May 10, 2024

To: Justin Watkins, MPCA, Rochester, MN

From: Jeffrey S. Broberg, LPG, MA, elbabroberg1@gmail.com

11596 Persons Dr, St. Charles, MN

Re: Comments on Interagency Fish Kill Response Guidance

Comments of Jeff Broberg related to draft fish kill guidance.

Fish kills are tragic ecological events, many are preventable, but all are only a symptom of toxic water quality. It is about the water, not just the fish.

This proposed Interagency Fish Kill Response Plan is a big leap forward and the guidance itself will enhance Minnesota's understanding and capacity to deal with the calamity. Thank You. This protocol will definitely improve response and build on the foundation guidance, the Field Manual for the Investigation of Fish Kills, published by the US Fish and wildlife Service in 1990[1]

When those of us watching repeat fish kills in SE Minnesota trout streams started to watch the State's response and investigative approach and found that multiple agencies, all with different duties never had a clear emergency response protocol. Slow reporting of fish kills compounded the lack of capacity.

In the SE Mn trout stream fish kills we also saw the obvious correlation to summertime manure applications, arial application of toxic fungicides, and ag-field runoff being washed away into our spring fed streams during heavy rains in July through September. Whenever trout stream fish kills were reported the first responders never got to the stream in time to witness the water that killed the fish, they only got to take an inventory of the dead. The investigators were often not trained or equipped to investigate a flowing plume of contaminants that killed the fish until it became diluted below a toxic level. The coordination between agencies took days or weeks. In the end agencies could rarely define a clear cause and for Rush Creek issued headline press releases "The heavy rain killed the fish" We called bullshit on the agency methods and conclusions.

Last year a broad coalition of organizations went to the Legislature to order Minnesota's assorted state agencies to develop a protocol and guidance on how

[1] 1990, Meyer, F.P., and Barclay L. A., editors. Field Manual for the Investigaiton of Fish Kills. US Fish and Wildlife Service Resource Publication 177, 121 p

fish kills are evaluated and reported to the public. New laws passed that ordered weekly reporting of any fish kills in the state and ordered state agencies to coordinate their efforts to develop inter-agency guidance for addressing fish kills.

The weekly reports in the EQB Monitor inform the public and are revealing. This is really the first chance for the public to see the patterns of fish kill reports and distinguish between fish kills and fish die-offs. The Monitor is published online every Tuesday at noon: https://www.eqb.state.mn.us/eqb-monitor

The information now available is very basic and telling and should improve over time. It would help the public to know some of the details that will come from the new protocol; an effective communication plan is essential. Hopefully in the future the EQB fish kill reports can include the triage details, whether it was a die-off or fish kill and the a summary of the details promised in the new guidance.

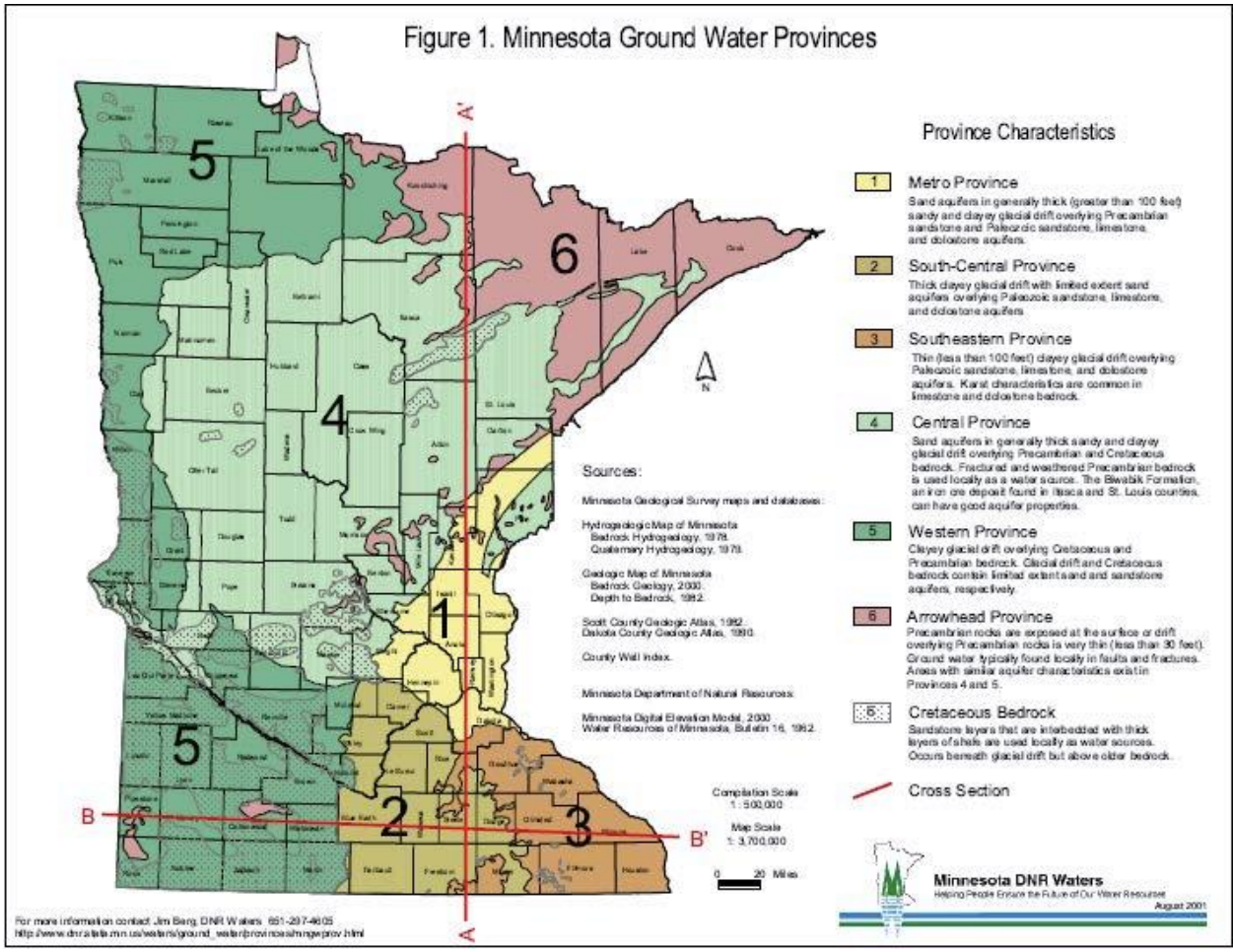
Draft Interagency Fish Kill Response (IFKR)

The IFKR presents a very thoughtful and thorough guidance on dealing with the inevitable complexities of coordinating our legions of state agencies who work at variable speeds and sometime seem to play conflicting roles. This is important work to define who does what, who knows what to do and who is responsible for protecting the water quality and Minnesota's aquatic ecosystems?

I would recommend Minnesota authorities approve this plan but ask for more; Minnesota especially needs the abality to respond 24-7 to reported fish kills and the plan could be improved with regional guidance based on the typical fish kills in the area.

This important first guidance should be used to build an even more robust plan that can execute rapid response investigations, determine the causes of toxic water and take time to define how future events are prevented. Here are factors that I believe need more work:

- The protocol should have chapters or appendices on distinct hydrologic or hydro-geographic regions where the fish kills and die-offs are similar or related to local surface water hydrology:



For rivers and streams fish-kills and die-offs are very different in the sSE Mn karst trout streams than the the North Shore cold-water streams, and different from the warm water rivers across the state.

Lake regions have similar groupings of shallow, warm water lakes, deeper glacial lakes or bedrock-controlled lakes. Each different fish kill area will have different causes and the standards and approaches to the triage and investigation can be streamlined for each region. There should be more detailed guidance for the karst trout streams. This is the area with the most and most frequent man-made fish kills where a rapid and thorough response can identify the responsible parties and information about fish kills can be used for intervention and prevention.

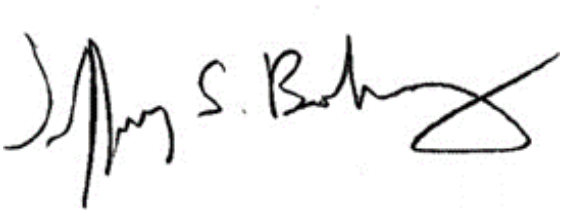
- In the karst area if there are fish kills in trout streams the Health Department must be immediately engaged to alert nearby well owners and initiaite water quality testing from private wells where surface water infiltration is occurring.

    - The data practices standards for health notification must allow for immediate public and individual alerts.
- For fish kills in lakes regional the Heath Department must assess and alert the public with concerns about swimming and fish consumption advisories and alert lake shore owners who may have shallow sand point wells.
    - Wherever there is a strong link between surface water and groundwater in the fish kills in the karst urgent action is needed to protect private well owners who are consuming groundwater that is susceptible to contamination.
    - The data practices standards for health notification must allow for immediate public warnings to people downgradient of the fish hill.
- The response plan needs an ending that moves all state agencies and cooperators toward prevention of future fish kills. This applies to every fish kill category: urgent, non-urgent, winterkill and summerkill.
    - Every type of kill or die-off is a symptom of poor water quality that will not support the fish that are living there. This is often a watershed or impaired water issue that should gain priority attention whenever the water quality is so bad to kill the fish.
    - Summerkill from hyper eutrophication should be addressed as a watershed impairment and there should be a priority on nutrient reduction.
    - Winterkill can be a function of many factors, but some have man-made causes that should be addressed in areas with chronic fish kills.
    - Many die-offs could be prevented with watershed projects that control farm and urban stormwater runoff.
- Im concerned about the lack of capacity to respond 24 hours a day seven day a week. The plan is bold enough to identify this major flaw in the proposed multiagency guidance. Unfortunately, the plan does not recommend a fix.
    - The plan says that there is no one to respond on “weeknights, weekends and holidays”.
        - For a person working 40-hour weeks there are just 2,080 work hours a year and with eleven paid holidays only 2,000 work hours/FTE a year. But there are 8,760 hours in a year. This means that there are no fish kill responders 77% of the time. This is a big gap in capacity for a water quality emergency.

- The plan should have a category for the role Agencies retaining on-call emergency investigation and response contractors. There are many contractors who are trained and equipped for rapid response.
- The plan neglects the use of drones and other remote sensing techniques for investigation. Drone technology is so refined that it can be used to count dead fish, identify the area and extent of a kill or die-off and can be fitted to collect water samples in otherwise inaccessible areas.
    - Drones in the karst can clearly see runoff patterns from the uplands and can be a valuable tool identifying the source of toxic runoff from manure and pesticides.
- Determination of the cause of a fish kill caused by leaks, spills and runoff of farm chemicals always requires a rapid response.
    - The goal for fish kills investigation is to respond within hours. However, the reporting of fish kills is often delayed. This reporting delay alone hampers the investigation.
    - Rapid response of further delayed if trained and properly equipped responders are only available during standard working hours. Based on the joint agency response there is less than a one in four chance of a timely response.
        - Hiring on-call environmental consultants would increase the opportunity to define the sources of fish kills.

Thank you for your combined efforts to put this guidance together. Im looking forward to future refinements to the guidance.

Sincerely



Jeffrey S Broberg