Bassett Creek Watershed Management Commission

Technical Advisory Committee Meeting

Wednesday September 6, 2023
10:30 a.m. – 12:00 p.m.
Wirth Lake Room, Brookview

1. **CALL TO ORDER**
2. **COMMUNICATIONS**
3. **BUSINESS**

A. Main Stem Lagoon Dredging Project – Lessons Learned

i. **Background Information**

Project was awarded to Fitzgerald Excavating (Contractor) in October 2022 based on its bid of $1,588,970. Fitzgerald bid was approximately $530,000 lower than second lowest bid. BCWMC awarded project to Fitzgerald, the Notice of Award was fully executed on Nov 1, 2022 and the BCWMC's agreement with Fitzgerald was fully executed on Nov 10, 2022. Fitzgerald mobilized on or about January 6, 2023 and excavated the lagoon ponds during the winter. The BCWMC paid two partial payments to the Contractor based on the assumed percent of dredging completed. After completion of dredging, a bathymetric survey was performed to confirm dredging limits. It was learned that the Contractor only dredged approximately 4 ft. of the 6 ft. depth required per plan. The specifications also called for payment based on plan quantity. According to the survey, it was learned that the BCWMC overpaid the Contractor by approximately $134,000.

ii. Defective Work Claim

BCWMC filed a defective work claim (claim) requesting reimbursement of the overpaid amount. Barr, as the Engineer of Record (EOR) and per the Contract Documents, reviewed the claim and provided an opinion supporting the claim. Contractor disagreed with the opinion but expressed a willingness to negotiate settlement of the claim. Barr, as the EOR and per the Contract Documents, reviewed the Contractor's response and provided a decision supporting the claim and indicated the Contract Documents support the Contractor's willingness to negotiate the settlement with the BCWMC. At its August 17, 2023 meeting, the BCWMC provided direction to the Commission attorney and administrator regarding a path forward.

iii. Project Specifics (what happened)

a) Plans and Specifications

Measurement and payment

The Main Stem Lagoon Dredging Project specified measurement and payment based on plan quantity, with a bid amount of 39,600 Cubic Yards (CY). Justification for selecting this method:

- We avoided paying by tonnage to minimize risk of quantity overruns due to over-excavation or paying for weight of water and ice.

- We wanted to simplify measurement and not require either the Engineer or Contractor to survey during the project (winter survey in water can be difficult or infeasible). Measurement

not required but Owner may require Contractor to perform, or Owner may choose to perform, a confirmation survey.

Potential issues with this method:

- Disputes may arise due to accuracy or limits of survey (Contractor does have the right to perform its own survey).

- Potential risk that Contractor may not perform dredging to plan limits without confirmation survey.

Partial payments

The Main Stem Lagoon Dredging Project used the following partial payment measurement procedure:

- Partial payment was based on percent of work completed (assuming project was performed to proper depth)
- Interim bathymetry for partial payment was not performed because it was deemed not feasible in winter/ice conditions and because specifications did not require it.
- Weight tickets were collected to demonstrate proper disposal of regulated fill, but were not used as basis for partial payment.

b) Means and Methods

Weather issues are challenging and unpredictable (to some extent) in dredging projects.

- In general, mechanical dredging in the wet is often performed in the winter; equipment does not operate in extreme cold conditions; road restrictions affect how long contractor can work in late winter/spring; warm trends above freezing can minimize dredging effectiveness.
- For the Main Stem Lagoon Dredging Project, periodic warm weather, including rain, resulted in contractor stopping work because of work conditions, too much water in dredge material resulting in landfill not accepting (or threatening not to accept) material (paint filter test). Heavy snow also impacted the contractor's work schedule.

iv. Potential Future Actions to Avoid Issues:

Quantities are almost always disputed in a dredging project.

- Owner should perform new bathymetric survey immediately before construction/dredging to establish pre-dredging conditions.
- Write specifications to eliminate wiggle room (i.e. weight tickets, tolerances, etc.)
- Contractors often perform inaccurate surveys on top of the ice either before or after ponds are dewatered.

Site Investigations and Surveys

- Final design, construction drawings and quantities should be based on recent (within one year) bathymetric surveys to establish existing (pre-dredge) sediment depths; depending on

schedule, this could be performed or performed again immediately before construction/dredging.

- Do not accept contractor surveys performed in dewatered frozen conditions, due to ice and frost heave.
- Use sonar or extra wide foot on the survey rod because normal foot will sink in soft sediment.
- During sediment exploration as part of feasibility study or design, Engineer could obtain several samples to determine in-situ unit weight of sediment and include that information in the bid documents.

Measurement and payment

Following are measurement and payment options for a dredging project. What would the TAC recommend for a future dredging project?

- Option 1: Measurement and Payment based on plan quantity Cubic Yards (CY) (used for the Main Stem Lagoon Dredging Project)
- Option 2: Measurement and Payment based on Lump Sum (LS)
    - Hiding quantity results in higher bids; the more information that is shared with a bidder will result in less risk and lower bids.
    - Eliminates contractor argument that plan quantity is not correct.
    - Risk that contractor may not perform dredging to plan limits without confirmation survey.
- Option 3: Measurement and Payment based on survey quantity (CY)
    - Disputes may be due to accuracy or limits of survey.
    - Disputes may be due to redeposited sediment after dredging.
- Option 4: Measurement and Payment based on weight of material disposed (tons per weight tickets)
    - Owner will pay for water and ice disposal as well as sediment.
    - No incentive for contractor to dewater sediment.
    - Risk of overpayment due to disposal of water and ice.
    - Contractor has incentive to over-excavate.

Partial payments

- Extra caution should be taken not to approve quantities that cannot be verified – especially when those quantities represent the overwhelming majority of the contract price.
- Could require that contractor provides survey or other backup to support partial payments.
- Weight tickets could be reviewed and compared to pre-project material density testing.

B. Options for Completing Lagoon Dredge Project

Should the Commission complete the project of dredging to 6-foot design depth?

i. Options

a. Accept project as-is (approx. 4 ft. depth consistent with Feasibility Study Option 1)
b. Complete project by re-bidding and retaining new contractor to dredge to 6 ft. depth
c. Consider dredging Lagoon G

ii. Project elements for new project

a. Data collection (site survey, collect sediment data if Lagoon G is included)
b. Contract documents
c. Bid Project
d. Permitting (including EAW if Lagoon G is included)
e. Construction

iii. Construction options to complete the project

a. Option A: construct earth berm into lagoons and use long reach backhoe to excavate to remaining depth. Load into trucks similar to 2023/2024 project. Remove berm as dredging retreats.
b. Option B: investigate options to excavate in the dry; divert flows into pipe, use dam or berm to separate excavation area from channel; load into trucks similar to 2023/2024 project. It would likely be challenging to fully dewater.
c. Option C: Hydraulic dredging and discharge to geotubes; excavate geotubes/dewatered sediment and load into trucks and haul to landfill (sediment may need to dewater for a year or so). A larger staging area would be needed.
d. Option D: Mechanical excavation from barge, load into trucks or load onto barge and transfer into trucks similar to 2023/2024 project.

C. Consider Developing Protocol for Sampling Suspected Blue Green Algae Blooms (if time allows)

This summer, the BCWMC was alerted to multiple potential blue green (BG) algae blooms in lakes and ponds. Because some BG algae blooms could pose health threats to humans and pets, there is often a request from a resident for the BCWMC to sample and confirm/deny the bloom. It's likely unsustainable (finically and staffing-wise) to sample every suspected BG algae bloom. The BCWMC should consider developing a standard protocol in these instances for consistency between waterbodies and across years.

One option is to consider adopting a policy/protocol similar to Nine Mile Creek Watershed District's protocol (see attached Appendix F from NMCWD Plan). In general, NMCWD only collects samples to verify blue-green algal blooms on lakes being monitored as a part of their routine monitoring program. If staff observe a blue-green algal bloom in a lake during a routine monitoring event and the location of the bloom is different from the routine monitoring location, staff are authorized to collect a sample from the potential bloom and then has Barr Engineering complete an analysis of the sample as quickly as possible to determine whether the bloom is caused by blue-greens, and if so, whether blue-green numbers exceed the WHO threshold for moderate probability of adverse health effects (100,000 natural units/mL). When residents/concerned citizens contact the District about a potential blue-green algal bloom, NMCWD directs them to MPCA and MDH websites and promote "When in Doubt, Stay Out!"

D. Next Meeting – October 4th @ 10:30 a.m. Wirth Lake Room, Brookview

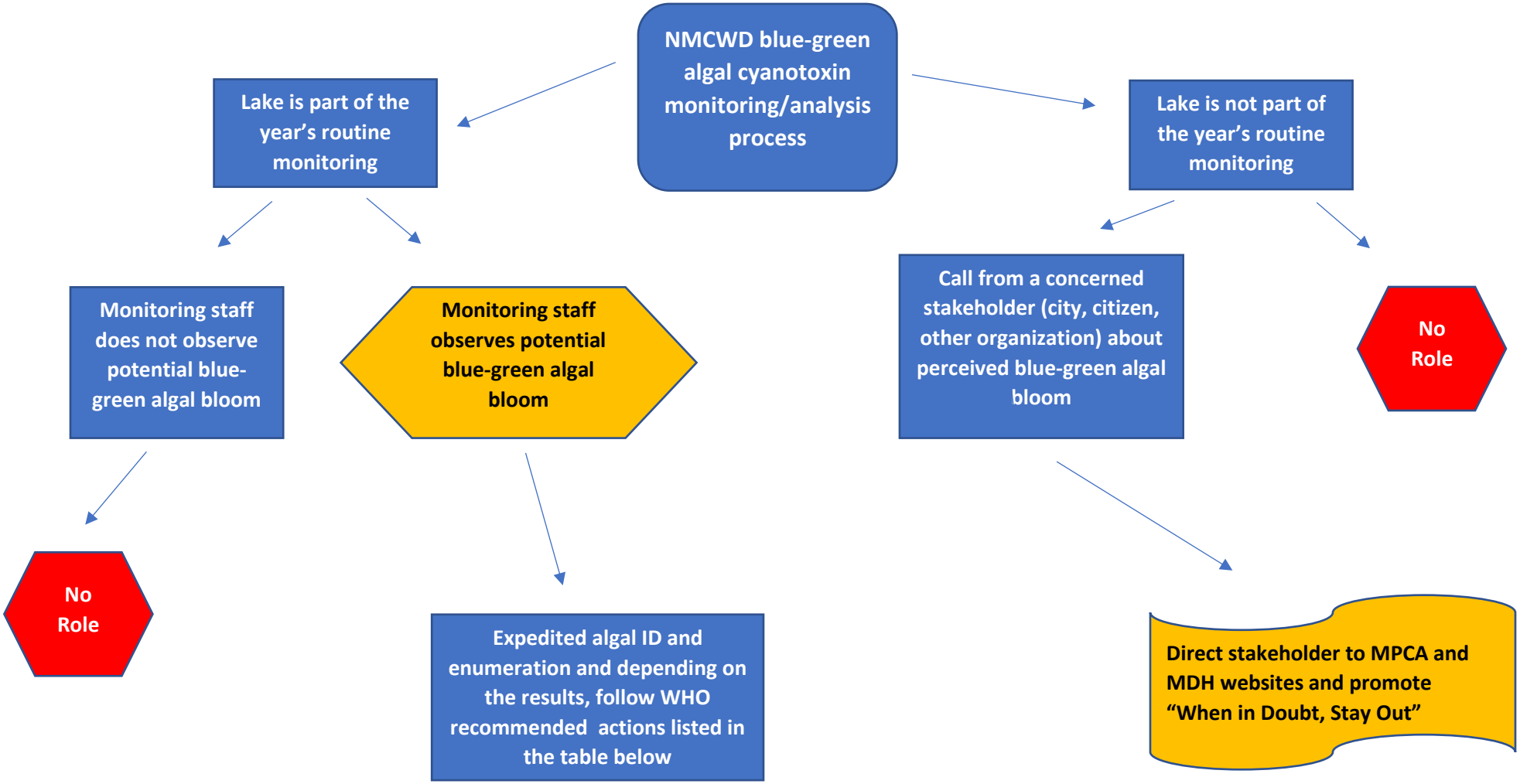
4. **ADJOURN**

Appendix F

HAB Monitoring and Analysis Protocol

NMCWD's Role in Blue-Green Algal Bloom and Potential HAB Monitoring & Analysis Protocol

The District's protocol of testing for a potential Harmful Algal Bloom (HAB) will continue through our normal rotating lake monitoring program and follows recommendations of the World Health Organization (WHO). Whenever District monitoring staff observes algal scum on a lake the District is currently monitoring, staff will take a water sample expediate algal identification and enumeration and if the analysis determines blue-green cell counts exceeding WHO thresholds for low, moderate or high probability of health risk to recreational users we will notify the proper entities (e.g., city, MPCA and MDH) of the health risk, advise the city of potentially posting signs at the lake's access points and post the advisory(ies) on the District's website (as well as social media and e-newsletters and press releases). Below is a flowchart detailing the District's protocol.



World Health Organizations Guideline Thresholds

Guidance Level	Health Risk Level	Health Risks	District Actions
< 20,000 blue-green algal cells per milliliter	Little, If any probability	• Little if any	None
> 20,000 blue-green algal cells per milliliter but < 100,000 blue-green algal cells per milliliter	Low probability	• Short-term health outcomes (e.g., skin irritations, gastrointestinal effects)	Inform the City, the MPCA, MDH and other stakeholder partners of findings of a low probability of a health risk to lake users and post advisory information on the District's website "when in doubt stay out" (as well as social media and in newsletters/press releases). Advise property owner of WHO recommendation to post advisory signs on the property.
> 100,000 blue-green algal cells per milliliter but < 1,000,000 blue-green algal cells per milliliter	Moderate probability	• Short-term health outcomes (e.g., skin irritations, gastrointestinal effects) • Potential for long-term effects from some cyanobacterial species	Inform the City, the MPCA, MDH and other stakeholder partners of findings of a moderate probability of a health risk to lake users and post health risk advisory information on the District's website (as well as social media and in newsletters/press releases). Recommend that the property owner post advisory signs on the property.
> 10,000,000 blue-green algal cells per milliliter	High probability	• Short-term health outcomes (e.g., skin irritations, gastrointestinal effects) • Potential for long-term effects from some cyanobacterial species • Potential for acute poisoning	Inform the City, the MPCA, MDH and other stakeholder partners of findings of a high probability of a health risk to lake users and post health risk advisory information on the District's website (as well as social media and in newsletters/press releases). Recommend that the property owner post advisory signs on the property.

Who should you contact if you suspect a potential blue-green algal bloom?

- Contact the Minnesota Pollution Control Agency (MPCA) or the Minnesota Department of Health (MDH)
- MPCA lake monitoring staff track reports of potential harmful algae blooms. You can email pictures of the suspected bloom to algae.mpca@state.mn.us. For more information on harmful algae blooms, call 651-757-2822 or 800-657-3864 or visit the MPCA's Blue-Green Algae and Harmful Algal Bloom web page.
- Report human health effects to the Minnesota Department of Health (MDH) Foodborne and Waterborne Illness Hotline at 1-877-366-3455. For health questions, citizens can contact MDH's Waterborne Diseases Unit at 651-201-5414 or visit the MDH's Harmful Algal Bloom web page.
- In addition, if you think you or your pets are experiencing adverse health effects due to contact with, or ingestion of, lake water/algae, seek medical attention immediately.