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July 17, 2011

Mr. Lawrence Lynch
Wisconsin Department of Natural Resources
PO Box 792 Madison WI 53707-792I

Email: lawrence.lynch@wisconsin.gov

RE: Proposed High Capacity Well
Long Property
Town of Utica, Wisconsin

Dear Mr. Lynch:

At the request of members of Save Copper Creek, I have been asked to review the draft Environmental Assessment ("EA") for the Long Property Well from my perspective as a fish ecologist with extensive experience with Wisconsin cold-water streams.

In short, I found the EA to be incomplete and of insufficient depth to justify the finding of no significant impact for the proposed well and the determination that an Environmental Impact Statement would not be required. The EA raised far more questions than it answered with respect to the potential negative effects of the proposed well on the integrity of aquatic resources and impacts on the local brook char population.

First, significant assumptions are made regarding hypothetical spatial and temporal impacts of reductions in groundwater input on stream temperature variation. The EA states:

> *"In the worst case, continuous pumping of the well at the maximum pumping capacity over an extended period of time could lead to a reduction in stream flow in the North Branch of Copper Creek of approximately 0.7 cfs."*

The EA calculates that this would at most account for a 40% reduction in flow in the vicinity of the well. I have my doubts about the validity of the calculations, which were based upon a single stream measurement taken during March, when water levels are typically above average. In addition, the EA states:

> *"Impacts would diminish downstream of the proposed well as additional springs and tributaries contribute flow to the stream ".*

The EA acknowledges that the percent reduction could be greater during periods of drought and low flow. My primary criticism, however, is that the EA only addresses the possible impacts of pumping on increased water temperatures (a probable impact during warm summer months) but fails to consider the severe negative impacts of reduced groundwater inputs on decreased winter stream temperatures.

Most people consider brook char to be "cold water" fish, but in fact their life history is best characterized by their adaptation to the relative "warm water" from springs that incubate their eggs at about 4-6C and keeps them from freezing during the winter months. In my experience, disruptions in groundwater input

have their greatest impact on trout streams by reducing the ability of the stream to maintain a "warm water" condition in spawning redds during the coldest weeks of winter. Although juvenile and adult brook trout have the behavioral flexibility to move about in streams to select habitats with warmer or cooler temperatures, the developing embryos in the redds are at the mercy of the weather, stream temperature and the groundwater upwellings that protect them. When groundwater inputs to trout streams are disrupted (for example by drain tiles or agricultural wells), the potential for disproportional temperature impacts on trout spawning areas is great.

The EA falls short in that it does not present any data on the spatial distribution of spawning redds or the number and distribution of upwelling areas. Without such data, it is impossible to assert that the proposed well operation will have "no significant impact". I assert that such information should be collected, and that the potential impact on stream temperature in these areas be investigated as part of a pumping test for the proposed well site.

Second, I was very surprised by the overgeneralization made in the EA regarding the ability of trout populations to recover should the well be found to have a negative impact. The following statements from the EA illustrate this point.

> *"If a decrease in streamflow had negatively impacted trout populations in the adjacent segment of the stream, it is expected that trout would repopulate the stream as groundwater inflows returned to pre-pumping levels."*
>
> *"However, other segments of the stream and other streams in the area will be unaffected by operation of the well and will continue to offer trout fishing opportunities."*

I certainly agree that there are examples where fish populations rebounded after human-induced stressors were eliminated. However, there are just as many, if not more examples where damaged populations did not recover when the factors responsible for their decline were removed. The reasons can be complex. Populations frequently exist as groups of smaller sub-populations where some sub-populations act as "sources" (which successfully produce offspring), while others exist as "sinks" (made up of immigrants, which themselves are not successful in producing offspring). It is very common in stream systems for young fish produced in "source" sub-populations to migrate to other parts of the stream where breeding conditions are less conducive. This can give the false impression that there are many health sub-populations in a stream system, when in fact a very few locations may be responsible for producing the majority of fish recruitment into the population.

The assertions made in the EA cannot be supported without a detailed examination of trout age structure both in the vicinity of the proposed well and in the other "*adjacent*" populations referenced in the EA. If these data exist, then they should be analyzed and reported. If they don't exist, they should be collected and included in an EIS.

Thank you for the opportunity to comment on the Long Property Well EA. I hope my comments are useful. If you have any questions or wish to discuss any of these points for further clarification, I can be reached by email or at the numbers listed above.

Sincerely

Digitally signed by Timothy Ehlinger
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Timothy J Ehlinger
Associate Professor, Biological Sciences

cc: Mr. Bob Van Hoese