Barr Lake/Milton Reservoir Watershed Association

Technical Committee Meeting

Thursday, August 23rd, 2012 (9:00am – 11:00pm)
Metro Wastewater Reclamation District, Denver

MINUTES

In attendance:
Steve Lundt – Metro Wastewater
Al Baker - Centennial
Laurie Rink –FRICO (phone)
Jim Dorsch – Metro
Jordan Parman – Metro Wastewater
Marcia Greenblat – Integral (phone)

Guests:
Amy Conklin – BMW

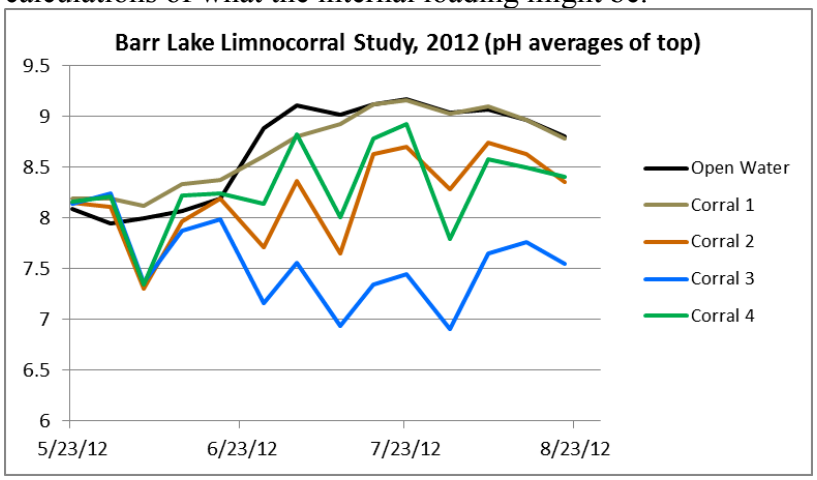
Welcome and introductions – The group introduced themselves.

1. **BMW WQ Modeling Update**
    a. Data sent to Marcia – Marcia Greenblat reported that they will begin data analysis next month. Their work will re-calibrate the model using data from 2005-2008 and validate the re-calibration using 2009 and 2010 data. The addition of Xcel energy data from one of their plants will be a new component to the model. All the water quality and flow data has been sent to Integral; only the weather data remains to be gathered. The Integral team is still in planning phase with the timeline of getting results of analysis completed by the end of the year. They will get in touch as they have questions and will provide update at the end of September.

2. **Limnocorral Update**
    a. Go over data – Steve Lundt summarized the results of the limnocorral experiments conducted this year. Four corrals were installed with one acting as a control and the open water was sampled as well. Corral #3 responded the most and the most predictably to the four alum additions. Corral #4 responded most similarly to the control corral.
    Following each of the 4 alum additions, the pH dropped but to different degrees in each of the corrals, with Corral #3 showing the largest decline. A graph of the pH in the 4 corrals and the open water is shown below. The largest pH decline was in Corral #3 with pH hovering close to 7 for most of the summer. pH in the open water was above 9 for parts of the summer but the pH in the corrals remained below 9. The total phosphorus (TP) concentrations were not reduced below 100 ug/L, as was the goal. The average TP in the corrals was reduced to 147 ug/L. Addition of alum reduced alkalinity, as expected, and as required for success of the implementation plan. The Implementation Plan assumes that alkalinity will be dropped to 95 units. In Corral #3, addition of alum reduced alkalinity to 92 units with open water alkalinity at 164, for comparison. The control corral alkalinity was 157 units. Dissolved Oxygen (DO) dropped below the standard of 5 mg/L in the corrals, likely the result of reduced mixing action in the corrals compared to the open water. DO in the lake remained above the standard.

Chlorophyll a (chlor) was also reduced following alum addition with the chlor measurement in Corral #3 averaging 3 ug/L. The chlor average in the control corral was 25 ug/L.

Steve still needs to look at the Total Nitrogen (TN) to TP ratio and will begin the calculations of what the internal loading might be.



b. Plan to remove them – September 24th, is tentatively set as the removal date. We might have Blair tie up the corrals so they are more compact and easier to remove. There is a concern that the difference in water quality results among the corrals is the result of significant damage to the corrals. We'll have to wait to ascertain the condition of the corrals before deciding what to do about future corral experiments. **Amy Conklin** will coordinate feeding the volunteers with Steve as appropriate.

c. Next steps – The plan is to write a final report in fulfillment of permit. The permit is good for 5 years so we should be able to conduct the experiments next year. Laurie Rink asked about the conditions necessary to declare that the lake is no longer sample-able. She is concerned that the conditions being sampled will qualify Barr Lake and Milton Reservoir to be placed on the 303 (d) list when that is not appropriate. Jim Doersch replied that the Listing Methodology for the lakes defines 'representative' data. We need to check to see exactly what the listing methodology states about representativeness. Steve Lundt replied that he is comfortable continuing to collect samples as long as Barr Lake remains at 2 meters or deeper. Shallower than 2 meters is not representative in his view. Amy Conklin suggested that the group develop some protocols for when samples are no longer representative and what we do in that case. Some options are: to stop collecting data; to collect data and not submit it to the regulators; and to collect data, submit it to the regulators but flag it as not representative.

Steve Lundt reported that the alum permit requires that all water quality standards are being met before the corrals are reviewed. Currently the DO may not be attaining the standards in the corrals, but hopefully that will improve.

The pH in Barr Lake is currently below 9 at 8.7. Historically the pH would be over 9.2 at this time of year. The DO is at 100% saturation and the fish seem to be doing well in the low water conditions.

The group discussed the usefulness of collecting sediment cores while the lake is so low. **Steve** will check into the feasibility of collecting samples in a transect across the lake. Extensive analysis of sediments cores from Barr Lake have been done as part of previous efforts.

3. **WQ Update**
    a. Quantity – There is still some water in both water bodies. Milton benefitted from stormwater additions. There are about 2,000 AF of water or about 7% of normal in Barr Lake. There are 420 acres of water now with full pool at 1850 acres.
    b. Temperature and pH – Milton's on the warm side but only a degree or two. pH is below average (and the standard of 9) maybe because the water is more turbid and limiting photosynthesis. The carp and wind are mixing the smaller pool more than normal. Jordan has been doing algal analysis to determine species relationship. The Flow cam counts total particles and has recorded 5,000-7,000 particles per liter in open water with only 50-70 particles per liter in the corrals. Blue green algal species are dominating even in the corrals but the volume of chlor is much lower in the corrals. Diatoms are starting to bloom as the water cools. The flow cam can differentiate between the species. Chlor concentrations in the lake are averaging 50 ug/L.

4. **TMDL Implementation Topics (On Going Updates as Needed)**
    a. Canal Treatment
    b. Stormwater Options
    c. NPS/Ag.
    d. WWTP upgrades – **Steve** will look into taking a van tour of Metro's wastewater treatment plant upgrades at the September Board meeting.
    e. Internal Loading Treatments

5. **Other BMW Topics and Discussion**
    a. Al Polonsky has been working with a landscaping group who wants to learn more about BMW and our issues. They have invited us to give them a one hour presentation in the spring. **Steve** will sign us up!
    b. Metro sent in comments to WQCD on how they're treating internal loading in response to Centennial and Littleton/ Englewood comments about the TMDL.

6. **Next Meeting**
    a. Tech. Committee: September 27, 2012, 9am at Metro
    b. Limnocorral removal…