May 26th, 2022 (virtual meeting). Erin will be out of town but will make the meeting virtual.