ORIGINAL

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
PROPOSED AMENDMENTS TO	)	R04-25
DISSOLVED OXYGEN STANDARD	)	
35 IILL. ADM. CODE 302.206	)	

PCB 103

NOTICE

TO: Dorothy Gunn, Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 W. Randolph Street 11-500
Chicago, Illinois 60601

Richard McGill, Hearing Officer
Illinois Pollution Control Board
James R. Thompson Center
100 W. Randolph Street, Suite 11-500
Chicago, Illinois 60601

SEE ATTACHED SERVICE LIST

PLEASE TAKE NOTICE that I have filed with the Office of the Clerk of the Pollution Control Board the Illinois Environmental Protection Agency's Pre-First Notice Comments on behalf of the Illinois Environmental Protection Agency, a copy of which is herewith served upon you.

Date: December 20, 2006

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

By: Stefanie N. Diers

Stefanie N. Diers
Assistant Counsel
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THIS FILING IS SUBMITTED ON RECYCLED PAPER

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35 Ill. Adm. Code 302.206	)	

Illinois EPA's Pre-First Notice Comments

Now comes the Illinois EPA ("IEPA"), by and through one of its attorneys, Stefanie N. Diers, and hereby respectfully submits to the Illinois Pollution Control Board ("the Board") its Pre-First Notice Comments in the above captioned regulatory proceeding. In support thereof, IEPA states as follows:

Introduction

In April 2004, the Illinois Association of Wastewater Agencies ("IAWA") filed its proposal to amend the dissolved oxygen standard for Illinois waters designated for General Use. In response to IAWA's proposal, the Illinois Department of Natural Resources ("IDNR") and IEPA recommended alternative revisions to the dissolved oxygen standard and filed their recommendations with the Board in April 2006.

There have been five hearings in this matter over the past two years; all agree that the current standard for Illinois General Use waters is too simplistic and inadequately accounts for how dissolved oxygen concentrations vary across a broad range of natural aquatic conditions throughout Illinois.

However, IEPA cannot support the proposal submitted by IAWA. The dissolved oxygen standards proposed by IAWA fails to adequately protect some *Illinois* fish and stream macroinverebrates that require minimum dissolved

oxygen levels higher than the minima represented by the IAWA-proposed standards.

In response to IAWA's proposal, IEPA and IDNR collaborated extensively to develop the technical basis for and to perform the analyses that resulted in the joint recommended revisions to the dissolved oxygen standard. The recommendations by IDNR and IEPA will adequately protect Illinois aquatic life while providing a more realistic and useful standard; the recommended revisions will improve IEPA's ability to focus on those streams that are truly having or are most likely to have dissolved oxygen problems.

IEPA and IDNR's recommended revisions differ from IAWA's proposed revisions in the following ways: 1) IEPA and IDNR define two levels of numeric standards, with a higher level that provides enhanced protection in waters that have organisms especially sensitive to low dissolved oxygen levels; 2) IEPA and IDNR provide a narrative standard for waters that naturally cannot achieve consistently higher levels of dissolved oxygen, e.g., wetlands, sloughs, river backwaters, and lake and reservoirs below the thermocline; 3) IEPA and IDNR recommend a longer period for the protection of early life stages of fish: March-July; and 4) consistent with USEPA 1986 national criteria document, IEPA and IDNR have included a 30-day chronic dissolved oxygen standard, i.e., daily mean averaged over 30 days. (Exhibit 23, P. 2-3).

There appears to be just a few areas of disagreement remaining between IAWA's proposal and the joint recommendations by IDNR and IEPA and these

comments will focus on those remaining issues, as well as addressing issues raised by other participants.[1]

Discussion

I. Waters Selected For The Higher Level of Dissolved Oxygen

Dennis Streicher testified that IAWA is most concerned about how the enhanced segments were selected by IDNR and IEPA. (R. of November 2006, P. 68). Mr. Streicher also testified that such selection by IDNR and IEPA was arbitrary and the chosen segments were scattered across the state. (R. of November 2006, P. 72-73).

Contrary to Mr. Streicher's interpretations, the analysis and selection of the Illinois streams that require higher levels of dissolved oxygen was not arbitrary. Rather, as explained in the joint technical support document (Exhibit 23) and as reflected in testimony by IEPA and IDNR, agency experts who know and understand Illinois streams and their resident aquatic life collaborated in a process that resulted in a subset (list) of General Use waters selected for higher dissolved oxygen standards. The basis for this list is well-documented and supported by the collective experience and expertise of IDNR and IEPA biologist. (Exhibit 23). This list is a primary feature of updating the current dissolved oxygen standard. IEPA believes that incorporating this list of selected waters in the standard is necessary to provide adequate protection for aquatic life in streams throughout the entire state.

[1] Since the filing of IEPA and IDNR's recommended revisions to the dissolved oxygen standard, IAWA has stated on the record that they support the narrative standard proposed by the Agencies and that they support the addition of the 30-day chronic standard. (R. of November 2006, P. 167 &182).

IDNR and IEPA testified that some Illinois waters (i.e., about 8% of the General Use stream miles) warrant dissolved oxygen levels higher than U.S. Environmental Protection Agency's (USEPA) "warmwater" criteria. This subset of Illinois waters need higher standards because of a meaningful amount of fish and macroinvertebrates that are more sensitive to low dissolved oxygen than the relatively few organisms on which the USEPA's "warmwater" criteria are based. (R. of April 2006, P. 33 and 34). IEPA and IDNR also testified that the dissolved oxygen necessary to protect the aquatic life in this selected subset of General Use waters is intermediate between the "coldwater" criteria and the "warmwater" criteria recommended in USEPA's national criteria document. (R. of April 2006, P. 33).

Roy Smogor from IEPA testified that he spoke with Edward T. Rankin about how Rankin's research of Ohio fishes and dissolved oxygen could help assist IEPA and IDNR identify Illinois fish species that were especially sensitive to low dissolved oxygen and thus deserving of dissolved oxygen standards higher than those based on the USEPA "warmwater" criteria. (R. of April 2006, P. 35). The two agencies then worked together to analyze which stream sites had a meaningful amount of sensitive organisms. (R. of April 2006, P. 35). After this analysis, IEPA and IDNR extrapolated the site-specific information and reviewed these extrapolations to identify a subset of General Use stream segments in Illinois that need dissolved oxygen standards higher than those based on the USEPA "warmwater" criteria. (R. of April 2006, P. 38-45). The resulting two levels of recommended dissolved oxygen standards are based

directly on an understanding of the differences in dissolved oxygen sensitivities among the biological communities occurring throughout Illinois. (R. of April 2006, P. 122). IEPA and IDNR are recommending higher dissolved oxygen standards for the locations (stream segments) believed to harbor meaningful amounts of the organisms that need dissolved oxygen higher than the levels represented by the USEPA "warmwater" criteria and higher the IAWA's proposed standards.

II. 6.25 Milligrams Per Liter As A Daily Average Over Seven Days

IAWA stated at the November 2006 hearing that they disagree with the inclusion of 6.25 milligrams per liter as a daily average over seven days as recommended by IDNR and IEPA. (R. of November 2006, R. 77-78). Mr. Streicher testified that the number chosen by IEPA and IDNR had no basis and was nothing more than a compromise. (R. of November 2006, P. 76).

However, IDNR and IEPA testified that 6.25 was chosen because it represents the midpoints point between the USEPA "coldwater" and "warmwater" chronic criteria. (R. of April 2006, P. 111, Exhibit 23, P. 8). IEPA and IDNR applied a technically sound, common-sense approach when selecting this number. (R. of April 2006, P. 111). IEPA and IDNR recognized and provided scientific evidence that some types of fish and aquatic macroinvertebrates that live in Illinois streams needed more protection than that provided by the USEPA "warmwater" criteria or by the IAWA proposed standards. However, these Illinois organisms do not necessarily need protection at the highest levels, as required by salmonids (i.e. trout and salmon). (R. of April 2006, P. 111). Therefore, a reasonable midpoint was chosen.

III. Early Life Stage Period

Compared to the IAWA proposal, IEPA and IDNR is recommending a longer early life stages present period (i.e., extending through July 31) for the protection of early life stages of fish and to ensure the long-term survival and viability of Illinois fish species, including smallmouth bass and channel catfish. (R.of April 2006, P. 44 & Exhibit 23, P. 23-31).

The USEPA's 1986 national criteria document for dissolved oxygen clearly emphasizes the need to protect for early life stages of fish. (Exhibit 2, P. 4 & 33). USEPA defines early life stages as, "Includes all embryonic and larval stages and juvenile forms to 30-days following hatching. (Exhibit 2, P. 34). Based on the scientific literature, IAWA's June 30 cut-off date likely fails to provide sufficient time for the protection of post-hatch and embryonic and yolk-sac fry development for several Illinois fish species. (R. April 2006, P. 44 & Exhibit 23, P. 26-31).

In Illinois, protecting the early life stages of fish through July 31 ensures adequate dissolved oxygen levels for these most-sensitive life stages and will also ensure that all later-spawning fish species will have completed a substantial majority of their spawning and fry development during the time when appropriate higher dissolved oxygen standards are in effect. (R. of April 2006, P. 44 & Exhibit 23, P. 23-31). Moreover, to adequately protect all Illinois fish in General Use Waters, IEPA and IDNR determined that the early life stages must include not only the typical early spawning period, but also part of the late spawning. This aspect accounts for the fact that, in some years, the relative importance of

the late-spawned fish is much greater than in a typical year when the majority of recruitment comes from the earlier-spawned individuals. (Exhibit 23, P. 24-25).

IAWA testified June 30 is the appropriate ending date of for the early life stages. (R. of November 2006, P. 90-91). Dr. James Garvey testified that whatever spawning occurs toward the end of the spawning period (in many cases these are July and August) is largely unimportant to the well being of the species. (R. of August 2005, P. 79-100 & Exhibit 16, attachment 8).

IDNR and IEPA reviewed the available literature for Illinois fishes that spawn in either the late spring or primarily in the summer. (Exhibit 23, P. 25-31). Based on the literature and on first-hand knowledge and field observations by IDNR, the Agencies concluded that an additional 30-day period (i.e., through July 31) is necessary to ensure the long-term survival and viability of fish species in Illinois General Use waters.

IV. Regulatory Language & Section 302. Appendix D

Based on questions and suggestions made at the hearings, IEPA has made a few changes to the regulatory language proposed in April of 2006.

In Section 302.206 Dissolved Oxygen, the following changes are being made to paragraphs (a), (b)(1),2(B) and (d)(4):

General use waters shall maintain dissolved oxygen concentrations at or above the minimum values contained in subsections (a), (b) and (c) of this Section.

(a) General use waters at all locations shall maintain sufficient dissolved oxygen concentrations to prevent offensive conditions as required in Section 302.203 of this Part. Quiescent and isolated sectors of General Use waters including but not limited to wetlands, sloughs, backwaters and <u>below the thermocline</u> in lakes and reservoirs ~~below the thermocline~~ shall be maintained at sufficient dissolved oxygen concentrations to support their natural ecological functions and resident aquatic communities.

(b) Except in ~~for~~ those waters identified in Appendix D of this Part, the dissolved oxygen concentration in the main body of all streams, in the water above the thermocline of thermally stratified lakes and reservoirs, and in the entire water column of unstratified lakes and reservoirs shall not be less than the following:

(1) During the period of March through July, ~~a dissolved concentration of:~~

(A) 5.0 mg/l at any time; and
(B) 6.0 mg/l as a daily mean averaged over 7 days.

(2) During the period of August through February, ~~a dissolved oxygen concentration of:~~

(A) 3.5 mg/l at any time;
(B) 4.0 mg/l as a daily minimum averaged over 7 days; and~~;~~
(C) 5.5 mg/l as a daily mean averaged over 30 days.

(c) The dissolved oxygen concentration in all sectors within the main body of all streams ~~and rivers~~ identified in Appendix D of this Part shall not be less than:[2]

(1) During the period of March through July, ~~a dissolved oxygen concentration of:~~

(A) 5.0 mg/l at any time; and
(B) 6.25 mg/l as a daily mean averaged over 7 days.

(2) During the period of August through February, ~~a dissolved concentration of:~~

(A) 4.0 mg/l at any time;
(B) 4.5 mg/l as a daily minimum averaged ~~averages~~ over 7 days; and
(C) 6.0 mg/l as a daily mean averaged over 30 days.

(d) Assessing attainment of dissolved oxygen mean and minimum values.

(1) Daily mean is the arithmetic mean of dissolved oxygen values measured in a single 24-hour calendar day.

(2) Daily minimum is the minimum dissolved oxygen value as measured in a single 24-hour calendar day.

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[2] After reviewing the language, IEPA is striking rivers from the proposed regulatory language. Using "streams" and "rivers" in the same sentence seemed redundant.

(3) The measurements of dissolved oxygen used to determine attainment or lack of attainment with any of the dissolved oxygen standards in this Section must assure daily minima and daily means that represent the true daily minima and daily means.

(4) The dissolved oxygen values used in calculating or determining any daily mean or daily minimum should not exceed the air-equilibrated ~~100% air-saturation~~ value.

Also, after further review a change needs to be made in Appendix D, P.3. A segment was mistakenly listed on the Enhanced Dissolved Oxygen List. Therefore, the change is as follows:

~~Des Plaines River~~
~~245~~
~~Start 41.3923135096469 88.25901242255285 Grundy~~
~~End 41.4325013563553 88.1725611633353 Will~~

V. Data Requested by IAWA

IEPA recognizes the need for additional dissolved oxygen continuous monitoring data and has committed staff and resources to meet this goal. At the April hearing, Dr. Garvey indicated that he (IAWA) would like IEPA to resample the sites collected in 2005. (R. of April 2006, P. 104). Following that hearing, Mr. Matt Short from IEPA called Dr. Garvey on May 4, 2006 to let him know this would not be possible due to the rotating basin program the Agency uses to monitor statewide on a 5-year schedule.

IAWA (Mr. Streicher) initially contacted IEPA (Mr. Short) via phone call on August 22, 2006 to request the continuous monitoring data being collected by the Agency during 2006. IEPA was unable to comply with the request as this was during the middle of the basin sampling season (July 1 - Oct 15) and the data were actively being collected. IEPA typically provides data to outside users in the

spring of the year following the collection. For 2006, the Agency's continuous dissolved oxygen monitoring focused on streams that were currently on the 303(d) list as impaired due to low dissolved oxygen. The dissolved oxygen monitoring sites corresponded to the regularly scheduled intensive basin sites, where fish, macroinvertebrates, habitat and sediment chemistry and multiple water chemistry samples were also collected. The continuous dissolved oxygen monitoring consisted of two 7-day monitoring events, one prior to July 31 and one after, to reflect the seasonal limits in the proposed dissolved oxygen rule.

The IAWA has emphasized much of the continuous monitoring data that has been collected by its members. (R. of November 2006, P. 74-75). IEPA recognizes the commitment involved by the IAWA members in this effort. Some sites were able to meet the proposed standard and some were not but no corresponding information about the actual biological conditions at the locations was provided. Mr. Frevert testified that when dissolved oxygen levels fall below the proposed standard that organisms may be under stress. (R. of November 2006, P. 30). Mr. Pescitelli, from IDNR, noted at the November hearing that dissolved oxygen sensitive fish sought areas of higher dissolved oxygen during times of low dissolved oxygen on the Fox River. (R. of November 2006, P. 34). IEPA believes that statewide information is needed, not just a limited set of waters receiving effluent discharges, to better understand the dynamics of dissolved oxygen in Illinois streams.

VI. Technical Feasibility and Economic Reasonableness

The authority for the Board to adopt water quality standards is found in Section 13(a) of the Environmental Protection Act ("Act") which provides "The Board .... may adopt regulations to ....prescribe: (1) Water quality standards specifying among other things, the maximum short-term and long-term concentrations of various contaminants in the waters, ***the minimum permissible concentrations of dissolved oxygen and other desirable matter in the waters***, and the temperature of such waters." [415 ILCS 13(a)(1)] (Emphasis added). Among other things, Section 27(a) of the Act directs the Board to take into account "the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution" when conducting any substantive rulemaking. *See* 415 ILCS 27(a).

The amendments to the General Use water quality standard for dissolved oxygen recommended by IEPA and IDNR are technically feasible and economically reasonable. The Board found the regulation of dissolved oxygen to meet this test when it adopted the existing General Use regulation. In nearly every instance, this rulemaking is expected to be less restrictive than the current dissolved oxygen standard and therefore less likely to yield exceedances (violations) of no environmental significance. IEPA believes this joint IEPA-IDNR recommendation will actually be economically beneficial by more accurately focusing environmental management resources toward water resources in need with a standard more accurately reflecting the needs of the aquatic community.

In adopting an ambient water quality standard for dissolved oxygen, the Board is not tasked with "reducing" or "measuring" a particular type of pollution as referred to in Section 27(a) of the Act; but instead with determining what level of dissolved oxygen in the environment is necessary for the protection of aquatic life. While the Board must analyze whether there are any economic factors relevant to this rulemaking, what the Board may not do in this matter is use economic factors to override scientific ones as it may do in a use attainability or regulatory relief proceeding. *See*, 40 C.F.R. 131.4, 131.5, 131.10 and 131.10. The Board's responsibility under the Clean Water Act is to update outdated standards to reflect the current science as represented by the IEPA and IDNR technical support document.

VII. Use of Dissolved Oxygen Data

IAWA has indicated numerous times in this proceeding that "the data supports its proposal" yet they have never explained to the Board how to make use of available dissolved oxygen data and how this information would support its proposal over the one submitted by IEPA and IDNR. Both proposals begin where most water quality standard proceedings start with a National Criteria Document developed by USEPA. In this case, the most recent NCD for dissolved oxygen is from 1986. That document is an important foundation. It recommends different standards for the protection of species that are most sensitive to low dissolved oxygen ("coldwater) vs. those that are less sensitive to low dissolved oxygen ("warmwater'). Specifically, the NCD limits "warmwater" species to those species that are equally or more tolerant of low dissolved

oxygen levels as are largemouth bass (as adults) or channel catfish (as early life stages). The record shows that Illinois streams contain numerous fish species whose sensitivity to dissolved oxygen falls in between the needs of the NCD "warmwater" fishes and those of the "coldwater" salmonid species. (R. April 2006, P. 33-34 & 97-98 & Exhibit 23 at 27-31).

IEPA and IDNR developed a technically sound and reasonable methodology to address this failing in the IAWA proposal and adapted the NCD to Illinois in a scientifically defensible manner. (R. April 2006, P. 40-43 & Exhibit 23).

Additionally, the NCD allows for less restrictive dissolved oxygen standards during times of the year when sensitive life stages of fishes are not expected to be present. However, in order to incorporate this aspect into the dissolved oxygen standard, the State must demonstrate that the recommended periods accurately reflect the specific conditions present in the State. IAWA's proposal is under-protective in this respect as well. Only by adopting an ending date of July 31 for the sensitive life stage period will the Board be consistent with the NCD and protective of aquatic life.

There has been much discussion about ambient dissolved oxygen measurements in this proceeding. Much data has been presented to the Board with little context regarding the meaning or possible interpretations of that data. In a more conventional water quality standard proceeding, ambient data is not used to drive the value set by the Board but to give the Board some insight into whether or not the proposed standard is likely to be attained in most areas of the

State. In proposing standard changes to the Board, IEPA relies primarily on laboratory studies that evaluate the acute and chronic impacts to aquatic life of varying levels of a pollutant. The stakeholders to this proceeding seemed to agree (until Dr. Garvey's final pre-filed testimony) that the impacts of "desirable" parameters like dissolved oxygen –as compared to toxics-- are less accurately measured by laboratory studies. There is no disagreement that there are areas of the State that do not always attain the current standard. There is also no disagreement that both the IAWA proposal and IEPA/IDNR recommendations would result in some significant (but smaller) number of exceedances. IEPA has testified that it believes only the IEPA/IDNR recommendations will succeed in directing available resources at the exceedances most likely to represent a threat to aquatic life.

There was some hope at the outset of this proceeding by those involved that an analysis of newly available continuous monitoring data might provide insight into how dissolved oxygen levels behave in the environment. It was hoped this data would explain what conditions are expected to be found in healthy streams. It became clear to IEPA early on that the patterns varied so greatly between the limited numbers of sites for which data was available that it was impossible to draw meaningful conclusions about the needs of Illinois fish from available ambient water quality data. It is for these reasons that IEPA and IDNR did not use the available ambient dissolved oxygen data in developing its recommendations to the Board.

VIII. Recommendations Made By Other Participants

Metropolitan Water Reclamation District of Greater Chicago ("MWRD") presented testimony from Mr. Kollias and Mr. Lanyon stating that the Board should 1) include a waiver provision for urban impacted streams to study technology for compliance and 2) investigate a separate wet weather standard following storm water runoff. (R. of November 2006, P. 230). While IEPA appreciates the suggestions from MWRD in this matter, the Agency does not believe either of these exemptions are consistent with general use rulemaking. Federal and State law have other mechanisms to address these issues such as an adjusted standard or variance proceeding.

Finally, the Sierra Club recommends a higher dissolved oxygen level in the months of December to March and suggested a minimum level of 6.5 milligrams per liter. (R. of November 2006, P. 257). At no time during the hearing did anyone suggest the current standard was inadequate to protect aquatic life in Illinois, rather that it inadequately addresses the natural variability of dissolved oxygen. The approach of using saturation to determine dissolved oxygen criteria, as suggested by Dr. Murphy and relied upon by the Sierra Club for their recommended level, is a methodology substantially different than that used by IEPA and IDNR.

IEPA appreciates the recommendation by the Sierra Club, but the Agency believes the IEPA and IDNR recommendations will protect aquatic life and therefore is not convinced that such a revision is needed. There is no

connection between this recommendation and the needs of the fish found in Illinois streams.

Conclusion

There is no dispute between the various groups that participated in this proceeding that the current dissolved oxygen standard needs to be revised. The IEPA and IDNR recommendation are scientifically sound and defensible in light of the current available information on the dissolved oxygen needs of aquatic life in Illinois.

Finally, the IEPA appreciates the opportunity the Board has granted all parties to present testimony for the Board's consideration.

Wherefore, for the reasons stated above, IEPA respectfully requests the Board take further action in this proceeding consistent with the IEPA's comments and adopt its recommended language in the Board's First Notice Opinion and Order.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: _____

Stefanie N. Diers
Assistant Counsel
Division of Legal Counsel

December 20, 2006

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P.O. Box 19276
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ORIGINAL

STATE OF ILLINOIS)
) SS.
COUNTY OF SANGAMON)

PROOF OF SERVICE

I, the undersigned, on oath state that I have served the attached Pre-First Notice Comments upon the person to whom it is directed, by placing it in an envelope addressed to:

TO: Dorothy Gunn, Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 W. Randolph Street 11-500
Chicago, Illinois 60601

Richard McGill, Hearing Officer
Illinois Pollution Control Board
James R. Thompson Center
100 W. Randolph Street, Suite 11-500
Chicago, Illinois 60601

SEE ATTACHED SERVICE LIST

and mailing it First Class Mail from Springfield, Illinois on December 20, 2006, with sufficient postage affixed.

Sara Gilmore

SUBSCRIBED AND SWORN TO BEFORE ME

this 20th day of December, 2006

Brenda Boehner
Notary Public

OFFICIAL SEAL
BRENDA BOEHNER
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 11-3-2009

THIS FILING IS SUBMITTED ON RECYCELD PAPER

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