

Barr/Milton Watershed Association

Technical Committee

BMW Technical Committee Meeting
Thursday, May 22, 2025
Virtual Meeting - 9:00am – 10:00am



BARR MILTON
Watershed Association

Technical Committee Meeting Minutes

Attendance: Sami Miller, Steve Lundt (Metro), Curt Bauers (FRICO), Jim Dorsch (Metro), Abbie Culbertson (Metro), Nicole Laurita (SPR), Chris Newton (ECCV), Brad Cox (City/Co Denver), Harvey Harper (Env Research & Design), Jeremiah Unger (E470), Noel Browning (CO Pond & Lake), Wanda DeVargas (E470)

1. Technical Items to Discuss

- a. Update on Beebe Pipeline phosphorus interception study (Harvey Harper)
 - i. Three phases of project: site visit on March 4, develop conceptual design for pilot project (almost finished with this/end of May likely – looking very favorable for alum treatment & expect about 80% removal in pipeline; power could be a roadblock/permits/storage tanks/duration of testing – how much info do we need to make decision), develop plan to convert to a permanent system
 1. Alum flock will discharge into Burlington Ditch and flow to Barr Lake
 2. Question about temp differences and how that would affect things – Harvey responded that you may be able to see floc particles and when it enters the lake, that's when he believes it would begin to settle (accumulation at the inlet then?)
 3. When floc dries out and water draws down, will there be an issue with dust? No, it will form a very hard mineral that doesn't redissolve.
 4. Slides from Harvey:

Bebee Pipeline Phosphorus Interception Study

May 22, 2025

- Project has 3 phases
 - Site visit to review conditions
 - Conducted on March 4, 2025
 - Develop conceptual design for pilot project
 - Evaluated pumping rates and seasonal variability
 - Evaluated Beebe pipeline water chemistry
 - Very favorable for alum treatment
 - Alkalinity sufficient
 - Currently preparing Draft Report on pilot design
 - Completed by end of May
 - Very simple system – alum storage tanks, feed pump, and enclosure
 - Manually operated based on discharge
 - Based on existing chemistry, system should easily achieve 80% removal for TP

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Bebee Pipeline Phosphorus Interception Study

May 22, 2025

- Issues to be resolved
 - Power at the pilot testing site
 - Chemical storage tanks, locations, and permitting
 - Duration of the pilot testing
 - Monitoring/testing protocol, objectives
 - Need to tap into the pipeline
 - Responsibility of United
 - Need to conduct jar testing to confirm alum dose and floc formation
- Develop plan to convert to a permanent system

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b. Update on BMW monitoring

- i. Continuous monitoring in Barr (Noel Browning)
 1. Probes weren't connecting properly, so they are being fixed
 2. Got BMW thinking what are our other options in order to get more continuous data automatically
- ii. AquaRealtime or HOBO ideas – Abbie Culbertson
 1. Send any questions to Abbie & Steve and have someone come out in July to speak to us about this (from AquaRealtime – **Abbie ask him about July 24**)

2. Slides from Abbie:



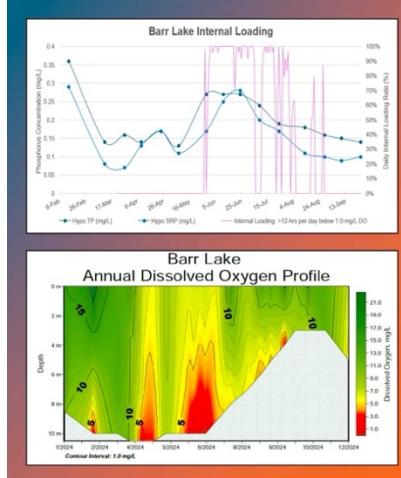
Routine Monitoring

Bi-weekly sampling near dam

- Multi-parameter sonde profile
- Key water quality parameters
 - Phosphorus speciation!
- Chlorophyll-a
- Clarity
- Phytoplankton and Zooplankton

Limitations

- Temporal
- Spatial
 - Discrete sampling from a single location at a single depth



Integrated Monitoring Approach

- Hourly In-Situ monitoring (COPL)
- DO sensors to evaluate internal loading (COPL & Metro May 2025)
- EPA CyAN Web App - Satellite coverage for blooms, too infrequent
- Metro >> weekly sampling for growing season?



Company: **AquaRealTime**

- Boulder, CO headquarters
- Smaller company

Monitoring Device: **Algae Tracker**

- Chlorophyll-a > green algae, diatoms, cryptophyta
- Phycocyanin > cyanobacteria
- Turbidity
- Water temperature
- Ambient weather and light conditions
- Live GPS

- 30-minute monitoring interval with updates every 2-hrs to web dashboard
 - Action alerts
 - Weekly updates
- Solar powered

- 8 lbs (aka manageable ☺)
- Low Maintenance >> Wiping system
 - Maintenance visits: Once per 1 - 4 months depending on algae density
- Optimal sensor placement for cyanobacteria detection: 5-6 in below surface
 - Significant complement to our manual phytoplankton analysis
 - QA/QC
- Requires 3ft depth, can be deployed during drawdown
- 5-year plan to guarantee functionality and lifespan
- Lower cost



Cost-breakdown

Option #1: Five Year Plan for Three Units

- "bulk discount" for 3 units = 3 monitoring locations
- All rigging equipment (i.e., buoy, stainless steel cables/shackles)
- Anti-fouling brushing system
- Telemetry and dashboard
- Extended warranty with annual preventative maintenance servicing

Five Year Cost: \$30,000
Annual Cost: \$6,000 per year for 3 monitoring locations



Option #2: Five Year Plan for Two Units

- All the same inclusions

Five Year Cost: \$22,000
Annual Cost: \$4,400 per year for 2 monitoring locations

Option #3: Five Year Plan for One Units

- All the same inclusions

Five Year Cost: \$11,000
Annual Cost: \$2,200 per year for 1 monitoring locations

**Annual Plans also available, but less cost effective

iii. Reservoir – Clarity Differences

- c. BMW Intern for 2025 – Barr Lake Weather Station
 - 1) Try to get intern to set this up.
- d. Help Plan BMW Watershed Tour for June
 - 1) We might be able to get FRICO at the new inlet structure – **Curt will check**
 - 2) Meet at arsenal and do tour there; go to inlet without United people, but then look at the ditch/1st-3rd creek, end at Barr Lake then chit chat and take people back to the inlet
- e. USGS Lagrangian study 2025 Update
 - 1) Storm event, snow melt season and base flow
 - 2) BMW is chipping in some money thanks to Thornton
- f. Summer Newsletter Article about Milton Dredging (Curt, can you write this?)
 - 1) Curt is kept separate from that project so he can't contribute.

2. Next Meeting

- a. Tech. Committee: Thursday, July 24, 9:00 – 10:00 AM