Keep water on "proper" side of water divide.
Milwaukee River can't handle storm events now.
Maintain Mississippi River water on that side.
Allow Waukesha to drill wells and blend water to meet standards.

Move ahead with diversion to benefit the City and avoid radium and other deep aquifer problems.

Sir,I have just read the short article at the JSonline website concerning the proposal to divert water to the city of Waukesha.I live in the town of Waukesha and have a well.Because of my well,I am always reminded of the need to maintain my pump,soft water system and all of the filters that are required so I can enjoy safe drinking water.I am also constantly aware of the fact that any item that goes on the lawn, will find it's way into the water table. That includes soap to wash the car and fertilizers or herbicides. I think of my water as a finite resource. At any moment,I might have to drill a deeper well. I feel blessed that I have had good luck so far. My point in this Email is to remind all those involved in water diversion,that the conversation should begin with conservation.I want the opening paragraph in the next article I read about this topic to say that the people of Waukesha will be required to cut back on their usage.If we have a sensible water conservation plan in place before the water is diverted,then the water that we do get,will last that much longer.We also are required by the great Lakes Water Board to address these issues.Please start our community on a sensible path to water usage.If we can be proactive in this issue,then the residents win,and the Great Lakes community will respect us more for our efforts.

I have serious concerns for the environmental impact of providing Lake Michigan water to Waukesha. Essentially its openning the dam gates for unbridled further growth and development in that area. Without unlimited resources as is available in the Milwaukee Metropolitan area, perhaps development can properly be concentrated in the land already raped by development rather tha ravanging further Waukesha County farm land. Lord knows, Milwaukee could use a resurgence of development as well as population growth.

I doubt if Milwaukee is going to just let Waukesha just buy water. There would be strings attached. Because Waukesha is using their water they would probably want to control how many people can build in Waukesha who would then raise the amount of water they would need to sell to us. Possibly depleting their supply in their eyes. Those strings would get very complicated I am sure and I can't see where Waukesha could then stay a seperate community from Milwaukee. That would be very unfortunate. What about looking into buying from another community like Oak Creek? Also there must be options that haven't been studied in an intense manner to use our own water resources in a new way. With all this about the City of Waukesha water supply, what about all the people in the area with their own wells? If the City has radium problems they must also.

I believe the main problem is sprawl. Waukesha is asking for water to fuel its growth and sprawl. I believe it is better to work with what we have rather than deplete more precious resources.

I am not in favor of allowing Waukesha to access Lake Michigan water.

In order to implement the historic Great Lakes Compact in keeping with the intent and spirit of the law, it is becoming increasingly clear that the State of Wisconsin **first** must interpret a number of central provisions and threshold questions arising under the Compact and 2007 Wisconsin Act 227's exception standard. In the ensuing paragraphs, we have provided ***a non-exhaustive*** list of key provisions of the Compact and Act 227 that inevitably will call for State interpretation and guidance, thereby underscoring the need for administrative rule-making and development of a comprehensive, fully vetted Environmental Impact Statement (EIS) prior to consideration of any upcoming application for a Great Lakes diversion in Wisconsin.

As a point of reference, under the Great Lakes Compact and Act 227, applications for diversions of Great Lakes water are subject to the Exception Standard, which requires determinations on the following issues:

1. *Unavoidable Need*—the need for the proposed diversion cannot be reasonably avoided through efficient use and conservation of existing water supplies.
2. *Reasonable Use*—the diversion is limited to quantities reasonable for the purposes for which the diversion is proposed;
3. *Return-Flow*—an amount of water equal to the amount of water withdrawn from the Great Lakes basin must be returned to the source watershed, less an allowance for consumptive use, at a place as close as practicable to the place at which the water is withdrawn.
4. *No significant adverse impacts*—the diversion will result in no significant adverse individual impacts or cumulative impacts to the quantity or quality of the waters of the Great Lakes basin, including protection of the physical, chemical and biological integrity of the receiving water body if diverted water is to be returned to the source watershed through a stream tributary to one of the Great Lakes (considering the state of the receiving water before the proposal is implemented, both low and high flow conditions, and potential adverse impacts due to changes in temperature and nutrient loadings).

5. *Environmentally sound and economically feasible water conservation.*
6. *Compliance with all applicable laws.*

In turn, these central issues raise questions of interpretation that the State of Wisconsin, through its Department of Natural Resources, must resolve through administrative rulemaking or as part of its EIS process, as demonstrated by these still-to-be-resolved questions in the following categories:

A. "Completeness":

* When and by what criteria shall a community's application for a diversion be determined "complete"?

- Must the route of the water supply, return flow and discharge points be clearly defined within the application for a diversion prior to the application's submission?

- Must a firm agreement with all appropriate conditions be in place between the community seeking a diversion and all communities who may be recipients of return flow waters as part of the applicant community's application for a diversion?

- And, see E. Supplier of Water Question in terms of agreement being in place between supplier and applicant.

B. No Reasonable Alternative Water Supply:

* What are the important factors--i.e. *identified* considerations--that will determine that a community has no reasonable alternative water supply?

* What time duration will be operative? In other words, for how many years must an alternative water supply be deemed sustainable in the said evaluation of "no reasonable alternative water supply"?

C. Service area:

- How will the boundaries of the land area to be served by a diversion be determined?
    - Will the boundary for the land area to be served by a diversion be limited by the existing boundary of the community requesting a diversion?
    - Will said boundary be determined as the city or municipal boundary, the water supply boundary or some other alternative?
    - If the land areas outside the boundary of the applicant community are to be included in the application, must they meet all required Compact provisions, including having no reasonable alternative water supply?
    - Following approval of the diversion request, can the receiving community use the diverted water in an area that had not been previously identified in the application?

- Will the communities and populations outside the applicant community's boundary, who may be included in a diversion application, have to petition the applicant community to be included in the request for a diversion?

D. Conservation:

Under Act 227, Wisconsin DNR shall promulgate rules specifying the requirements for an applicant for a new or increased diversion ***to demonstrate*** the efficient use and conservation of existing water supplies, including a requirement for the applicant to document the water conservation planning and analysis used to identify the water conservation and efficiency measures deemed feasible.

- How and to what extent shall applicant communities document the actual performance of the water conservation measures identified in their diversion application in order to meet a "complete application"?
- How shall the applicant community's conservation goals be assessed as reasonable and realistic? (e.g. a water use reduction goal of 10 %).
- How will the community's conservation program be monitored and held accountable?
- What level of I/I will be permissible in a system that is conserving water?

E. Supplier of Water:

- Must a firm agreement with all appropriate conditions be in place between the community seeking a diversion and the community supplying the water as part of the applicant community's application for a diversion? [A consideration under Section A. also].
- Must the community supplying the water need be a co-applicant for the diversion?

F. Environmental assessment:

- Does the application for a diversion include a side-by-side environmental and economic analysis of each of the reasonable alternatives that were considered in the evaluation of both the water supply alternatives and the return flow alternatives?
    - What is the process that the state will employ and expect from all applicant communities in developing a full and robust environmental impact statement?
- Will the environmental and economic analysis of each application include all necessary permits and actions as one comprehensive package?

G. Return flow:

- How will the state determine that a community is meeting the requirement of minimizing the co-mingling of Great Lakes water with water from outside the Basin?

- May water that is sent back to the Great Lakes as part of a diversion include waste water from communities or parts of communities that will not be serviced by the diverted water?

H. Public review and comment:

The Compact provides the principles guiding its application in Wis. Stat. § 281.343, and discusses the intentions behind public participation under sub. 6. Specifically, the language states, "The parties recognize the importance and necessity of public participation in promoting management of the water resources of the basin." Wis. Stat. § 281.343(6)(a)(1). Further detail concerning the public participation process is set forth within ch. § 281.346(9)(b).

- How will the state ensure that its procedures meet the following requirements when they receive proposals subject to the standard of review and decision:

    1. provide public notification of receipt of applications?

    2. provide a reasonable opportunity for the public to submit comment before applications are acted upon?

    3. provide the record of decision for public inspection including comments, objections, responses, approvals, approvals with conditions, and disapprovals?

- How will the Department ensure that public notice of each complete application for a diversion is circulated to interested and potentially interested members of the public and the form and content of public notice is established so that it provides certain basic information, but allow some flexibility in meeting all the requirements under the Compact while achieving the intent of the Compact?

Please see our recommended process for public participation in the attachment.

In closing, we appreciate your consideration of the preceding list of questions. These questions serve to illustrate the many substantive issues of interpretation that the State of Wisconsin, through its Department of Natural Resources, will be confronted with—and will need to resolve—if it is to implement the Great Lakes Compact and keep with the state's often-stated commitment to an open and transparent public process. As this Coalition has recommended in numerous prior communications, we believe that Wisconsin DNR's wisest course will be to resolve these and other areas of uncertainty through administrative rulemaking *before* addressing any imminent applications for diversions of Great Lakes water. However, even if the Department remains determined not to proceed with rule-making at this juncture, these substantive questions will still need to be resolved, one way or the other, as they will be germane to the Department's EIS process under development and to other matters of public importance. With this in mind, our Coalition requests a meeting with you and your staff, in order to take up these and other Compact implementation issues, including the status of the City of New Berlin's compliance with its approval conditions under Wisconsin Act 227

Public Participation Process

We respectfully submit our recommendations for what the rules governing a public participation process should contain. This recommended process complies with the spirit and letter of the Compact, is partially modeled upon the open and accessible dockets at the Public Service Commission, and will help prevent a lack of completeness as seen in the New Berlin application. We would also assume that the recommended process for public participation below would be folded into or be part of the procedures called for in the public's review and comment on an EIS on a diversion application under the state and federal rules governing WEPA and NEPA. **Please note that we encourage the Department to hold a public comment period on <u>both</u> the completeness of the application and whether the application meets the standards of the Compact.**

<u>Our recommended process is as follows:</u>

1. Open an online webpage dedicated to posting all application materials, including an explanation of the application and review process with dates and deadlines, application-related meeting agendas, meeting notes, audio records of meetings, correspondence and any other relevant documents. This website would include an expected date of the community's application, and the community's own plans for a public participation process, if any. All materials received by the community or generated by the State of Wisconsin can be made accessible to the public on this webpage, thus saving the Department time and money in sending out public notices and responding to open records requests.
2. A community's application, once received by the Department, should be posted to the website.
3. The Department should open a 30 day public comment period on the completeness of the application.
4. The Department would consider the diversion application and public comments, and determine if the application is complete. Once the application is complete, the Department would issue a letter of completeness.
5. Once the application is determined to be complete, issue a public notice of receipt of the complete application. This public notice should be published as a class 1 notice under ch. 985, Wis. Stat. The public notice should contain the following information in an easily-understood format:
    a. The name and address of the applicant;
    b. A description of the proposed diversion, including the amount of the proposed diversion, and the standards that the applicant must meet;
    c. A description of the procedures for the formulation of final determinations on applications, highlighting the public comment period;
6. Wisconsin Statutes Chapter 281.346(9(c) requires a 30 day public comment period and that the Wisconsin DNR consider all comments when deciding whether to

We are writing to respond to the Department's February 5, 2010 request for public comments concerning the environmental analysis public scoping process relating to the City of Waukesha's proposed Water Diversion Application under the Great Lakes Compact.

We understand that an important, preliminary part of the Department's Environmental Impact Statement (EIS) process for the proposed City of Waukesha Water Diversion application will involve a "scoping" of the analysis, that is, a determination of the significant issues to be analyzed in depth as part of the prospective environmental analysis.

We agree with, and remain encouraged by, the statement made by Secretary Frank in recognition of the Department's pivotal, independent decision-making role that Wisconsin's DNR is taking on: "If done right, we'll have a robust EIS, with high standards, that will set the precedent for the Region." Secretary Frank further stated that what is being sought by the Department is "a transparent process that errs on the side of being as open as possible." Given the importance of this commitment to the EIS process overall, it will be important at this early juncture for the Department to formulate a clear, staged public notification and hearing process to ensure that the public's access to reasonably *complete* information is recognized and that DNR resources are best utilized. We believe that official public hearings—as opposed to "open house sessions"—should be held in the communities that will be affected by the sale of water, by the route of pipelines, and by the discharge of waste water into their area waterways, At a minimum, these would include Waukesha, Wauwatosa and Milwaukee.

As communicated to you on numerous prior occasions including, most recently, the March 1st meeting, we strongly recommend that the Department hold public comment periods and hearings on *both* (i) the completeness of the application and (ii) whether the application meets the standards of the Compact. Without this phased, two-part process, both the public and the Department will lack any assurance that the application being reviewed will not be substantially changed, for example, into another version that substitutes one water supplier for another (e.g. City of Oak Creek or Racine for City of Milwaukee). With this process in place, the application's evaluation can proceed with the requisite degree of certainty called for under the Compact pertaining to a "complete" record for review at the regional level.

Accordingly, at the same time that the Department is proceeding with scoping work for its prospective EIS, we ask that the Department proactively incorporate the following procedural steps into the public participation process it will be responsible for once Waukesha's application is submitted:

(a) Upon receipt of the application, the Department should open a 30 day public comment period focused *on the completeness* of the application, including consideration of such questions as:

- Must the route of the water supply, return flow and discharge points be clearly defined within the application for a diversion prior to the application's submission?

- Must a firm Agreement with all appropriate conditions be in place between the community seeking a diversion and all communities who may be recipients of return flow waters as part of the applicant community's application for a diversion?
- Must a firm Agreement be in place between the water supplier and applicant community seeking the diversion as part of the application?
- Must the application identify and include all necessary permits as one comprehensive package?
- Must all water conservation measures required to meet the Compact provisions be identified, adopted and/or enforceable prior to the application's submission?

(b) After consideration of the application and public comments, the Department would determine if the application is complete; if so, the Department would issue a letter of completeness.

(c) The Department should proceed thereafter with opening a 30-day public comment period, focused on the *merits of the application* itself.

In addition, the underlying purpose of an EIS is to facilitate a side-by-side environmental and economic analysis of each reasonable water supply alternative and return flow alternative under consideration. For the general public, it will be important to have the alternatives developed in a format that facilitates easy comparison. It will not be sufficient or conducive to an open public review process merely to assert that other alternatives have been considered and dismissed, without explanation and justification, or to provide links to previous and older studies, without accurate summaries and analyses.

We offer the following "Scoping Comments" responsive to the Department's "initial list of topics to be addressed in the EIS" released to the public on February 5, 2010—which we categorized by Compact requirements for ease of consideration and in keeping with NR 150.22 parameters regarding probable environmental impacts:

(1) No Reasonable Water Supply Alternative:

Under the Compact, the City of Waukesha must demonstrate that "there is no reasonable water supply alternative in the basin in which [Waukesha] is located, including conservation of existing supplies" and that "the need for the proposed diversion cannot be reasonably avoided through efficient use and conservation of existing water supplies." These provisions require that the following questions be evaluated within the EIS Analysis:

(a) What other groundwater and surface water alternatives, or combination thereof, are available to the City of Waukesha, including but not limited to:

- the unconfined deep aquifer to the west;
- river groundwater inducement;

- additional shallow aquifer wellfields;
- enhanced conservation;
- expanded utilization of radium treatment technology/systems.

(b) What are the important factors used to determine whether or not Waukesha has a reasonable alternative water supply?

(c) What time duration will be operative? Specifically, for how many years must an alternative water supply be deemed sustainable in the evaluation of "no reasonable alternative water supply"? At the point of current discussions, it appears that several different timelines are being considered. For example, Waukesha at times refers to a SEWRPC draft Water Service Area plan that uses a timeline of 2028 for projected water and land use. Yet, Waukesha also relies on SEWRPC's Water Supply Study, which uses SEWRPC's current Land Use Plan of 2035 for projected land use and populations. Waukesha, at the same time, indicates that the amount of water that it will request for a diversion is based on a fully built-out land use scenario of 2050 or later.

(2) Reasonableness of Requested Diversion Amount:

Under the Compact's Exception Standard, "the amount of water diverted will be limited to quantities that are considered reasonable for the purposes for which it is proposed." These provisions require that the following questions be evaluated within the EIS Analysis:

(a) Does the requested diversion amount reflect Waukesha's current public health needs or, rather, encompass substantial additional lands beyond the City's current water supply area based on growth projections?

(b) What basis is there for a nearly 100% increase in daily demand in view of the known decline in the City of Waukesha's industrial usage over the past two decades coupled with the City's publicized water conservation savings?

(c) Can and should Waukesha seek a smaller diversion amount at this point in time?

(3) Return Flow Alternatives:

Under the Compact and Act 227's Exception Standard, "an amount of water equal to the amount diverted, less an allowance for consumptive use, will be returned to the watershed from which it was withdrawn." Further, under Wisconsin Act 227, if the water is returned through a stream tributary to Lake Michigan or Lake Superior, "the physical, chemical, and biological integrity of the stream must be protected and sustained… considering the state of the receiving water before the proposal is implemented, and both

high and low flow conditions and potential adverse impacts due to changes in temperature and nutrient loadings caused by this return flow."

Notwithstanding Waukesha's primary focus to date on Underwood Creek as its preferred alternative, the Department's prospective EIS must include a thorough analysis of the available return flow alternatives and their respective environmental and economic impacts. Equally important, the EIS must ensure that any return flow alternative will be protective of the "physical, chemical and biological integrity of the receiving waters" in conformance with Act 227 statutory direction and all existing laws and regulations. To meet these requirements, the Department's EIS Analysis must address the following:

- What impact would Waukesha's wastewater discharge into Underwood Creek have in terms of fecal coliform or bacteria levels in Underwood Creek and the Menomonee River? For example, it is our understanding that Waukesha's discharge of fecal coliform throughout most of the year is at a level 9 times higher than MMSD maximum discharge limits set for contractors (900 cfu/100 ml versus 100 cfu/100 ml) and 20-30 times higher than the actual monthly effluent concentrations achieved by MMSD and its contractors historically.

- How will increased discharge of bacteria affect Underwood Creek's already elevated bacteria levels (i.e. the creek's proposed listing as an impaired water for bacteria on the section 303d list)? Can the Department require year-round UV treatment to reduce bacterial loading to this stream?

- How will Waukesha's wastewater flow impact algal growth in Underwood Creek and the Menomonee River?

- How would Waukesha's wastewater flow meet expected new phosphorus limits for rivers and streams in Wisconsin?

- What wastewater treatment and disinfection measures have been committed to by Waukesha? Specifically, with respect to fecal coliform levels? Phosphorus?

- What impacts might increased flows of Waukesha wastewater in Underwood Creek have on creek restoration efforts underway now by MMSD, the city of Wauwatosa, and others?

- What data and assumptions will be used to evaluate Underwood Creek's capacity to absorb Waukesha's return flow? How will "extreme runoff events" of the kind seen in the past two years be taken into account?

- What effluent limits would Waukesha need to meet to discharge to a restored Underwood Creek that fully meets the "fishable and "swimmable" goals of the federal Clean Water Act?

- What effluent limits does Waukesha currently meet by comparison? And how is the Department going to alter these effluent limits given the change in receiving water and Underwood Creek's proposed listing as impaired for bacteria?

- How and what entity will be responsible for monitoring the effects of Waukesha's return flow effluent on downstream waterways? What provisions will be made to allow for adaptive management?

- Will Waukesha be required to meet state standards for mercury and chloride if it discharges to Underwood Creek versus the variances for these two pollutants that Waukesha is currently granted?

- MMSD has spent approximately $150,000,000 on flood management on the Milwaukee County Grounds and downstream areas of Wauwatosa and Milwaukee to prevent flooding along the Menomonee River. Although MMSD already has acquired and demolished dozens of flood prone homes along the Menomonee River, there are still flood-prone structures downstream that future MMSD projects may address or that the Cities of Wauwatosa and Milwaukee will have to address. How will the increased return flow to Underwood Creek protect or affect those past and future investments?

- What are the environmental and economic benefits and costs of Waukesha returning its wastewater through alternatives other than Underwood Creek, such as the MMSD system, Lake Michigan directly, or the Root River?

- Are there options for distributing return flow to a receiving water in a more natural and controlled fashion, using wetlands or mitigating local impacts by discharging to several different locations?

- What are the total projected costs of Waukesha's diversion proposal? How can these costs be broken down in terms of construction, equipment, energy and remediation costs?

- What is the cost comparison of available return flow alternatives?

- Do cost calculations account for increased levels of wastewater treatment, as required to protect waterways proposed for return flow?

- What is the **cost comparison** of the diversion versus no diversion alternatives? Importantly, are these cost comparisons detailed enough to provide sufficient value to any cost effectiveness analysis given that each estimate contains a *$25 million contingency*, i.e. "swing" either way, for unknowns?

(4) <u>Water Conservation:</u>

Under the Compact and Act 227's Exception Standard, the applicant must demonstrate that "the need for the diversion cannot be reasonably avoided through the efficient use and conservation of existing water supplies" and must commit to "environmentally sound and economically feasible water conservation measures." These provisions raise the following questions for evaluation within the Department's EIS Analysis:

- What water savings documented from the start of Waukesha's water conservation program can be tied directly to the City's conservation measures as distinct from, for example, an increase in precipitation or declining industrial users?

- How does I & I water factor into the City's conservation program?

- What monitoring or enforcement measures will be implemented to assure achievement of projected conservation goals?

- If Waukesha proposes to implement water conservation measures to meet the requirements of Act 227 and, at the same time, also seeks to add additional lands to be served by a water diversion, how does the City propose to ensure that water conservation measures are enforced outside its current City boundaries?

- What additional conservation measures have been rejected and on what basis?

(5) **No Significant Adverse Individual or Cumulative Impacts**:

The Compact and Act 227 Exception Standard require that "the diversion will result in no significant individual or cumulative adverse impacts to the quantity or quality of the water of the Great Lakes basin or related natural resources." Given this requirement, the Department's EIS Analysis must evaluate the individual and cumulative impacts of the Waukesha diversion in the context of other current or prospective environmental impacts including, for example, the Wisconsin Department of Transportation's publicized plan to increase run-off to Honey Creek and Underwood Creek by 33% as part of the Zoo Interchange reconstruction proposal. These projects, alone and together, will be certain to create individual and cumulative effects, such as increased risk of flooding of homes along Underwood Creek, that will need to be analyzed and addressed in keeping with the Compact and as part of the Department's EIS.

(6) Compliance with Applicable Laws:

The Great Lakes Compact and Act 227's Exception Standard provide that a "diversion will be in compliance with all applicable local, state, and federal laws and interstate and international agreements." As such, the Department's EIS Analysis must examine Waukesha's diversion and proposed return flow alternative under recent Clean Water Act decisions, given that Waukesha's proposed return flow will be a new discharge to

Underwood Creek—a waterway already on the state and federal impaired waters list for bacteria. In consideration of NR 150.22(2)(d) and NEPA guidance, the Department's EIS also should include an examination of socioeconomic impacts. Moreover, to the extent that Waukesha will be pursuing or receiving federal monies for this Great Lakes diversion project, EPA policies and Title VI of the Civil Rights Act will require future examination of environmental justice requirements, of the type and scope identified in the socioeconomic impact analysis currently underway as part of SEWRPC's ongoing Water Supply Study.

In closing, we appreciate your consideration of the afore-stated process recommendations and scoping comments relating to the Department's initial list of topics to be addressed in its EIS analysis. Further, given that Waukesha's final application may be different from earlier drafts, is our understanding that the Department will continue to accept comments on scoping for a period of time after the final application is, in fact, submitted. We value the Department's commitment to a robust, open and transparent EIS process that will set high standards and serve as useful precedent for the Great Lakes Region. We look forward to the Department's ensuing EIS process as an integral step toward a successful Great Lakes Compact implementation.

Many topics have been addressed concerning the application by the Waukesha Water Utility for a Great Lakes water diversion.

One topic I have not heard discussed is an EIS concerning the Fox river if the WWU should return all of the effluent it currently discharges down stream from the city. This volume of water to suddenly cease would seemingly have an adverse negative impact to aquatic life and property values along the Fox. Would it effect wetlands, or the recharging of aquifers?

Perhaps I'm mistaken about the inclusion of this information for consideration, but if not, please consider this a topic to be added to the scope of EIS.

As a general matter, the EIS should be organized so that there is a separate section that focuses on the discharge impacts to Underwood Creek. Organizing the EIS by effects on surface water resources, wetland resources, geomorphology etc, as suggested by your initial outline would be more difficult for the public to understand. We need to have a document that clearly sets forth the potential impacts that this discharge might have on the City and its residents.

Substantively there are two broad areas that should be discussed as part of the proposed discharge to Underwood Creek: water quality and water quantity.

1. Water Quality Issues.

The EIS should discuss the potential range of the types of contaminants in the discharge, the estimated mass and concentrations of the discharge, whether such contaminants meet applicable water quality standards, and assuming they do, whether there are any other potential adverse impacts from the discharge on water quality. Among those contaminants, bacteria should be evaluated both in the context of potential exposure to users of Underwood Creek, as well as to downstream users including Lake Michigan.

2. Water Quantity Issues.

Water quantity issues require an analysis of several interrelated issues. The following issues should be discussed as part of the EIS:

- **Floodplain impacts**. Increasing the flow to Underwood Creek by 11 to 13 million gallons per day could impact the existing floodplain or the floodway and floodfringe areas within the floodplain. The scope and potential cost of those impacts including changes to FEMA maps, floodplain zoning and development restrictions should be evaluated. To the extent that there are ways to ameliorate those impacts by restricting flow during storm events, those alternatives should be evaluated.

  A related question concerns the impact of increased flows on downstream flood control structures that have been constructed in the City at the County Grounds and at Hart Park. Impacts could include physical impacts to the structures or increased maintenance from the flow and sediment. Given that these structures have cost tens of millions of dollars, a discussion of impacts to these structures and alternatives would be important to the City.

- **Stormwater management impacts**. The City needs to meet certain stormwater criteria under NR 151. How will the additional flow impact the implementation of best management practices to meet those standards. For example, will the increased flow prevent the placement of ponds, restrict infiltration options or otherwise impact best management practices (BMPs) in and near the stream corridor.

- **Habitat impacts**. Increased flow has the potential to erode banks or beds or to adversely affect habitat along the stream corridor. The potential for such impacts should be evaluated along with mitigating alternatives.

  In addition, there is the potential for additional portions of Underwood Creek to be restored to a more natural condition. How will the increased flow affect the ability of the City or Milwaukee Metropolitan Sewerage District (MMSD) to restore the stream corridor.

- **Fluctuations.** Flow of a reasonably constant volume may have different impacts than flow that fluctuates. The extent of discharge flow fluctuations and the impact of flow fluctuations on the above impacts should be evaluated and alternatives considered to mitigate any adverse impacts.

- **Increased flows.** There is the potential for increased flows into the system both from Waukesha and from other sources. The cumulative impact of the flows on

the above factors (flooding, stormwater management and habitat) needs to be evaluated.

There is some question regarding the extent to which the Waukesha treatment plant will be able to increase its return flow beyond the 11 to 13 mgd under this approval. For example, water consumption is expected to increase 58 to 100% and if additional communities in outlying areas seek Lake Michigan water the discharge would increase. Scenarios evaluating potential return flow increases should be evaluated.

In addition, there could be other increases in flows to Underwood Creek as a result of other projects. The Wisconsin Department of Transportation suggests that the redesign of the Zoo Interchange could increase flows by 33%.

We look forward to working with the Department to make sure these issues are addressed as part of the EIS process and considered in appropriate permitting decisions.

I am writing to respond to the Department's February 5, 2010 request for public comments concerning the environmental analysis public scoping process relating to the City of Waukesha's proposed Water Diversion Application under the Great Lakes Compact.

I understand that you seek, as part of the Department's Environmental Impact Statement (EIS) process for the proposed City of Waukesha Water Diversion application a determination of the significant issues to be analyzed in depth as part of the prospective environmental analysis. I believe economic analysis should be central to much of what you will be examining as you prepare a "… robust EIS, with high standards, that will set the precedent for the Region." I would suggest that the example you set will resonate throughout the Great Lakes basin as dozens if not hundreds of older communities will consider selling wholesale water to their suburbs.

RELEVANCE OF ECONOMIC DEMAND ANALYSIS

Economics is an important element to five categories of evaluation that you list:

a. Reasonable Water Supply Alternative,
b. Reasonableness of Requested Diversion Amount
c. Return Flow Alternatives
d. Water Conservation
e. No Significant Adverse Individual or Cumulative Impacts

All of these categories of evaluation are intrinsically linked to the quantity of water that will be demanded by residential and commercial demanders of water. In turn, that quantity is intrinsically linked to price. That is, the quantity of water demanded is not fixed, but instead is significantly related to the price per unit. I believe that to be complete of the EIS evaluation must include a pricing study.

PRICE ELASTICITY OF DEMAND FOR WATER

To convey the relationship between price and the quantity of water demanded, economists use the concept of elasticity of demand. This term of art may require a little explanation.

Elasticity measures are numerical estimates of the changes people make in their usage of water in response to changes in incentives such as price; command and control regulations such as limits on showerhead flow rates; and moral suasion such as public service announcements urging conservation. Econometric studies of the demand for water show price to be the primary economic incentive. Economists have measured the elasticity of residential water demand for decades.[1]

Economists divide demand elasticity into "long run" and "short run." In the "short-run" people respond to changes in price by changing the amount of water they use with their previously-installed equipment. That is, they respond to higher prices by taking shorter showers,

[1]There are a large number of excellent water economists around the country, and they have produced a vast research literature on the elasticity of demand for water. A Google search on Professor Sheila Olmstead of Yale or Professor Robert Stavins of Harvard will quickly produce links to their studies and references to dozens of others.

or fewer of them, washing the car less frequently, or watering the lawn less and at night. In the "long-run" people have greater elasticities because they have more choices. "Long-run" decisions include changes in "long-lived" water-related investments. For example, in anticipation of home-buyer reaction to future water prices, home builders can install the latest in water conserving equipment, choose smaller lot sizes, forgo water-intensive features like hot tubs, plant less thirsty ground cover instead of grass, and build condominiums instead of single-family homes. Because more choices can be made in the long run, long-run elasticity tends to be greater than short run elasticity.

As a numerical measure, elasticity is expressed as a ratio of two percentage changes. The numerator of the ratio is the percentage change in the quantity of water people use caused by a percentage change in the price, the latter appearing in the denominator of the ratio. Indeed, the consensus among economists who make empirical measurement of the elasticity of demand for water is that it is substantially less than 1. In fact, the consensus average of long-run demand elasticity is measured at .6: buyers consume 6 percent less water in response to a 10 percent increase in expected price. As expected, short-run elasticity is less than long-run elasticity; the consensus is that short-run elasticity is .3.

RELEVANCE TO THE EIS

All elements of this or any diversion application will depend on the quantity of water to be diverted. Indeed, the Compact requires demonstration that "there is no reasonable water supply alternative in the basin in which [Waukesha] is located, including conservation of existing supplies" and that "the need for the proposed diversion cannot be reasonably avoided through efficient use and conservation of existing water supplies." Given the significant elasticity of demand, the reasonableness of any diversion amount cannot be estimated without estimating the amount that will be demanded at alternative prices per unit.

As examples, a careful economic analysis would enable the DNR to estimate how return flow alternatives are changed by higher prices and associated changes in the amounts demanded by water users; how the land use and growth potential of the region is affected by higher prices and associated water use; how price-induced reduction in the quantity of water demanded would affect various possible harmful effects of the return flow, including but not limited to the ability of the water works to assure the physical, chemical and biological integrity of the return stream, including flood and "extreme runoff" control; and, how a reduced quantity would affect the creek restoration in Underwood Creek now underway.

I hope you find these remarks helpful. I wish you all well in this endeavor to provide a precedent-setting study. Communities throughout the Great Lakes will take guidance from your actions.