Electronic Filing - Received, Clerk's Office, January 18, 2008

ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF;	)	
	)	
WATER QUALITY STANDARDS AND	)	R08-9
EFFLUENT LIMITATIONS FOR THE	)	(Rulemaking-Water)
CHICAGO AREA WATERWAY SYSTEM	)	
AND LOWER DES PLAINES RIVER	)	
PROPOSED AMENDMENTS TO 35 ILL.	)	
ADM. CODE 301, 302, 303, AND 304	)	

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO'S PRE-FILED QUESTIONS TO THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Questions on IEPA Statement of Reasons

1. On page 6, paragraph 2 of the Statement of Reasons, the IEPA states: "After designating uses, States are obligated to look to the requirements of 40 C.F.R § 131.11 to establish criteria sufficient to protect these uses. States must establish criteria, for the relevant parameter, that protect the most sensitive use and must address all parameters necessary to protect the use."

   A. What is IEPA's explanation for not establishing water quality criteria for bacteria to protect the proposed designated uses, in accordance with your aforementioned obligations?

2. On page 18 of the Statement of Reasons, the IEPA states that, "75 percent of the waterway length consists of human-made canals where no defined stream channel existed previously."

   A. Please tell us what type of fish and benthic populations IEPA considers to be indigenous to this type of a waterway. Please provide the basis for your response.

3. Page 19 of the Statement of Reasons refers to the characteristics of the CAWS which caused it to be designated Secondary Contact Use and Indigenous Aquatic Life Use in the early 1970s.

   A. With the exception of TARP decreasing the frequency of wet weather CSO loading to the CAWS, have any of these limiting characteristics described on page 19 been eliminated?

4. On page 33, paragraph 3, of the Statement of Reasons, IEPA states: "The most severe physical barriers to waterway recreation exist in CSSC from its confluence with the Calumet-Sag Channel down to its confluence with Des Plaines River."

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A. Given that the severe physical barriers to waterway recreation outlined on page 33 are the same for both segments of the CSSC, explain and provide reasons why IEPA proposed two different recreation uses (Incidental Contact Recreation and Non-Recreational) for the same waterway?

5. In referencing the CAWS, on page 34, paragraph 4, of the Statement of Reasons, the IEPA states: "Many of the activities are promoted and occur from March through early November."

A. Please explain what is meant by "promoted."

6. On page 34, paragraph 4, of the Statement of Reasons, the IEPA states that these activities "Include small human-powered watercraft boating, fishing and other shoreline uses such as wading."

A. How many times was the recreational use category "wading" observed in the CAWS during the 2003 recreation and navigation surveys?

B. What percentage did wading constitute of the total observed recreational activities in the CAWS during the field surveys?

7. On page 35, paragraph 4, of the Statement of Reasons, the IEPA states: "All CAWS and Lower Des Plaines River reaches are subject to an average of about fifteen CSO events a year," and that, "Bacterial levels in the waterways exceed the draft federal water quality bacteria criteria nearly everywhere in the waterways following CSO events."

A. Identify the agencies that provided information on the number of CSO events and the bacteria levels in the waterways following these events.

B. Is historical data available that confirms the number of CSO events and bacterial water quality relative to the proposed bacterial standard in the waterways? If the answer is yes, provide a reference(s) for the information.

8. On page 40, paragraph 3, of the Statement of Reasons, the IEPA states: "For the Calumet River segment currently designated as General Use, the portion of the Calumet River from Torrence Avenue to the O'Brien Locks and Dam is being proposed for designation as Incidental Contact Recreation, because some smaller craft recreational boating is believed to occur in this portion."

A. Explain what the IEPA intended by using the phrase, "some smaller craft boating is believed to occur in this portion."

B. Please quantify "some."

C. On what basis does the IEPA "believe" smaller craft boating occurs?

D. Does the IEPA have any recreational data for the segment to verify that this recreational activity does actually occur?

E. If there is no recreational data available, how did the IEPA determine the recreational use?

9. On page 42, paragraph 2, of the Statement of Reasons, the IEPA states: "The Agency declines to propose a numeric standard at this time" for bacterial water quality.

A. Given the absence of sound science how has IEPA arrived at effluent limits when no associated water quality criteria have been developed?

10. On page 43, paragraph 2, of the Statement of Reasons, the IEPA states: "As of today, USEPA has not determined what the indicator organism should be" for all surface waters.

A. In light of the above, what assurance can IEPA offer that their proposed effluent fecal coliform standard provides any protection to recreational users, while there is a lack of scientific foundation for secondary contact recreation activities?

11. On page 43, paragraph 2, of the Statement of Reasons, the IEPA states:, "When U.S. EPA determines the indicator organism, Illinois EPA has committed to the Board to initiate another rulemaking to address U.S. EPA's decision with regard to the bacterial standard for Lake Michigan." On page 44, paragraph 1, the IEPA further states: "Unfortunately, U.S. EPA's work plan includes no provision to assess health risks and formulate criteria associated with any secondary or lesser exposure conditions than primary contact recreational activities."

A. What is the basis for IEPA to initiate this rulemaking when there is no compelling data based on sound science indicating that the USEPA recreational water quality standards developed for primary contact recreational water, such as Lake Michigan, are applicable to incidental contact recreation in the CAWS?

12. On page 44 of the Statement of Reasons, IEPA acknowledges that an epidemiologic study and a risk assessment study commissioned by the District will, "allow comparison between the risk associated with the specific types of human contact recreation occurring in the CAWS during both dry and wet weather."

A. Having acknowledged that sound scientific information is not available and that studies commissioned by the District will provide data within 24-30 months that will fill the scientific void, what justification does IEPA have for moving forward at this time to make recommendations?

13. On page 46 of the Statement of Reasons, the IEPA states: "Waters designated as Chicago Area Waterway System Aquatic Life Use A Waters are capable of maintaining aquatic-life populations predominated by individuals of tolerant or intermediately tolerant types…"

A. Given the use of the word "or," does this statement mean that a waterway could be designated Aquatic Life Use A even if it is only capable of maintaining tolerant types of aquatic life?

B. If so, what would be the difference between Aquatic Life Use A and B waters in terms of the types of aquatic life they can support?

C. Please give examples of fish and benthic organisms that are considered intermediately tolerant and therefore could thrive in Use A waters but not Use B waters. (Provide literature citations to support your response.)

14. On page 47, paragraph 3, of the Statement of Reasons, the IEPA states: "Aquatic life use attainability (i.e., biological potential) of the CAWS and the lower Des Plaines River depends primarily on physical habitat conditions."

A. Identify the physical habitat conditions upon which the aquatic life use attainability depends.

B. Are the physical conditions (for example, lack of suitable substrate, cover, flow, depth, pools, riffles and the like) the major environmental stressors precluding attainment of aquatic life uses in the CAWS and the lower Des Plaines River?

15. On pages 57, final paragraph, of the Statement of Reason, the IEPA states: "The proposed dissolved oxygen standards are based on criteria and corresponding justification in U.S. EPA's national-criteria document..." Table 8 of the USEPA Criteria Document lists the acceptable 1-day minimum DO concentration for warm water species as 3.0 mg/L. The IEPA proposes a minimum of 3.5 mg/L.

A. Please explain why the IEPA has chosen not to adopt the USEPA criteria for the CAWS which are designated for moderate and limited aquatic life use?

B. Of the fish and benthic species which you expect to find in Use A and Use B waters, please identify the ones that can survive in waters with a 1-day minimum DO of 3.5 mg/L, but will not survive at ~~the 3.0 mg/L level and provide the~~ data sources or literature citations used to derive your response.

C. Was the USEPA document meant to provide DO criteria for man-made canals?

16. Given that the current DO standard for the Calumet-Sag Channel allows for a minimum daily DO of 3.0 mg/L.

A. How many significant fish kills have been reported to the IEPA in the past five years for the Calumet-Sag Channel?

B. What fish species were killed in each event?

C. If any fish kills have occurred, has IEPA determined that they have adversely affected the long-term health of the fish population in the Calumet-Sag Channel?

D. Can you explain why a higher minimum daily DO standard is now needed for the Calumet-Sag Channel?

17. The IEPA proposal for Aquatic Life Use A specifies a daily minimum DO of 5.0 mg/L for the months of March through July.

A. Please identify the fish and benthic species living in Aquatic Life Use A waters in the CAWS that need this high of a DO concentration to thrive (please provide some aquatic ecology literature citations to support your response).

B. Which of these fish and benthic species are currently found in the Calumet-Sag Channel?

18. On page 55 of the Statement of Reasons, the IEPA indicates that the Unnatural Sludge standard (Section 302.403) is to serve the "necessary purpose of preventing future additional accumulations of unnatural pollutants."

A. In practical terms, how does the IEPA propose to distinguish between legacy and recent accumulation of sediment?

19. On page 61 of the Statement of Reasons, the IEPA states: "During periods when wet weather causes CSO discharges to impact the CAWS and Lower Des Plaines River, dissolved oxygen can drop to zero. .... it is highly likely the proposed dissolved oxygen standards will be violated. It may be necessary for MWRDGC to implement additional flow augmentation and aeration treatment technologies in order to achieve compliance with these dissolved oxygen standards."

A. Has IEPA confirmed whether CSOs or re-suspended sediment (as described on page 33 of the Statement of Reasons), or both cause the DO depletion during wet weather?

B. Would IEPA consider allowing a wet weather exception to the standards due to the unique hydrological conditions that apply to operating the system during wet weather? If not, why?

20. On page 82 of the Statement of Reasons, the IEPA states: "Chicago Area Waterway System and Brandon Pool Aquatic Life Use B waters listed in 35 IAC 303.235 should use the option of 8 RAS to determine the summer daily maximum and period average." It further states: "The Chicago Area Waterway System Aquatic Life Use A waters listed in 35 IAC 303.230 should use the option of 8 RAS plus white sucker to determine the summer daily maximum and period average."

A. Is it correct to say then that the only difference between Aquatic Life Use A and B waters is the presence of the white sucker species of fish?

B. How was this rationale applied to standard derivations other than temperature, such as DO?

21. Starting on page 92 of the Statement of Reasons, effluent bacteria standards for discharges to the CAWS are described by IEPA. On page 93, the IEPA states: "In the proposal, the Agency included an effluent standard for the disinfection of all existing effluents discharged to Incidental Contact Recreation waters and Non-Contact Recreation waters by the recreational season 2011 as specified in the language above."

A. With respect to indicator and pathogenic microorganisms, what scientific data proves that wastewater effluent disinfection will result in measurable improvements in bacterial water quality in the CAWS?

B. Did IEPA take into account the impacts of all of the sources of microorganisms to the CAWS including lingering effects of wet weather in their assessment of water quality improvement and risk reduction expected to result from effluent disinfection? Please provide the details of this analysis.

C. What science is available to demonstrate the public health benefits to justify the costs of achieving the effluent disinfection that is required in IEPA's proposal?

D. What scientific basis exists to prove that requiring effluent disinfection at all of the District WRPs will not result in other undetermined significant environmental impacts?

E. What scientific evidence demonstrates that there is currently a public health concern for recreators in the waterways proposed as Incidental Contact or Non-Contact Recreation?

F. Explain the benefit and justification for requiring bacterial standards for effluent that is being discharged to a waterway without a water quality standard?

22. On pages 92-93 of the Statement of Reasons, IEPA states, "It was noted at stakeholder meetings that there were activities, such as sculling, being performed as early as March and as late as November. It was determined that disinfection needed to correspond to these known recreational activities." Later, on page 98, IEPA states, "In addition to bacterial standards to protect human health…"

A. Does IEPA have any evidence to support that disinfection would protect recreators participating in these activities, such as sculling?

B. Please describe the number of disease outbreaks that have been reported to the IEPA in the past three years from people recreating in the CAWS?

C. How many total individuals were affected?

D. Were these outbreaks, if any, conclusively attributed to exposure to water in the CAWS?

E. Based on your data and information, please estimate the total number of people that IEPA believes would become ill due to CAWS exposure in the next three years, without disinfection at the District WRPs.

23. On page 100, paragraph 2, of the Statement of Reasons, the IEPA states: "In the August 26, 2005 report 'Technical Memorandum 1WQ: Disinfection Evaluation,' MWRDGC provided a cost estimate to disinfect the effluent at the North Side, Stickney and Calumet treatment plants of total present worth between $963 million and $2,702 million for capital costs and operation and maintenance costs."

A. Based upon the estimated number of current CAWS recreators, and the information the IEPA currently has on risk assessment, how many incidents of illness are likely to be prevented annually by effluent disinfection at District WRPs?

B. Based upon these figures and the number of illnesses that you estimate might be reduced when disinfection is practiced, what is the cost in tax dollars annually for each possibly preventable illness?

C. Did you conclude from this analysis that the costs of effluent disinfection are justified by the estimated benefits?

D. Is IEPA aware that it will take longer than three years to construct disinfection facilities at the District's WRPs that discharge to the CAWS due to the size of the facilities that provide a scale upon which the preferred technology has never been tested?

E. Is IEPA aware that if the facilities are built as a precautionary measure for the three-year interim period and the public health studies indicate that there is not a need to operate the facilities, the hundreds of millions of dollars of capital costs cannot be recovered?

F. Has IEPA considered delaying any disinfection requirement until the ongoing epidemiological study regarding this issue is completed? If not, why not?

Questions Regarding IEPA Attachment No. R, "Analysis of Physical Habitat Quality and Limitations to Waterways in the Chicago Area," by Edward Rankin

1. On Page 2 of Attachment R, Analysis of Physical Habitat Quality and Limitations to Waterways in the Chicago Area by Edward Rankin, (page numbers not present) the report indicates that "cover type scores" are listed in Table 3 and were "collected as part of a planned revision to the QHEI."

   A. Was this revised QHEI metric used to evaluate the CAWS, rather than the traditional QHEI method?

   B. Has this revised method replaced the original QHEI at this time?

   C. Has the revised method been peer-reviewed and utilized successfully in this region?

2. On pages 3-5 of the Analysis of Physical Habitat Quality and Limitations to Waterways in the Chicago Area Report, there is a large difference in the QHEI scores reported in the second column of Table 2 (not labeled) and the second column of Table 3 for the Calumet-Sag Channel at Route 83 (42.0 and 54.0, respectively) and Cicero Avenue (37.5 and 47.5, respectively). Similarly, there are different scores listed for "Sharon," (which appears to be a misspelling of Sheridan Road) and Dempster Street on the North Shore Channel. The remaining stations show the same QHEI scores in each table.

   A. Is this an error? Please explain the discrepancy.

   B. Did Mr. Rankin use the QHEI scores from Table 2 or Table 3 when he evaluated the Calumet-Sag Channel and suggested a tier classification?

3. On page 6, paragraph 2, of the Analysis of Physical Habitat Quality and Limitations to Waterways in the Chicago Area Report, there is a discussion of habitat conditions that are not feasible to restore, "such as ongoing activities that maintain the water in an altered state (e.g., channel maintenance for ag [sic] drainage, flood control)..." This condition would apply to all of the CAWS (with the exception of the Calumet River upstream of the O'Brien Lock and Dam to Lake Michigan) since its flow is controlled by the Metropolitan Water Reclamation District of Greater Chicago.

   A. Does IEPA agree with Mr. Rankin's statement in his report that habitat cannot be feasibly restored if the waterway is in an "altered state" for flood control?

4. On page 6, last paragraph, the Analysis of Physical Habitat Quality and Limitations to Waterways in the Chicago Area Report, Mr. Rankin states, "In the following section we will examine each waterbody and summarize the physical limitations and the suggested tier under which it would fit in the Ohio model."

A. Please describe the recommended categories that Mr. Rankin used from the Ohio tier model.

B. Were Mr. Rankin's recommendations based on actual QHEI scores or on his professional judgment?

C. If based on QHEI scores, what scores are associated with each of the recommended Ohio tier categories?

5. On page 10 of the Analysis of Physical Habitat Quality and Limitations to Waterways in the Chicago Area Report, Mr. Rankin states: "The Cal-Sag Channel had QHEI scores in the fair range, largely because of the limestone rubble and coarse materials left behind in the littoral areas from the construction of the channel." However, on page 4 QHEI scores in the Cal-Sag Channel were listed as 42 and 37.5, both of which are <45, and fall into the "poor" category according to Table 1 on page 2 of the report.

A. Do you agree that QHEI scores of 42 and 37.5 fall in the "poor" category according to QHEI protocol?

B. If the correct QHEI scores were applied to the Calumet-Sag Channel in the same manner as the rest of the CAWS, would this change Mr. Rankin's recommended category for the Calumet-Sag Channel?

Questions for Rob Sulski

1. As the project manager of the CAWS, please explain the following:

   A. How was data quality and representativeness addressed in the UAA?

   B. Were all of the surveys performed in accordance with USEPA, IEPA or other generally-accepted quality control procedures?

2. On page 3 of your pre-filed testimony, in referring to the Chicago Area Waterway System, you state: "This modified river system has served Illinois in excess of 100 years in multiple and to a great extent competing, perhaps even conflicting, ways."

   A. Explain what are the "competing" and "conflicting" ways?

   B. Did IEPA set priorities for these competing and conflicting uses when they developed their proposed regulatory approach? If yes, please identify how the uses were prioritized.

3. On Page 3-4, of your pre-filed testimony, you state: "There was and continues to be sound reasoning to custom tailor water quality standards for this system to coincide with its own unique configuration and functions as we establish environmental uses and goals to achieve and protect its ecological and recreational potential. The system must still support other critical functions, particularly urban drainage, flood control and navigation."

   A. What are the IEPA's current procedures for establishing microbial water quality standards for the CAWS that are tailored to the use of the waterway?

   B. Please explain how the functions of the waterway including urban drainage, flood control, and navigation affect the microbial water quality of the CAWS.

   C. Do you foresee that the current physical conditions and primary functions of the CAWS and Lower Des Plaines River could be changed to accommodate more recreation uses in the near future? If so, please explain.

4. On page 4 of your pre-filed testimony, in reference to the CAWS, you state: "Its potential continues to be somewhat tempered by its unique physical and habitat characteristics as well as lingering, albeit diminishing, legacy contamination from prior decades of neglect."

   A. Is "legacy contamination" referring to polluted sediments?

   B. What evidence is there in the record that "legacy contamination" is diminishing?

5. On Page 6 of your pre-filed testimony, you present the six "factors" identified in the UAA model that preclude a waterbody from achieving Clean Water Act goals. Please explain

whether and how the following issues were addressed while considering the six factors identified in the UAA model:

A. Sediment re-suspension caused by commercial navigation (barge traffic) in the CAWS can cause increased levels of metals and persistent organics in the waterway, and can lead to depletion of dissolved oxygen in the water column.

B. WRPs account for the majority of the flow in the CAWS. Restrictions on Lake Michigan supplemental water limit the ability to maintain flow for aquatic life or to dilute WRP effluents.

C. Historically impacted sediments contribute to high levels of SOD in stagnant reaches of the waterway.

D. Important requirements for flood control, navigation, and effluent discharge preclude conversion to natural state.

E. Large stretches of CAWS are steep lined banks.

F. Capture and treatment, including disinfection, of CSO outfalls and other non-effluent discharge points is operationally and economically impractical.

6. On page 7 of your pre-filed testimony, you state: UAA factors 3, 4, and 5 limit "aquatic life potential" in the lower Des Plaines River.

A. Please explain or define "aquatic life potential" as it relates to the CAWS.

B. Do factors 3, 4, and 5 limit the aquatic life potential in the Chicago Area Waterway System? If yes, please explain how.

7. On page 8 of your pre-filed testimony, you state: "After consideration, Illinois EPA decided that the Brandon Pool warranted no recreational use protection..." and proposes to designate the reach as Non-Recreational.

A. Identify the reason(s) used by the IEPA for designating the Brandon Road navigational pool as Non-Recreational.

B. State each reason why the entire Chicago Sanitary and Ship Canal should not be considered as Non-Recreational, and specify support in the record for such reasons.

8. On page 9 of your pre-filed testimony, you state: "Illinois EPA's proposed use designations incorporate additional habitat and aquatic life and recreational data not available at the conclusion of CDM's contract obligations toward the CAWS UAA. The additional data can be found in Attachments S and MM of the Statement of Reasons."

A. Attachments S and MM appear to deal with the Lower Des Plaines River. What new data from the CAWS were used? Where in the record are the data located?

B. Has any biological data collected in the CAWS after 2002 been considered in IEPA's proposal? If not, please explain.

9. On page 9 of your pre-filed testimony, you state: [for the CAWS] "... CDM recommended two aquatic life uses, one composed of a fisheries consisting of some important sport fish species, and another where straight-walled, deep-draft shipping channels limit the fisheries to predominantly tolerant species."

A. Define "important sport fish species."

B. What are the important sport fish species?

C. Define "predominantly tolerant fish species."

D. Identify which fish species should be included in a community of predominately tolerant fish.

E. Explain why some important sport fish species were included in one of the aquatic life use categories?

F. Explain what environmental and/or other factors were used by the IEPA in determining the difference between the two aquatic life uses proposed for the CAWS?

G. Why does the IEPA not include the phrase "some important sport fish species" in the definition of CAWS Aquatic Life Use A Waters in IPCB R08-9?

H. Do "important sport fish species" and "predominantly tolerant fish species" have different dissolved oxygen requirements?

10. On Page 9 of your pre-filed testimony, you state: the protected uses of the CAWS include "hand-powered boating and wading."

A. Define what specifically is included in the definition of "hand-powered boating".

11. On page 11 of your pre-filed testimony, you state that the CAWS UAA demonstrates through recreational surveys and other investigations that "...primary contact recreation is not attainable..." in the CAWS. According to Attachment B, the UAA Report at Table 4-52, page 4-85, there were limited observations of swimmers and "hand-powered boaters" observed in the Cal-Sag Channel and CSSC (0 and 1, respectively, according to the UAA Report at Table 4-42, page 4-70). At page 3-3, the UAA Report clearly warns of the dangers to hand-powered boating in the CSSC. In light of this, please answer the following:

A. Can you give examples of primary contact activities?

B. Does IEPA consider kayaking or any other recreational activities reported in the UAA as primary contact activities?

C. Has IEPA developed a list of primary contact activities that are not suitable for the CAWS?

D. How many observed recreators constitute frequent enough occurrence to warrant protecting for a given use?

E. Did all stakeholder participants in the UAA agree that primary contact recreation does not occur and is not attainable in the CAWS?

F. What prompted the IEPA to disregard the warning in the UAA Report that hand-powered boating in the CSSC and Cal-Sag Channel is dangerous and propose that this activity is a designated use in these waterways?

G. What basis or recreational evidence did IEPA have for upgrading the CSSC to Incidental Contact Recreation in the proposed standards, when the CAWS UAA Report recommended that the CSSC be designated Recreational Navigation? Explain in detail the reasons and science behind the IEPA's decision to reject this recommendation

H. What data, in addition to what is presented in the UAA report (Attachment B), were used to determine the current level of recreators on the CAWS? The UAA Report indicates very low usage in some areas, yet most all of the CAWS was designated the highest of the secondary recreational uses.

I. Did IEPA consider any quantitative data regarding commercial barge traffic in the CAWS similar to the recreational observation data that was analyzed? If so, what were IEPA's conclusions regarding commercial use in the CAWS?

J. Where recreational uses are known to be dangerous or in conflict with existing navigational uses, what is IEPA's position on designating these uses even when water quality standards alone cannot protect them? Should such use be prohibited?

12. On page 12 of your testimony, you state: "The reach of Calumet River from Torrence Avenue to the O'Brien Lock and Dam is being proposed for designation as Incidental Contact Recreation, because some smaller craft recreational boating occurs there." And, on page 11 of your pre-filed testimony, you list activities ranging from fishing to small craft recreational boating as requiring Incidental Contact Recreational Use standards.

A. What basis did IEPA have for determining which recreational activities would be appropriate for the various categories of recreational use?

B. Please state all reasons and cite to all data in the record that IEPA has and used to determine that recreators participating in these activities are exposed to similar quantities of water and experience a similar risk of ingesting water?

C. Is it your opinion or that of the IEPA that someone fishing from the shore is likely to ingest the same amount of water as someone kayaking in the channel?

13. Currently, the U.S. Coast Guard can issue a reckless behavior ticket for non-motorized boating in the CSSC because of the dangers associated with barge traffic and lack of points for exit (see IEPA attachment JJ). The proposed standards designate the CSSC as limited contact recreational waters from its easternmost point of origination to its junction with the Cal-Sag Channel, and then designate it as non-recreational water to its confluence with the Des Plaines River.

A. What properties of the CSSC upstream of its confluence with the Cal-Sag Channel are going to change previous to the promulgation of these use designations to ensure the safety of non-motorized boaters in this reach of the CSSC?

14.. On page 12 of your testimony, you state that IEPA is recommending two different recreational water uses for the Calumet River. It is recommending that the segment in the Calumet River from Torrence Avenue to the O'Brien Lock and Dam be designated as Incidental Contact Recreation because smaller craft recreational boating occurs, and that the segment in the Calumet River from Torrence Avenue to Lake Michigan be designated as Non-Contact Recreation. Non-Contact Recreational Use is defined as "...any recreational or other water use in which human contact with the water is unlikely, such as pass through commercial and recreational navigation, and where physical or flow conditions make direct human contact unlikely or dangerous."

A. Explain why IEPA decided to recommend two different recreational water uses for the Calumet River?

B. Do the smaller craft recreational boats in this segment have to be docked in the waterway or just passing through the waterway?

C. Are the physical or flow conditions that make direct human contact unlikely or dangerous present in the segment of the Calumet River from Torrence Avenue to the O'Brien Lock and Dam?

D. Explain why the segment of the CAWS from Torrence Avenue to the O'Brien Lock and Dam was not designated as Non-Contact Recreation?

E. Explain what recreational activities or other factors occur in the two Calumet River segments that allowed the Illinois EPA to recommend two different recreational water uses for the waterway?

15. On page 13 of your testimony, you state: "Illinois EPA has concluded that the Chicago Sanitary and Ship Canal downstream of the junction of the Calumet-Sag Channel and the Brandon Pool are not appropriate for Incidental Contact or Non-contact Recreational Uses," and thereby were designated as Non-Recreational Use Waters. Non-Recreational Use Waters are "dominated by shipping traffic, are composed of vertical-walled, deep-draft channels and are lined with private industrial facilities that do not allow public access to the waterways." The Chicago Sanitary and Ship Canal above the junction with the Calumet-Sag Channel has similar physical features and waterway uses as the downstream section of the waterway (see Attachment B, UAA Report, Section 4.4, page 4-69). Widespread commercial navigation occurs in the segment of the Chicago Sanitary and Ship Canal above the junction of the Calumet-Sag Channel (see UAA Report, Section 4.4.1, page 4-70). The walls along the banks are vertical (see Attachment B, UAA Report, Section 4.4, page 4-69). The waterway is a deep-draft channel lined with private industrial facilities that do not allow public access to the waterway (see Attachment B, UAA Report, Section 3.1.1.1, page 3-3).

A. Because the waterway segments are alike, explain why the IEPA assigned a higher recreational use (Incidental Contact Recreation) for the segments of the Chicago Sanitary and Ship Canal from the junction of the Calumet-Sag Channel to the South Branch of the Chicago River?

B. Will pass through commercial and recreational navigation be allowed in non-recreational waters? If so, what is the difference between non-contact recreation and non-recreation waters?

16. On page 13 of your testimony, you state: "In other reaches, the existing aquatic life falls short of its attainable biological potential. In reaches where attainable uses are not being met Illinois EPA has concluded that low dissolved oxygen and high temperatures are major water quality constraints."

A. Please explain how IEPA determines the "attainable biological potential" of a waterway.

B. Define "low dissolved oxygen."

C. Define "high temperatures."

D. How was it determined that low dissolved oxygen and temperature were the limiting constraints on existing aquatic life?

E. Please cite to scientific data in the record confirming that low dissolved oxygen and water temperature are the major stressors for the waterway segments in the CAWS where attainable aquatic life uses are not being met.

F. The UAA report concludes that major habitat limitations occur throughout the CAWS. Did IEPA consider physical habitat impairment as a major water quality constraint in the waterway system? If not, please explain why it failed to do so.

G. Does the IEPA believe that poor physical habitat is the primary reason that waterway segments in the CAWS are not meeting the aquatic life use goals of the Clean Water Act? Please explain.

17. Describe the fish and benthic invertebrate communities that have the potential to occur in CAWS Aquatic Life Use A Waters.

18. Describe the fish and benthic invertebrate communities that have potential to occur in CAWS Aquatic Life Use B Waters.

19. On pages 16 and 17 of your testimony, you state that IBI scores in ALU A waters "generally range from 22 to 30, which are expected in waterways with poor to fair habitat attributes," while in ALU B waters "IBI scores generally are below 22, which are to be expected in waters with very poor to poor habitat attributes."

A. Given the wide range of IBI scores calculated for each station (according to Figure 5-2 of the UAA Report), which values were used to categorize the CAWS?

B. Was a median or mean value employed?

C. How did IEPA address this variability in IBI scores?

20. On pages 16 and 17 of your pre-filed testimony you discuss the fact that IEPA used QHEI and IBI values for determining the proposed aquatic life uses for the CAWS.

A. Why was the abundant benthic invertebrate and sediment quality data contained in the UAA not used by the IEPA in the process of determining the aquatic life uses for the CAWS?

21. On page 16 of your testimony, you state that "QHEI scores in the CAWS ALU A waters generally range from 40 to 55."

A. Why was a QHEI of 40, which includes some stations that would be described as "poor," used as the cut-off, as opposed to setting the boundary at 46, where the "fair" habitat descriptor begins?

B. Under what circumstances would a station that scored less than a QHEI of 40 be classified as ALU A, in spite of the low score?

C. What specific habitat metrics in the QHEI for Aquatic Life A Waters cause the physical habitat value to be higher than in Aquatic Life Use B Waters?

22. On Page 18 of your testimony, you state: The UAA found that attainable uses were in some cases not achievable without overcoming dissolved oxygen, temperature and bacteria limitations. Waterway aeration, waterway flow augmentation, effluent cooling and effluent disinfection are the recommended options for overcoming the limitations." However, you acknowledge on Page 7 of your testimony that "...UAA factors 3, 4 and 5 limit aquatic life potential and preclude possibilities for safe primary contact recreation."

A. What is the scientific basis upon which you conclude that the proposed options are the cost-effective options for achieving proposed use designations?

B. Because primary contact recreation in the waterway is excluded in the IEPA's use designation proposal, what leads you to conclude that the benefits of effluent disinfection outweigh the cost to tax payers and overall adverse impact to the environment?

C. Has the IEPA studied the unintended environmental consequences that will result from effluent disinfection and artificial supplementation of dissolved oxygen? Does IEPA believe that such considerations are relevant? Did the IEPA weigh these environmental costs against the alleged benefits of effluent disinfection and artificial supplementation of dissolved oxygen? If so, how?

23. On page 18 of your testimony, you state that: "In order to reduce bacteria levels, effluent disinfection would be required at all domestic wastewater treatment works discharging into water designated for Incidental Contact and Non-contact Recreation Use." Also, on Page 19, you state that: MWRDGC has indicated that if they were to undertake disinfection at their facilities they would likely use UV treatment, but would be free to select between any available technologies that would meet the 400 fecal coliforms per 100 mL requirement of 35 Illinois Administrative Code Section 304.224.

A. What bacteria level will remain in the CAWS if disinfection at all of the MWRD plants were implemented?

B. To what extent will reduction of bacteria concentrations to this level decrease human risk of illness?

C. What is the current health risk to incidental contact and non-contact recreators due to bacteria levels in the CAWS, without disinfection?

D. Does IEPA have data to show that effluent disinfection will result in reduction of bacteria in the waterway?

E. What data does IEPA have to demonstrate that imposition of indicator effluent limits on the District's WRPs will reduce the levels of pathogens in the waterway?

F. Data published in peer-reviewed technical literature indicates that there is no statistically significant correlation between pathogens and indicators in surface water bodies. How does IEPA protect the public by establishing effluent criteria for indicators?

G. What evidence does IEPA have that the indicator effluent criteria for fecal coliform will protect recreational users of the CAWS from pathogen exposure and pathogen related illness?

H. Does IEPA have data to demonstrate that the effluent fecal coliform criteria will protect the recreational users under both dry and wet weather conditions?

I. What data did you analyze to determine the microbial pollutant loads from different sources in the waterway?

J. What data do you have to demonstrate the microbial pollutant loads from different sources in the waterway during dry and wet weather conditions?

K. What knowledge do you have of the relative contribution of sources other than the District's effluents on microbial pollutant loads in the CAWS during wet weather conditions?

L. What data does the IEPA have to demonstrate that if the fecal coliforms in the District's effluents meet the IEPA discharge criteria, then different reaches of the waterway would be free of pathogens and safer for recreational use?

M. Are you aware of any outbreaks of disease associated with the recreational use of the waterway?

N. Why would non-contact recreation require the same bacterial criteria as incidental contact recreation?

O. What are the fecal coliform densities in receiving water upstream of the WRPs and in major tributaries to the CAWS? To what extent do pathogens in these waters contribute to the overall risk to CAWS recreators?

P. The USEPA has dropped the fecal coliform bacteria as an indicator of health risk and the scientific community is currently questioning other bacterial indicators. Can you explain the rationale for eliminating the fecal coliform indicator and revising the national criteria for bacterial water quality standards and its applicability to the CAWS?

Q. The USEPA's Municipal Wastewater Disinfection EPA/625/1-86/021 Manual requires disinfection in those instances where significant disinfection benefits outweigh the environmental risks and costs. Have these conditions been

demonstrated or even considered in the CAWS? If so, where in the record is it documented?

24. During the stakeholder process, IEPA requested that the District undertake a microbial risk assessment in wet and dry weather in order to evaluate the need for disinfection at water reclamation plants. Why is the IEPA proposing bacterial effluent standards before the results of these studies are published?

25. The Clean Water Act requires that revised or new water quality standards shall consist of the designated use and the water quality criteria necessary to protect that use [33 U.S.C. §1313(c)(2)(A)].

A. Do you think it is justified to establish a designated use without setting appropriate criteria to protect the designated use? If so, please state the reasons why and cite to appropriate authority

26. On page 19 of your testimony, you state that: Technology-based effluent disinfection has been a long-standing requirement for and has been successfully used by domestic wastewater treatment facilities throughout the State, dating back to the original 1970s Board regulations."

A. Define the word "successfully" in this statement?

B. Are you aware that in 1976, EPA deleted the fecal coliform standard from its definition of secondary treatment, stating that the benefits achieved by disinfection should be weighed against the environmental risks and costs? Did the IEPA do so in this case?

C. Can disinfection designed to remove indicators be effective in the removal of pathogens and in the reduction of pathogen risks?

D. What are the risks associated with microbial pathogens compared to those associated with disinfection by-products (DBPs) which are persistent chemicals and some of which have relevant toxicological characteristics?

E. Does IEPA have an inventory of probable DBPs that have the potential to form in the CAWS and to cause adverse health effects?

F. Has IEPA performed a risk assessment for exposure to DBPs?

G. Considering post-disinfection re-growth of bacteria, relatively poor virucidal or protozoa effectiveness of certain technologies, and generation of persistent DBPs, what evidence is in the record that wastewater disinfection will yield improved effluent and receiving water quality?

27. On page 20 of your testimony, you state that: "Under Section 27 of the Environmental Protection Act, the Board is also required to take into account the economic reasonableness of

rulemaking proposals before it. To assist the Board with this mandate, the Agency encouraged stakeholders to present information quantifying the economic impacts upon their individual operations. That information was used by the Illinois EPA in formulating our petition and is intended to assist the Board as it considers the rulemaking proposal."

A. How is economic reasonableness defined?

B. Did IEPA use the economic impact information in formulating its petition? If yes, please explain in detail the basis of its determination that the rules proposed are economically reasonable.

Questions for Roy Smogor

1. Do you consider yourself an expert in the designation of aquatic life uses in waterways of the nature of the CAWS and Lower Des Plaines River, that is effluent based waterways, and development of dissolved oxygen standards protective of aquatic life in waterways of that nature? If so, please describe your background, particularly with respect to aquatic life uses and dissolved oxygen standards. Also, please provide a list of your publications in the field of aquatic life uses and dissolved oxygen standards in effluent based waterways.

2. On page 3, paragraph 1 of your pre-filed testimony, you state: "Illinois EPA proposes that the lowest applicable level of biological potential service as the aquatic-life goal for the remaining part of the Chicago Area Waterway System and part of the lower Des Plaines River, these waters are collectively called "Chicago Area Waterway System and Brandon Pool Aquatic Life Use B Waters." This final level of biological potential represents the capability to maintain aquatic-life populations predominated by individuals of tolerant types that are adaptive to the unique physical conditions, flow patterns, and operational controls designed to maintain navigational use, flood control, and drainage functions in deep-draft, steep-walled shipping channels."

   A. Is the only difference identified in the definitions between A and B Waters that the aquatic life in B Waters reside in deep-draft, steep-walled shipping channels.

   B. Please define "deep-draft".

   C. Please define "shipping channels".

   D. Please explain why the IEPA proposes that the Calumet-Sag Channel, Little Calumet River, and the Calumet River from the O'Brien Lock and Dam to Torrence Avenue be classified as CAWS Aquatic Life Use A Waters in IPCB R08-9.

   E. Please explain what characteristics differentiate these waterways from the CAWS Aquatic Life Use B Waters.

3. On Page 2 and 3 of your pre-filed testimony you discuss the aquatic life use designations applied to the CAWS. You testify that ALU A Waters are predominated by "individuals of tolerant or intermediately tolerant types...," while ALU B Waters are "predominated by individuals of tolerant types..."

   A. Please define "intermediately tolerant aquatic life organisms".

   B. Please explain how "tolerance" is determined for aquatic life organisms.

   C. Please describe the fish and benthic invertebrates in an aquatic community predominated by tolerant and intermediately tolerant types.

D. Please identify the species that were included as tolerant, intermediately tolerant, and intolerant that are adaptive to the unique physical conditions flow patterns, and operational controls necessary to maintain navigational use, flood control, and drainage functions of the waterway system.

E. What specific species of fish does IEPA believe can be supported in ALU A versus ALU B waters?

F. Does IEPA have any scientific data or evidence indicating DO requirements for the fish species that they expect to find in ALU A waters? If so, please identify that scientific data.

G. Is the enhanced seasonal DO requirement proposed for ALU A waters meant to protect early-life stages?

H. Is there data or evidence of fish spawning in all of the waters proposed to be designated ALU A? If so, please discuss it and indicate where it is presented.

I. Has IEPA analyzed the CAWS fish data to determine life stages present in various waterways?

J. Do the proposed IEPA designated Aquatic Life Uses for the CAWS fit within the long-term fisheries management strategies that the Illinois Department of Natural Resources have for the CAWS?

4. In discussing the final designation of the Chicago Area Waterway System and part of the Lower Des Plaines River as Chicago Area Waterway System and Brandon Pool Aquatic Life Use B Waters, on Page 3, paragraph 1, of your pre-filed testimony you state: "This final level of biological potential represents the capability to maintain navigational use, flood control, and drainage functions in deep-draft, steep-walled shipping channels."

A. Please explain why the Calumet-Sag Channel, in view of the fact that it fits this physical description, is not defined as Aquatic Life Use B Waters in the IEPA's proposed aquatic-life use designations.

5. On page 3, paragraph 2, of your pre-filed testimony, you state: "Illinois EPA primarily bases these proposed aquatic-life uses and designations on direct measurements and observations of the chemical and physical conditions in these waters and on how foreseeable improvements in these conditions--or lack thereof--relate to the potential biological condition. Illinois EPA also considered direct observations, including measures of biological integrity, of the types, life stages, and relative numbers of aquatic organisms that have lived or currently live in the Lower Des Plaines River and the Chicago Area Waterway System. Although understanding the past and present biological conditions of these waters provides essential context, the primary responsibility in defining and designating aquatic-life uses is to consider what level of biological condition represents a reasonable and attainable goal from now into the foreseeable future."

A. Please define "biological condition."

B. Please define "reasonable goal."

C. Please define "foreseeable future."

D. Please explain what is the process/methodology used by the Illinois EPA to determine the different levels of biological condition that are reasonable and attainable in a waterway in the CAWS from now and into the future?

E. Do you foresee that improvements in the physical conditions of the CAWS or that any functional change from navigational use, flood control, and urban drainage, which are the primary uses of the CAWS, could happen in the foreseeable future (i.e. 10 years)?

6. In contrast to your pre-filed testimony on page 3 regarding the basis for the IEPA's proposed aquatic life uses, page 5-8 of Attachment B, the UAA report, states that the 75th percentile IBI scores were used to designate the aquatic life use tiers for the CAWS. The IEPA used the Ohio Boatable IBI in the UAA report to assist with conclusions concerning aquatic life use designations.

A. Are you aware that on November 8, 2006, Ohio EPA published *"2006 Updates to Biological Criteria for the Protection of Aquatic Life: Volume II and Volume II Addendum Users Manual for Biological Field Assessment of Ohio Surface Waters"* and made it available on the internet at: *http://www.epa.state.oh.us/dsw/documents/BioCrit88_Vol2Updates2006.pdf*

B. Are you aware that on page 1 of this document, two modifications to the calculation of the Ohio boatable IBI that were published in the original volume II of October 30, 1987 (updated January 1, 1988), as follows:

> Volume II, P. 4-56, Modifies Table 4-6
> Metric 'Fish Numbers' should read:
> >450 200-450 <200
> Footnote c (see Appendix B) should have been changed to (see Table 4-10).

C. Are you aware of this modification to the calculation of the Ohio Boatable IBI?

D. Are you aware that this modification corrects errors in the calculation of the Ohio Boatable IBI that would be present if such an IBI were calculated without the modifications being taken into account?

E. Were the modifications in the 2006 Update to Vol. II taken into account for calculation of the values of the Ohio Boatable IBI that were used for the UAA Report (Attachment B)?

F. Would you consider an error in calculation of an IBI value that was >4 IBI units to be significant? If not, why not.

G. Would you consider significant calculation errors in IBI values as sufficient reason for reassessment of the IEPA's decisions on Aquatic Life Use designations?

H. Could the calculation errors potentially change the Aquatic Life Uses that were designated for certain waterways? If not, why not?

I. Would you agree that Table 4-11 on page 4-17 of Attachment B, the UAA Report, contains an inaccurate IBI scoring measure for "fish number" and special scoring procedures (special procedures should be used when relative numbers are less than 200/1.0 km, not 200/0.3 km.).

J. Is IEPA able to provide IBI scores that were reported for CAWS in a tabular form, so the calculations can be more easily compared?

K. If the IEPA standards proposal is based on flawed Ohio IBI calculations, do you agree that the calculations should be corrected before proper Aquatic Life Use designations can be made?

L. Why was the Ohio Boatable IBI chosen as a guide to evaluate the fish communities in the CAWS when this IBI was initially created in Ohio and calibrated using Ohio fish data?

M. Why did the IEPA choose to ***base*** the aquatic life use designations on the Ohio Boatable IBI rather than just using it as a guide?

N. How do the fish communities in the CAWS compare to the fish communities that were initially used to calibrate the Ohio Boatable IBI?

O. Is it your opinion that the metrics used to calculate the Ohio Boatable IBI are applicable to the CAWS?

P. Would you agree that an IBI calibrated to fish data collected from the immediate region in and around CAWS be more accurate in describing that fish community and assessing its condition?

Q. Please describe how metrics used to calculate the Ohio Boatable IBI are applicable to the CAWS.

R. What are the possible sources of error that could occur in using an IBI calibrated for another region?

S. Are you aware that the original IBI by Karr et al. in 1986 and used by IEPA and IDNR in the 1980s and 1990s was formulated using data from the CAWS as part of the total Illinois data set. (Reference: Karr, J.R., K.D. Fausch, P.L. Angermeier, P.R. Yant, and I.J. Schlosser, Assessing Biological Integrity in Running Waters. A Method and Its Rationale, Illinois Natural History Survey Special Publication 5, 1986)?

T. Was the IBI formulated by Karr, et al. considered as an appropriate measurement for the CAWS? If not, why not?

U. Please explain what chemical conditions exist in the CAWS.

V. Please explain the process by which measurements and observations of chemical and physical conditions in the CAWS were related to potential biological conditions.

W. Please explain how the Illinois EPA used chemical conditions in the CAWS for proposing aquatic life uses?

X. How was QHEI used?

Y. Was the QHEI modified for use in the CAWS which is unique and not a typical boatable river system?

Z. Impervious surfaces have been demonstrated to have significant impacts on aquatic life indices when greater than 15 percent of a watershed is impervious. Cook County has been estimated to have over 40 percent impervious surfaces. How did you account for this extreme watershed modification in your approach?

AA. How did you account for limitations to biological communities in the CAWS posed by thick layers of silty sediments that contain legacy contaminants that are often stirred up by commercial and recreational boat traffic?

BB. Were MBI or other macroinvertebrate indices generally used during the UAA process? If so, please explain how they were used.

CC. Was macroinvertebrate data collected by the Metropolitan Water Reclamation District of Greater Chicago (District) and IEPA used along with QHEI and IBI scores to determine the potential ALUs of various segments of the CAWS? If not, why not?

DD. Has the IEPA analyzed any sediment chemistry or toxicity data in the CAWS?

EE. Is it possible that sediment toxicity can be a factor in what ALU is attainable for a given waterway? If so, how did IEPA evaluate this?

FF. Do you have an opinion as to whether sediment contamination affects fish and invertebrates in the CAWS? If so, what is that opinion?

GG. Were sediment contamination data evaluated during the UAA process? If so, please explain how. If not, why not?

HH. Please explain how the benthic invertebrate and sediment quality data were used by IEPA in the process of determining the aquatic life uses for the CAWS.

II. Would you consider habitat the limiting factor for fish and macroinvertebrates in ALU A waters, given the "unique physical conditions, flow patterns, and operational controls..." that are present?

JJ. Where in the documentation that IEPA has put into the record for this rulemaking is the methodology and basis for the Aquatic Life Use designations that were made? Please cite to specific exhibits in the IEPA's proposal and supporting testimony.

KK. Is the documentation relied upon by the IEPA to determine the ALU detailed and complete enough for someone outside the agency to be able to replicate or verify the methodology and supporting information that was used?

7. On page 4 of your pre-filed testimony you state: "The dissolved oxygen standards being proposed for the Chicago Area Waterway System and the Lower Des Plaines River are consistent with the standards already recommended to the Board by Illinois EPA in the pending rulemaking, R04-25."

A. In making this statement, did you take into account that the CAWS are unique among waterways in the state and are not designated "general use waters" as is the case in Rulemaking R04-25?

B. Would you agree that the CAWS are not capable of supporting general use biological communities? If so, please explain why you support a general use dissolved oxygen standard in the CAWS and Lower Des Plaines River.

C. Did you account for behavior of the system under wet weather conditions in proposing this dissolved oxygen standard for the CAWS and Lower Des Plaines River?

D. In your opinion, is it reasonable to prescribe DO standards for CAWS which are, nearly universally, substantially higher than existing standards in other states?

E. In proposing this standard, did you consider that it may potentially lead to propagation and proliferation of less tolerant species than are currently found in CAWS?

F. Would you agree that there is a risk that occasional CSOs, flow stagnation, higher temperature regimes, and oxygen demand from resuspended sediments can combine to very quickly and unpredictably impact these less tolerant fish populations and negate the benefits of the additional aeration that will be required to achieve the standards? If not, why not?

G. Millions of dollars are being spent to construct and maintain an electronic barrier to prevent invasive species from entering the Great Lakes basin from the Mississippi River basin. In light of this concern and expenditure, in your opinion is it appropriate to propose standards for the CAWS that will provide an environment that is potentially more conducive to the survival and propagation of invasive species? Please explain the basis for your opinion.

H. Attachment B, the CAWS UAA Report, recognizes that water quality improvements, like re-aeration, will not lead to attainment of aquatic life uses because of habitat limitations. In view of that, please explain how the IEPA proposed dissolved oxygen criteria will lead to attainment of the IEPA proposed aquatic life uses.

I. Attachment B, CAWS UAA Report, page 5-8, states that the CAWS is functionally similar to the Cuyahoga River Ship Canal in Ohio, yet the IEPA proposed dissolved oxygen criteria are much more restrictive within the CAWS than those assigned to the Cuyahoga River. Please explain how the IEPA has or has not considered this comparison?

J. In determining the DO standard, did you consider the dissolved oxygen model results previously conducted by the District and the fact that additional modeling will be conducted in 2008 to evaluate integrated strategies that incorporate multiple control strategies? If not, why not?

K. USEPA cites the additive and synergistic temperature effects on dissolved oxygen levels in natural environments. The UAA states that water temperatures within the CAWS likely contribute to lower dissolved oxygen levels. Did IEPA consider the seasonally stagnant and thermally stratified conditions known to occur within the CAWS as it relates to the IEPA proposed dissolved oxygen criteria?

L. Has the IEPA considered the affect of stratification and bidirectional flow on low dissolved oxygen in developing criteria for the CAWS? If not, why not?

M. In determining the DO criteria and proposed DO standards, did you consider the Representative Aquatic Species (RAS) list that was developed by Mr. Chris Yoder for evaluation of temperature standards in the various Aquatic Life Use waterways. If not, why not?

N. Based on Mr. Yoder's RAS list, would you agree that it is reasonable that, if these RAS 8 or RAS 8 + white sucker lists were appropriate for use in determining

protective temperature standards in ALU A versus B waters, they should also be used to evaluate dissolved oxygen (DO) concentrations?

O. Did IEPA take these RAS lists into consideration when they determined proposed DO standards to protect the proposed aquatic life uses?

P. Please summarize the data that the Agency has collected on presence and growth of early life stages in the CAWS to support the basis of the proposed DO standards?

Q. Where can these data be found and where can a complete description of the specific methodology that was applied to the CAWS be found in the pre-filed record?

R. Please summarize the expected benefits in terms of enhanced growth rates, increased presence of early life stages, etc. that you anticipate will occur if the proposed DO standards are implemented for all of the proposed Aquatic Life Use designations.

8. On page 4, paragraph 1, of your pre-filed testimony, you state: "The dissolved oxygen standards being proposed by the Illinois EPA are based primarily on criteria and corresponding justification in U.S. EPA's national-criteria document published in 1986. Illinois EPA used this document as a foundation from which to interpret and incorporate more-recent information specifically applicable to the dissolved oxygen needs of aquatic life in Illinois waters". What was the more recent information that was used by the Illinois EPA for establishing dissolved oxygen standards in the CAWS?

9. On page 5, paragraph 3, of your pre-filed testimony you state: "For the Chicago Area Waterway System Aquatic Life Use A Waters, Illinois EPA proposes dissolved oxygen standards similar to those for the Upper Dresden Island Pool, but designed to protect for less-optimal fish growth that is consistent with the proposed aquatic-life use designation."

A. Please define "less-optimal fish growth."

B. Does less-optimal fish growth relate to a specific life stage of a fish or to the larvae, young, and adult?

C. How do you define suboptimal growth conditions for fish?

10. On page 6, paragraph 1, of your pre-filed testimony, you state: "Therefore, because suboptimal growth of fishes is a characteristic of the lower biological potential of these waters, the proposed dissolved oxygen standards based on daily minima alone provide sufficient chronic protection for all life stages in Chicago Area Watery System Aquatic Life Use A Waters."

A. Please define what is meant by "lower biological potential."

B. Please describe what would constitute a "higher biological potential."

C. Please provide examples of waterways in the area that have higher biological potential, and explain why these waterways have a higher biological potential.

11. On page 6, paragraph 2, of your pre-filed testimony, you state: "For the third set of waters, called Chicago Area Waterway System and Brandon Pool Aquatic Life Use B Waters, the proposed dissolved oxygen standards are consistent with the incrementally lower biological potential of these waters compared to Chicago Area Waterway System Aquatic Life Use A Waters."

A. Please define "incrementally lower biological potential."

B. Please explain why the Illinois EPA believes that CAWS Aquatic Life Use B Waters have an "incrementally lower biological potential." Please provide citations to whatever supporting materials were relied upon to come to this conclusion.

C. What is the difference in the aquatic community in a "lower biological potential" waterway and an "incrementally lower biological potential" waterway?

D. What are the differences in the two aquatic communities that support a different dissolved oxygen standard for each waterway?

E. What are some examples of the different aquatic communities?

F. Where are the differences in aquatic communities that formulate the basis for the decision to propose different DO standards for Aquatic Life Use A and Aquatic Life Use B waters, documented in enough detail that they can verified and checked? Please cite to where that information can be found in the record.

12. In discussing CAWS ALU A waters, on Page 5, paragraph 3, of your pre-filed testimony, you state: "For sufficient protection under such limited growth situations, U.S. EPA's 1986 national-criteria document provides a chronic criterion of 5.0 mg/L as a daily mean average across seven days, for early life stages. For other life stages, U.S. EPA provides an analogous criterion of 4.0 mg/L." Further, on Page 6, paragraph 1, of your pre-filed testimony, you state: "Illinois EPA judges that this level of protection is sufficient to attain the already limited growth potential of fish in these waters."

A. Why does IEPA propose criteria that are more protective than those set forth in the U.S. EPA's 1986 national-criteria document for the CAWS?

B. What is the scientific basis for IEPA to propose dissolved oxygen standards of above 5.0 mg/L at all times for early life stage and seven day averages of daily minima above 4.0 mg/L for other life stages in the CAWS?

C. Why has IEPA proposed chronic standards that are based on 7-day averages of daily minima rather than 7-day average of the daily means as they have indicated is recommended in the USEPA 1986 criteria document?

Questions for Scott Twait

1. Do you consider yourself an expert in the development of water quality standards for waterways of the nature of the Chicago Area Waterway System (CAWS) and Lower Des Plaines River? If so, please describe your background, particularly with respect to physical, chemical, and bacterial water quality standards. Also, please provide a list of your published materials in the field of water quality standards for effluent dominated waterways.

2. On page 2 of your pre-filed testimony you state: "In most cases, identical numeric water quality standards are necessary to protect all of the proposed aquatic life use designations. The exceptions to this are temperature, dissolved oxygen, and ammonia."

   A. If you based the specific numeric standards on species known to exist in the CAWS, please identify the parameters for which this was done.

   B. Is there any testimony or documentation in the record where a clear and complete explanation is provided for the methodology and basis for the proposed dissolved oxygen and ammonia standards?

   C. Is the documentation in the record sufficiently detailed and complete that someone outside the IEPA could replicate or verify the methodology and data upon which these standards are based? If yes, please identify the documents in the record where this information is located.

   D. Explain why identical numeric water quality standards are necessary for the protection of all of the proposed aquatic life uses.

   E. Explain the reasons why temperature, dissolved oxygen, and ammonia water quality standards are not identical for the different aquatic life use proposed for the CAWS in IPCB R08-9. Please reference all documents in the record upon which you relied to make this determination.

3. On page 3 of your pre-filed testimony, you state: "There are a number of water quality standards where the most recent U.S.A. EPA National Criteria Document was found to be the same as or consistent with the current water quality standard on the books for the General Use Designation."

   A. Given that the CAWS are not general use waters and do not support biotic indices as high as would be found in general use waters, do you expect that these standards are more protective than is necessary? Please provide the basis of your answer.

   B. If the General Use standards are changed in the future to become more protective of fish populations typically found in these waters, this could lead to a further increase in level of protection in CAWS by virtue of having applied general use

standards to CAWS. Does this seem reasonable given the dissimilarity between CAWS and General Use waters? If so, please explain the basis for your answer.

4. On Page 4 of your pre-filed testimony, you state: "The federal criterion states that a pH range of 6.0 to 6.5 will be unlikely to be harmful to fish unless the free carbon dioxide present is in excess of 100 parts per million."

A. Why does the IEPA choose the proposed pH standards of 6.5 to 9.0, instead of requiring pH of 6.0 to 9.0 and free carbon dioxide less than 100 ppm, which should have equal protection to fish according to the federal criteria but allow more flexibility for compliance?

5. On page 6 of your pre-filed testimony, you state: "The proposed Cadmium water quality standard is the same as the General Use water quality standard."

A. Are you aware that the IEPA imposed the General Use cyanide standard on the CAWS despite the fact that the CAWS are not designated General Use waters and the IPCB has granted adjusted standard R95-14 to raise the chronic limit from 5.2 to 10.0 µg/mL based on specific fish species that are present in northeastern Illinois rivers including the CAWS?

B. What was the IEPA's rationale for ignoring the IPCB's previous finding on cyanide in the CAWS?

6. On page 6 of your pre-filed testimony, you state: "Contaminated sediment is scoured and resuspended by barge traffic." Your further state at pages 6 and 7: "Based on an analysis of the data, the Agency believes that a legacy of contaminated sediment prevents full attainment of the Clean Water Act aquatic life use in these waters and is the primary reason that the chronic national criterion cannot be met in the segments of the CAWS."

A. In light of the fact that the proposed hardness-based chronic standard equation for dissolved cadmium often results in a concentration very close (within 0.01µg/L) to the method detection limit (0.3 µg/L), is the the compliance data for this constituent reliable?

7. On page 9 of your pre-filed testimony, you state: "There is currently no chloride standard applicable to the Secondary Contact and Indigenous Aquatic Life Uses segments of the CAWS and Lower Des Plaines River. The proposed chloride water quality standard is exactly the same as the current General Use water quality standard of 500 mg/L. The General Use chloride standard has not been updated since the original adoption. The U.S. EPA's National Criteria Document recommends a Criterion Maximum Concentration of 860 mg/L and a Criterion Chronic Concentration of 230 mg/L."

A. Given that you indicate that the Federal criterion for Cl allows a maximum concentration of 860 mg/L, and given the highly urban environment and limited

aquatic habitat found in the CAWS what justification do you offer for setting the CAWS standard for Cl at 500 mg/L, over 40% lower than the Federal criterion?

8. On page 11 of your pre-filed testimony, you describe the methodology the IEPA used for the development of temperature standards in the CAWS and the lower Des Plaines River, which includes a Represented Aquatic Species (RAS) list of fish. You state that the IEPA determined that the CAWS Aquatic Life Use A and B Waters should use the option of the 8 species RAS list developed for the lower Des Plaines River by the Midwest Biodiversity Institute. You further state that the eight species are representative of the fish species found in Secondary Contact/Indigenous Aquatic Life Use Waters. The only difference in the RAS list is that the Illinois EPA included an additional species, white sucker, for CAWS Aquatic Life Use A Waters. Except for the white sucker, the fish community is the same.

A. Because the fish community is similar in CAWS Aquatic Life Use A and B Waters, please state the reasons why the IEPA proposed a different aquatic life use for CAWS Aquatic Life Use A Waters.

9. On Page 14, of your pre-filed testimony, you state: "The proposed thermal water quality standards are more stringent than the current Secondary Aquatic and Indigenous Aquatic Life water quality standards for all months. The proposed thermal water quality standards are also more stringent than the current General Use Standards for the months April through November, especially when considering the period average. During the remaining months, the proposed standards are approximately equivalent to the existing General Use Standards."

A. Are the fish in the current General Use waters less protected April through November because of less stringent thermal standards, or are the proposed thermal standards for the CAWS and Lower Des Plaines River overly protective?

B. What is the rationale for applying thermal standards to the CAWS and Lower Des Plaines River that are more stringent than or even equivalent to general use standards?

C. What is the rationale for switching back and forth between District effluent and Route 83 on the CSSC as background temperature in October?

10. On page 16 of your pre-filed testimony, while addressing bacteria, you state: "While the Agency is proposing that the Board adopt specific recreational use designations applicable within the CAWS and Lower Des Plaines River, we are recommending deferral of adopting any numeric bacterial water quality standards until sound information is available to support such a standard. As a precautionary measure to protect our recreating public, however, we are proposing to require wastewater treatment facilities discharging into any segments listed as Incidental Contact Recreation and Non-Contact Recreation to employ disinfection practices after a reasonable compliance period."

A. In light of the fact that recreational uses have been occurring for decades without disinfection, preliminary studies indicate that risks are very low and

implementation of disinfection will not occur prior to the completion of the remaining health studies, please state the basis for requiring disinfection of wastewater treatment effluents.

B. Are you aware of significant health risks or incidence of illness resulting from current recreational use of the CAWS?

C. Do federal and State laws allow establishment of an effluent water quality limit if no water quality standard is promulgated for the waterway receiving the effluent?

D. Water quality standards (which include designated uses and criteria to protect the use) serve the dual purposes of establishing the water quality goals for a specific waterbody and serve as the regulatory basis for the establishment of water quality based treatment controls and strategies beyond the technology-based levels of treatment required by sections 301(b) and 306 of the CWA. In the absence of criteria, what is the basis for the proposed technology-based treatment limitation of 400/100mL for fecal coliforms which is for protection of General Use waters?

E. Technology based treatment requirements under section 301(b) of the Act represent the minimum level of control that must be imposed in a permit issued under section 402 (NPDES) of the Act. For POTWs, effluent limitations shall be based on secondary treatment and on the "best practicable waste treatment technology" (BPT). Although BPT limitations generally apply to industrial discharge categories, EPA's "Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards [Page 2282]" states that in specifying BPT limitations, EPA must first consider the cost of achieving effluent reductions in relation to the effluent reduction benefits.

   a. Did IEPA consider non-water quality environmental impacts, including, but not limited to, energy requirements, emissions of greenhouse gases and Hg during power generation, potential introduction of disinfection by-products into the CAWS, etc. in establishing disinfection of wastewater treatment effluent limits? If yes, please identify all such factors considered and conclusions reached.

   b. In proposing the technology-based effluent limitation of 400/100mL for fecal coliforms, has the IEPA determined the risk reduction benefits?

   c. Has the IEPA determined that the benefits of disinfecting discharges to the CAWS justify the costs of achieving the effluent reductions? If yes, please describe the facts considered and conclusions reached.

11. The seasonal ammonia standard is for the period March through October, while the enhanced seasonal DO standard is March through July. If both standards are supposed to be more protective of early life stages, please explain why they do not have the same applicable time period.

12. How will IEPA deal with excursions from the dissolved mercury standards given that atmospheric deposition is the likely cause?

13. Attachment 1 (Letter to Marcia T. Wilhite), appended to your pre-filed testimony, states on page 1: "U.S. EPA has reviewed the new and revised water quality standards identified above and the information submitted by Illinois EPA in support of these amendments and hereby approves all of the new and revised standards identified above pursuant to Section 303(c) of the CWA and Federal regulations at 40 CFR 131.21." Section 1313(c)(2)(A) of the CWA, 33 U.S.C. §1313(c)(2)(A), also requires that revised or new water quality standards ***shall*** consist of the designated use **and** the water quality criteria necessary to protect that use.

A. Do you deem the proposal consistent with the requirements of the CWA and 33 U.S.C. §1313(c)(2)(A)?

14. Please identify the cases where the General Use Standards are actually necessary to protect the kinds of aquatic life that are likely able to sustain populations in the CAWS.

Questions for Chris Yoder

1. On page 9 of your testimony, you state: "Using existing field and historical data, I developed potential RAS lists for three designated use options that were considered by the contractors during the Lower Des Plaines UAA process." Midwest Generation has been annually monitoring the fish community in the lower Des Plaines River for over 20 years.

   A. Did you include the extensive historical fish data from Midwest Generation when you compiled the RAS lists? If not, please explain your reasoning.

Respectfully Submitted,

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

BY: Frederick M. Feldman

Frederick M. Feldman, Attorney

Dated: January 18, 2008

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Electronic Filing - Received, Clerk's Office, January 18, 2008

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
WATER QUALITY STANDARDS AND	)	
EFFLUENT LIMITATIONS FOR THE	)	**R08-9**
CHICAGO AREA WATERWAY SYSTEM	)	**(Rulemaking-Water)**
AND LOWER DES PLAINES RIVER:	)	
PROPOSED AMENDMENTS TO 35 Ill.	)	
Adm. Code Parts 301, 302, 303 and 304	)	

NOTICE OF FILING

To: see attached service list

PLEASE TAKE NOTICE that on January 18, 2008, the undersigned filed with the Illinois Pollution Control Board the Metropolitan Water Reclamation District of Greater Chicago's Pre-Filed Questions to the Illinois Environmental Protection Agency, a copy of which is hereby served upon you.

I HEREBY CERTIFY that I served this Notice and the above referenced documents by placing copies in an envelope, postage prepaid, and depositing it in the U.S. Mail, at 100 East Erie Street, at or before 5:00 p.m. on January 18, 2008.

Metropolitan Water Reclamation District
of Greater Chicago

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THIS FILING IS BEING SUBMITTED ON RECYCLED PAPER

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CERTIFICATE OF SERVICE

I, Frederick M. Feldman, an attorney, hereby certify that true copies of the foregoing Metropolitan Water Reclamation District of Greater Chicago's Pre-Filed Questions to the Illinois Environmental Protection Agency were filed electronically and via First Class Mail, by depositing the same in the U.S. Mail depository located at 100 East Erie Street, Chicago Illinois in an envelope with sufficient postage prepaid, on January 18, 2008 to the following:

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And that true copies of the foregoing Metropolitan Water Reclamation District of Greater Chicago's Pre-Filed Questions to the Illinois Environmental Protection Agency were mailed by First Class Mail, by depositing the same in the U.S. Mail depository located at 100 East Erie Street, Chicago Illinois in an envelope with sufficient postage prepaid, on January 18, 2008 to the following:

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