

Appendix E
Bureau of Water
Impaired Waters of Illinois
Draft 2010 Integrated Report
Responsiveness Summary

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Final December 2011

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

IN THE MATTER OF:
Impaired Waters of Illinois
Draft 2010 Integrated Report

BACKGROUND INFORMATION

The Illinois Environmental Protection Agency (Illinois EPA or Agency) conducted a public hearing on Thursday, April 29, 2010, in the Illinois EPA Sangamo Room, located at 1021 North Grand Avenue East, Springfield, Illinois. The purpose of this hearing was to provide an opportunity for the public to comment on the Bureau of Water (BOW) draft 2010 Integrated Report.

The Illinois EPA is required under Sections 303(d), 305(b) and 314 of the federal Clean Water Act to assess waters of the state and evaluate compliance with applicable water quality standards and designated uses. Waters that are assessed as not achieving those standards are identified on the Integrated Report.

Waters identified in the Integrated Report in accordance with Section 303(d) are deemed impaired for specific chemical constituents and consequently additional loadings (i.e., discharges) of those constituents may be restricted. In addition to possible restrictions on future loadings to these listed waterbodies, waters identified in the Section 303(d) list are subject to the development of Total Maximum Daily Loads (TMDLs). TMDLs in Illinois may take the form of a watershed study in which the chemical constituent causing impairment to that water body is evaluated. A TMDL is the sum of the allowable amount of single pollutant that a waterbody can receive from all contributing sources and still meet water quality standards of designated uses.

PRE-HEARING OUTREACH

Pursuant to the federal regulations for public participation in 40 CFR 25, the hearing was announced in state publications including:

- *Arlington Heights Daily Herald* (state newspaper) on March 26, April 2 and 9, 2010.

The public hearing notice was sent via first class mail and/or by email to persons and groups on lists provided by:

- Bureau of Water, Division of Water Pollution Control
- Agency hearing officer

The public hearing notice was featured on the IEPA Internet Web Site. All Illinois EPA regional offices posted the hearing notice in a public area.

PUBLIC HEARING AND HEARING RECORD

The 17 non-Agency persons in attendance at the April 29, 2010, hearing represented consulting firms, sanitary districts, energy interests, agricultural interests, Attorney General of Illinois, Illinois Departments of Public Health and Agriculture and public water supplies.

Hearing officer Dean Studer opened the hearing at 10:03 a.m. Amy Walkenbach described the Draft 2010 Integrated Report. Agency staff responded to questions. Hearing officer Dean Studer closed the hearing at 10:35 a.m. Agency staff was available to meet with the public before and after the hearing. The transcript of the public hearing was posted on the Agency website on May 17, 2010.

The hearing record remained open for written comments postmarked through midnight June 1, 2010.

This responsiveness summary provides the Agency response to questions from the public hearing and written comments and questions received while the hearing record was open.

Questions, concerns and comments are in regular type

Agency responses are in bold type

Agency Responses to Questions, Concerns and Comments

1. Canton Lake in Fulton County is not impaired for use as a public water supply for manganese and total dissolved solids. Please update the 303(d) report.

Thank you for your comment. Surface water assessments in this 2010 report are based primarily on biological, water, sediment, physical habitat, and fish-tissue information collected through 2008. Specifically, for Canton Lake, data used for the 2010 report were collected in 2006. Based on the data provided in the table below, and the methodology provided in Table C-21 on page 80 of the 2010 Integrated Report (IR), Canton Lake is impaired for *public and food processing water supply* use. Manganese and TDS will remain on the 303(d) list.

It should be noted that Public and Food Processing Water Supply Standards apply “at any point at which water is withdrawn for treatment and distribution as a potable supply or for food processing” (35 Ill. Adm. Code 302.301). Therefore, only data reported for samples collected near the raw water intake in Canton Lake were considered for determining attainment of *public and food processing water supply* use.

	Sample Depth	Sample Depth Units	Water body Name	County	Collection Date	Analyte	Result_NUM	Result Units	Calculated TDS (mg/L)	Method Detection Limit	Reporting Limit
RDD-1	17	ft	CANTON	FULTON	27-Apr-06	specific conductance	897	uS/cm	538.2		
RDD-1	17	ft	CANTON	FULTON	12-Jun-06	specific conductance	790	uS/cm	474		
RDD-1	17	ft	CANTON	FULTON	11-Aug-06	specific conductance	705	uS/cm	423		
RDD-1	14	ft	CANTON	FULTON	8-Sep-06	specific conductance	696	uS/cm	417.6		
RDD-1	17	ft	CANTON	FULTON	12-Oct-06	specific conductance	712	uS/cm	427.2		
RDD-1	17	ft	CANTON	FULTON	27-Apr-06	Manganese	180	ug/l		1	5
RDD-1	17	ft	CANTON	FULTON	12-Jun-06	Manganese	210	ug/l		1	5
RDD-1	17	ft	CANTON	FULTON	11-Aug-06	Manganese	410	ug/l		1	5
RDD-1	14	ft	CANTON	FULTON	08-Sep-06	Manganese	160	ug/l		1	5
RDD-1	17	ft	CANTON	FULTON	12-Oct-06	Manganese	180	ug/l		1	5

2. As shown in the tables provided in exhibit 7, Illinois' Lake Michigan beaches continue to be plagued by high levels of E. coli. In 2007, 21 beaches had 15 or more beach action days (days on which closures or warnings are issued based on E. coli readings above 235 CFU/100 ml). In 2008, 14 beaches had 14 or more action days, with one beach experiencing 51 action days. Despite the obvious problem and the urgent need to address it, the 2010 Integrated Report once again fails to identify the sources of the pollution and, most notably, fails to set a timetable for making these beaches fit for swimming. As we all know, pollution sources include storm water runoff, outdated sewer systems, trash and wildlife on the shoreline. According to data from the MWRDGC, millions of gallons of storm water and untreated waste from combined sewer overflows were dumped into Lake Michigan during flow reversal events between August 2007 and June 2009.

The Agency will attempt to address each point as we understand it. Table 1 and 2 in Exhibit 7 do list beaches that were subject to beach action days in 2007 and 2008 respectively. The Illinois EPA is working closely with the USEPA to develop a work plan for all of the beaches listed in the 2010 Integrated Report. This work plan should lead to a structured approach to development of TMDL's for all the beaches on the list. Development of the plan has been completed and preparation of the TMDLs is underway. TMDLs are expected to be completed by May 2013. The Agency acknowledges that the pollution sources in your comment are indeed pollution sources for various waters of the state as well as Lake Michigan.

3. The open waters of Lake Michigan were not listed for fecal coliform bacteria. What data was used to make this determination not to list the open waters for fecal coliform?

The data used to make the assessment determinations were collected by IEPA from 2006-2008. The methodology is described on p. 77-78 of the Draft report. There were no exceedances found in the open waters during this time period.

4. IEPA must accelerate the schedule for developing TMDLs for Lake Michigan beaches. The current report shows these impaired beaches at the bottom of the priority list. The importance of these beaches to the people of Illinois and to our economy cannot be overstated. We cannot continue to afford to neglect them. IEPA should amend the Integrated Report to include the identification of the sources of bacterial pollution and a schedule of TMDL development.

The Illinois EPA is working closely with the U.S. EPA to develop a work plan for addressing the Lake Michigan beaches in Illinois. Development of the plan has been completed and preparation of the TMDLs is underway. TMDLs are expected to be completed by May 2013.

5. In addition, despite the recurring beach closures, advisories, and elevated levels of E. coli at Evanston Church Dog Beach, Evanston South Beach, Winnetka Centennial Dog Beach, Great Lakes Naval Nunn Beach, Illinois State Park Resort Beach, and North Point Marina North Beach these beaches were not named in Appendix B-5 of the 2010 303(d) list. According to Table C-18 of the Integrated Report, Lake Michigan beaches that experience more than one bathing area

closure per year should be assessed as not supporting (poor) primary contact recreation. IEPA should amend the Integrated Report to add these beaches to the 2010 303(d) list.

It appears that North Point Marina North Beach is indicated in the Integrated Report as North Point Beach (IL_QH-01) and Evanston South Beach is indicated as South Boulevard Beach (IL_QM-08). The current list of beach segments was created years ago. It appears that the other beaches mentioned above were not sampled prior to 2003 or 2004, or were reported under a different name. Dog beaches were not assessed for primary contact since public swimming is not allowed at these beaches. All 51 Lake Michigan Beach segments, representing the entire 63 mile Illinois shoreline, were assessed as not meeting the primary contact use. The list of beaches will be updated for the next Integrated Report.

6. Finally, we are both puzzled by and disappointed in the agency's failure to utilize valuable data provided by Alliance Adopt-a-Beach™ volunteers for use in the agency's preparation of the 2010 Integrated Report. The data was collected in a manner aligned with federal beach sanitary survey methods and was submitted to the agency along with a copy of a quality assurance/quality control plan. The data could be used by IEPA to help evaluate beach impairments, measure litter, algae, and wildlife, and assist in the identification of pollution sources. To dismiss volunteer-collected data as having "limited value" without providing further explanation or opportunity to respond is disappointing and unwise, particularly in a time of highly limited resources.

Illinois EPA thanks Alliance Adopt-a-Beach volunteers for their efforts and interest in Lake Michigan. However, the information provided did not significantly add to the available data required for making primary contact use assessments of Illinois Lake Michigan Beaches. Specifically, local agencies collect Escherichia coli bacteria samples daily during the swimming season (Memorial Day through Labor Day). Beaches are closed if Escherichia coli exceed 235CFU/100ml. Primary Contact use support assessments were made based on beach closure information over a three year period per USEPA guidelines.

7. There is evidence that both the narrative and the phosphorus water quality standards are being violated in Lake Michigan. Illinois' narrative standard prohibits unnatural algal growth. 35 IAC 302.102. Evidence of algae at various Lake Michigan beaches has been reported to IEPA. In addition, as shown in the table provided in exhibit 7, data collected by IEPA show that Illinois' waters of Lake Michigan had phosphorus levels in excess of the 0.007 mg/L water quality standard. 35 IAC 302.504(c).

The 2010 Integrated Report utilized data from 2006-2008. Most of the data in Exhibit 7 is from prior to this range. For the stations that do have data that fall into the 2006-2008 timeframe, no impairments were determined to exist due to the fact that the data set for any one station/segment did not exceed the statistical guidelines set forth in the methodology.

8. Many of the phosphorus samples collected between 2004 and 2008 were reported as below the detection limit of 0.010 mg/L, creating a real potential that phosphorus impairments in Lake Michigan are understated.

The minimum detection limit for phosphorus was 0.01 mg/L, so it is possible that concentrations above the Lake Michigan standard occurred. Analytic methods have improved and the current minimum detection limit is 0.002 mg/L. However, as described in response #9, the Lake Michigan open water phosphorus standard (302.504 c) is not applicable to the designated uses assessed for the 2010 Integrated Report.

9. It is unclear from the Integrated Report how IEPA evaluated Lake Michigan for impairments. Please clarify whether the impacts from phosphorus, nitrogen, nutrients and/or algae were evaluated in the assessment of Lake Michigan.

Lake Michigan was assessed for the following uses; aquatic life, public and food processing water supply (PFPWS), primary contact, secondary contact and fish consumption. All uses except for fish consumption were based on applicable Lake Michigan water quality standards. The only nutrient standard for the above uses is nitrate nitrogen (10 mg/L) for PFPWS. The phosphorus and ammonia nitrogen standards for the open waters of Lake Michigan (302.504 c and 302.535, respectively) are not applicable to any of the above uses, but were established as essentially non-degradation standards.

10. Nutrients have long been identified as the most important source of pollution to our nation's waters. National Research Council (2000) *Clean Coastal Waters – Understanding and Reducing the Effects of Nutrient Pollution*. IEPA has identified high nutrients as a major potential cause of impairment in Illinois waters. *2010 Integrated Report, p. 1*. Despite this recognition, the agency has failed to take decisive action to address the problems. The 2010 Integrated Report continues this tradition by setting a TP impairment level well above concentrations that are protective of aquatic life. The agency has also washed its hands of total nitrogen and other harmful forms of nitrogen pollution by failing to assess any waters for excess levels of TN, TKN or nitrate-nitrite and the impacts of these pollutants on aquatic life. Finally, the agency's expenditure of scarce resources attempting to remove listings based on low dissolved oxygen levels, because dissolved oxygen is not technically "a pollutant," provides further evidence of a lack of commitment to addressing nutrient pollution in Illinois waters.

Illinois EPA is concerned about the impacts of nutrients in Illinois waters and we are addressing those impacts through a variety of programs including permit limitations and grants for best management practices to control nutrients. However, the primary intent and essential requirement of CWA Section 303(d) is for states to identify waters where effluent limitations and other pollution control requirements are not sufficient to implement any water quality standard, and to identify the pollutants causing water quality standards violations. We have a phosphorus standard of 0.05 mg/L for inland lakes which we use in the listing and TMDL process. We are also currently in the process of developing water quality standards for nutrients in streams and more stringent effluent limits for nutrients. Where standards do not currently apply, the agency lacks a clear criterion or clear authority to list nutrients.

As for TN, TKN and nitrate-nitrite N, Illinois has no current water quality standard for these parameters related to aquatic life use. Furthermore, an analysis of Illinois data did not show a correlation between total nitrogen or nitrate-nitrite N and aquatic life use impairment. Total kjeldahl nitrogen includes ammonia nitrogen. Illinois does have a

water quality standard for ammonia nitrogen which we currently use in the assessment and listing process.

Dissolved oxygen is not a pollutant and is therefore not required to be placed on Illinois' 303(d) List. The decision to remove it from the 303(d) List was for data management purposes only, and in every other way, Illinois is handling violations of the dissolved oxygen standard as it did in previous cycles. Although Illinois removed dissolved oxygen from its 303(d) List, we continue to conduct TMDL studies for every waterbody impaired by low dissolved oxygen. When such studies determine that violations of the dissolved oxygen standard are caused by one or more pollutants, loadings are calculated for those pollutants.

11. The Integrated Report fails to list Diversey Harbor (ID No. IL_QZI) as impaired by mercury although nearly all other near shore areas are listed as so impaired. Please explain this discrepancy.

There were no water body-specific, "restricted consumption" fish-consumption advisory listed in the current IDNR publication "2010 Fishing Guide", nor were there any water body-specific fish tissue data provided by IDNR to the IEPA with elevated levels of Mercury for Diversey Harbor (2006-2008 data).

12. The open waters of Lake Michigan were not listed as impaired by fecal coliform bacteria. What data were used to make the determination that Lake Michigan complies with the standard for fecal coliform in 35 IAC 302.505?

The data used to make the assessment determinations were collected by IEPA from 2006-2008. The methodology is described on p. 77-78 of the Draft report. There were no exceedences found in the open waters during this time period.

13. Since 1972, the MWRDGC has conducted Ambient Water Quality Monitoring (AWQM) for waterways in the Chicago metropolitan area. Beginning in 2001, we obtained the approval of the Illinois Environmental Protection Agency (IEPA) to use District AWQM Program data in the required assessments required under the Clean Water Act conducted by the IEPA and used in the subject report. It was the District's understanding that IEPA used water quality data that the District collected during 2007–2008, and subsequently submitted to IEPA, to make water quality decisions in the 2010 Integrated Report. Table 1 (in Exhibit 8) compares analytical results from pertinent stream segments in the District's AWQM Program to water quality impairments listed in the subject report, as well as the General Use water quality standards for the respective constituents. The highlighted water quality constituents in Table 1 were found by the District to be in compliance with Illinois General Use Water Quality Standards, even though they were noted in the subject report as impaired. We request that these highlighted water quality impairments be removed from the 303(d) list.

Section C-2 of the Draft 2010 Integrated Report explains assessment methodology for Illinois waters. Tables C-1 through C-5 provide specific details on the aquatic life use assessment process for streams. According to Table C-3, footnote 1 "The most recent consecutive three years of data are used." Therefore, MWRDGC AWQM data from

January 2006 through December 2008 were used for the 2010 IR. In addition, IEPA data and other data sources were also used for assessments. Table C-3 also indicates how water quality data are used to determine moderate and severe impairment of aquatic life use in Illinois streams. Water temperature, pH and dissolved oxygen are based on percent violations of applicable water quality standards. All other parameters are based on the number of acute and chronic violations. If biological data indicate impairment and/or if one water quality parameter indicates impairment, then any other water quality parameter with only a single violation can be listed as a potential cause of impairment (see Table C-5). Some metals were listed based on highly elevated sediment concentrations (segments IL_GL-10, IL_G-39, IL_HCCC-04). However, sediment parameters are only listed as potential causes of impairment if biological data and/or water quality data indicate impairment. Guidelines for assessing primary contact in Illinois streams are presented in Tables C-16 and C-17. Both parts of the fecal coliform standard (i.e. geometric mean of 200 and percent of samples >400 from May through October) are used for the assessment of primary contact.

Three segments that are included in MWRDGC's Table 1 (IL_HCCA-02, IL_HCB-01, IL_HAA-01) were not re-assessed in 2008 and 2010 because they are part of the proposed water quality standards revision for the Chicago Area Waterway System (CAWS) currently before the Illinois Pollution Control Board. Some of the General Use standards presented in MWRDGC's Table 1 are incorrect. Hardness dependent dissolved metals standards in this table were based on maximum hardness concentrations over a two year period resulting in the highest possible acute standard. The proper evaluation is to use the hardness value at the time of each sample collection. In addition MWRDGC did not include chronic standards, which are also used in the assessment process (see Table C-3). The fecal coliform limit of 400 given in Table 1 is only one part of the standard as explained in the previous paragraph. Based on all of the above, the highlighted constituents listed in MWRDGC's Table 1 will not be removed from the draft 2010 303(d) list.

14. There are several General Use stream segments located in the Metropolitan Chicago area that are listed as impaired for various chemical constituents (see Table 1 in Exhibit 8). Physical habitat assessments performed by the MWRDGC strongly suggest that the aquatic life in these waterway segments are severely limited by poor physical habitat. Qualitative Habitat Evaluation Index (QHEI) scores calculated between 2002-2005 by District biologists are also included, where available, in Table 1. The District encourages IEPA to integrate non-pollutant causes of impairment into their assessments of these urban waterways. Investments in physical habitat restoration and improvement may have a more positive influence on aquatic communities than continued chemical constituent water quality improvements.

IEPA does include habitat and non-pollutant causes of impairment in the aquatic life use assessment process (see Part A: Introduction and Tables C-1, C-4, C-5 and Appendix B-2 of the Draft 2010 Integrated Report). IEPA has been using the QHEI as part of the habitat analysis since 2005. However, IEPA does not rely on QHEI scores alone, but rather on specific metrics such as heavy siltation, recent channelization/no recovery, no riparian width, severe bank erosion and other information such as flow alterations,

impoundments, etc (Table C-4). The Integrated Report fulfills requirements for sections 305(b) and 303(d) of the Federal Clean Water Act. Section 305(b) includes assessments of all waters and includes pollutant and non-pollutant causes of impairment (Appendix B-2). Section 303(d) is a list of waters impaired by pollutants and which require a TMDL (Appendix A).

15. The MWRDGC acknowledges that assessments of Indigenous Aquatic Life (IAL) Use streams were not updated in the current or previous cycles because comprehensive changes to the Secondary Contact and Indigenous Aquatic Life Standards that were proposed by IEPA in 2007 have not yet been approved by the Illinois Pollution Control Board (IPCB). This affected most of the deep-draft waterways of the Chicago Area Waterway System (CAWS). All previous assessments of IAL Use which were approved in the 2006 cycle were carried forward to 2008 and then 2010 without change. However, the District would still like to point out that there are several parameters listed as impairments in segments of the CAWS that should not be listed according to the District's AWQM Program data. In Table 2 of Exhibit 8, water quality constituents listed as impairments are compared with analytical results from appropriate stream segments monitored through the District's AWQM Program, as well as the Illinois water quality standard for these constituents. Page 66 of the Subject report states that IAL Use streams are fully supporting if "every available pollutant or stressor, <10% of observations exceed an applicable standard." All but one of the water quality constituents in Table 2 were found by the District to be in greater than 90% compliance with Illinois Water Quality Standards, even though they were noted in the subject report as causing impairment. We request that these water quality constituents that were found to be in compliance with water quality standards be removed from the 303(d) list (highlighted in Table 2). Total mercury concentrations detected in water samples are also included in Table 2, though fish consumption is the impaired use rather than aquatic life. It is noteworthy that mercury was not detected above 0.1 µg/L in water samples from the CAWS during 2007-8.

Since Indigenous Aquatic Life Use (IALU) assessments were not updated for the previous two cycles, the methods to make these assessments were also not updated. The methods would have changed to be more similar to aquatic life use methods if the IALU assessments were done (see Table C-3). Specifically, water temperature, pH and dissolved oxygen would still have been based on percent violations, but other parameters would have been based on number of violations. Data from 2006 through 2008 would have been evaluated using the current Secondary Contact and Indigenous Aquatic Life Use standards. MWRDGC's Table 2 includes total iron. However, there is also a standard for dissolved iron (0.5 mg/L), which if violated would also result in listing iron as a cause of impairment. IEPA stands by its decision to not update assessments until the IPCB rules on the proposed standards revision for these waters. Therefore no changes will be made to the 303(d) list.

16. Pages 47-48 of the 303(d) document explains that, "For parameters that have no numeric water quality standards (e.g., nutrients, suspended solids, siltation, various features of stream habitat), a statistically derived numeric value or a field observation may be used to identify potential causes of *aquatic life* use impairment. For total phosphorus and suspended solids, a numeric threshold based on an 85th percentile value is used as a cause guideline (Table C-5); this

threshold value is derived from all available data from water years 1978 through 1996 at AWQM Network sites.” The District does not support the use of an 85th percentile threshold to determine impairment if there is no scientific evidence that these constituents are negatively impacting aquatic life use in a given stream segment. The percentile approach is particularly unfounded when applied to IAL Use Waters of the CAWS which, by definition, are not meant to be compared on the same scale as General Use Waters. Using all AWQM sites to derive the threshold value is therefore not appropriate for IAL Use Waters. Furthermore, numerous studies conducted in Illinois for the purpose of determining defensible nutrient standards have failed to show any correlation between TP and algae, dissolved oxygen, or biota in Illinois streams. Defining stream segments as impaired for TP is contrary to this wealth of scientific information.

Thank you for your comments on this issue. For waters in the Chicago Area Waterway System, the draft 2010 integrated report made no changes to the assessments of use attainment and cause identifications from past integrated reports. Illinois EPA continues to work to develop reasonable ways to protect Illinois waters in which excessive amounts of nutrients can cause non-attainment of designated uses.

17. Nutrient pollution is among the most important sources of impairment to our nation’s waters (National Research Council 2000). The United States Environmental Protection (U.S. EPA) (2000a-d) has mandated states adopt ambient nutrient criteria for total phosphorus (TP) and total nitrogen (TN) developed by U.S. EPA or develop their own scientifically defensible numerical criteria for nutrients. The Illinois Environmental Protection Agency (IEPA) (2010, p.1) cited high nutrients as a major potential cause of impairment of Illinois waters. Yet, nearly a decade after the U.S. EPA issued this mandate to states, U.S. EPA has expressed serious concerns about Illinois’ progress in efforts to protect its waters from nutrient pollution (U.S. EPA/ Office of Inspector General 2009, p.8). Illinois has been estimated to contribute ~13% of the TP and ~17% of the TN loads to the Gulf of Mexico, but thus far the state has adopted numeric TP standards only for selected lakes and reservoirs, and its status in adopting numeric TN water quality standards is listed as “None” (U.S. EPA/ Office of Inspector General 2009, p.15). The lack of progress in protecting Illinois waters from nutrient pollution is also evident in IEPA’s (2010) approach in assessing water bodies for nutrient impairment.

Illinois EPA agrees that addressing nutrients is a pressing water quality issue and that the most straightforward approach to managing nutrients is through establishment of water quality standards. Having appropriate water quality standards provides a basic tool for water quality assessments and for management decisions (TMDLs and NPDES permits). However, despite research efforts that Illinois EPA funded beginning in 2003 and various analyses conducted by USEPA on Illinois data in the past 3 years, a strong basis for numeric nutrient criteria has eluded all. Therefore, we are left with using best professional judgment on the degree to which nutrients are the culprit in biological impairments identified in our waters and with managing nutrients through approaches that do not rely on numeric nutrient criteria. As a result of using a state effluent standard for phosphorus, antidegradation analyses and TMDL wasteload allocations, a percentage of point sources have limited their discharges of phosphorus and nitrogen. We continue to work with stakeholders and USEPA to establish effective approaches to addressing nutrients from all

sources that contribute to water quality impairments in in-state waters and Illinois' contribution to Gulf of Mexico hypoxia.

18. Protection of Illinois waters from nutrient pollution also involves adequate assessment of impairment. IEPA's (2010) treatment of nutrients in its list of impaired waters fails to assess Illinois waters adequately for impairment from nutrient pollution or an often-related parameter, low dissolved oxygen (DO). The following changes in IEPA's (2010) treatment of nutrients and DO in designating impairment are recommended:

- IEPA should consider waters to be impaired by excessive phosphorus if TP concentrations exceed 125 µg/L in the Central Corn Belt Plains Ecoregion (#54) and 95 µg/L in the Interior River Lowland Ecoregion (#72), rather than 610 µg/L;
 - IEPA should consider waters to be impaired by excessive nitrogen if TN concentrations exceed 1,940 µg/L in the Central Corn Belt Plains Ecoregion and 630 µg/L in the Interior River Lowland Ecoregion, rather than omitting TN as a cause of impairment; and
 - IEPA should include low DO as a cause of impairment in recognition of violations of the state's established numeric criteria for DO, rather than omitting DO as a cause of impairment.
-
- **While Illinois EPA agrees that a duly adopted water quality standard for phosphorus would in some ways make the assessment of nutrient impairment in streams more expedient, assignment of phosphorus concentrations for this task without benefit of the Illinois Pollution Control Board rulemaking process is not advisable. The fact that many if not most Illinois streams do not exhibit excessive algae growth in response to high phosphorus concentrations confounds attempts to define a cause/effect relationship. Setting assessment guidelines on the phosphorus concentrations would ensure that nearly all biologically impaired streams in the state are impaired due to nutrient over-enrichment, which is clearly not the case. A better approach and one currently being considered in the nutrient standards development process in Illinois, is to use indicators of nutrient impairment, i.e., dissolved oxygen and pH, to determine if a stream's biological impairment is due to phosphorus concentrations that are too high.**
 - **The history of state and federal nutrient regulation in Midwestern waters has been to regulate phosphorus because it is the limiting nutrient. If nutrient impairment exists, it has always been a premise of nutrient regulation that the way to eliminate this condition is to reduce the nutrient (phosphorus) in least relative abundance. Nitrogen is one of over twenty additional nutrients that algae and other plants require to grow. It is as pointless to indicate that nitrogen is an additional cause of impairment, when nutrient over-enrichment exists, as it would be to list any or all of the other plant nutrients such as potassium or boron. Streams that are nutrient impaired in Illinois are in that condition because they are susceptible to excessive algae growth, i.e., have sufficient sunlight and substrate, and all plant nutrients are present in abundance. Since phosphorus is the plant nutrient in least relative abundance, it is the logical nutrient controlled. Listing nitrogen as a cause of impairment when phosphorus is listed as a cause is redundant and leads to the**

expenditure of resources to reduce another substance when reducing the most logical cause (phosphorus) leads to the same result.

19. The fact that Illinois waters are not being adequately protected from nutrient pollution and other pollutants is evidenced from IEPA's (2010) report: For the 2010 303(d) list, IEPA (2010, p.3) assessed less than 0.5% of its lakes for at least one, and usually only one, designated use. Only 0.4% of lakes in the state were assessed in 2009 for aquatic life use; 0.1% of Illinois' lakes were assessed for safety of fish consumption; and 0.02% of the state's lakes were assessed for designated use as primary contact recreation. Streams are assessed within a given river basin only in one of every five years (p.35). There is no mention of the sampling frequency during the one year of sampling; IEPA states (p.33) that "Sampling locations are selected based on where data are currently lacking or historical data needs updating," but such an approach likely fails to capture most major pollution spills, most nonpoint pollution loading, and pollution from land use changes that are rapidly taking place in some areas. The percentage of streams that were not assessed for aquatic life use increased from 78.5% in 2008 to 85.9% in 2010 (IEPA 2010, p.2). Only ~61-63% of the streams that were assessed were evaluated as "good" for aquatic life use; the rest were evaluated as fair to poor.

The commenter does not provide the reader with full context regarding many of the statements made above. (1) Regarding the "number of lakes" assessed as reported in the table on page 3, while the percentages provided are accurate, one must understand that of the 91,456 lakes and ponds that exist in Illinois, 88,220 of those are ponds covering a total of only 65,253 acres. Obviously, Illinois EPA does not have the resources to monitor, assess, and report on the quality of 88,220 typically-privately-owned ponds in the state. Resources allocated to the Agency for lake monitoring and assessment are typically spent on larger (>6 acres), publicly-owned, and multi-use lakes and reservoirs. Therefore, it is far better for the reader to review the "acreage of lakes" assessed, which was 45% for both aquatic life and aesthetic uses, 29% for fish consumption use, and 0.6% for primary contact recreation use (primary contact recreation use percentage is, in fact, very low primarily because of the resource requirement to monitor fecal coliform bacteria on a statewide scale in accordance with the State's fecal coliform water quality standard). (2) The commenter claims that "usually only one designated use" is assessed at each lake. A review of the table on page 3 shows that nearly every lake and lake acre is assessed for at least two uses, aquatic life and aesthetic uses. (3) The commenter states that streams are assessed once every five years. A five-year, rotating intensive basin stream monitoring program is supported and advocated by this Agency and USEPA, and is the norm throughout the country. However, data collection from the AWQMN continues every year and these data are included in the assessment. (4) Finally, the commenter notes that streams not assessed for aquatic life use increased from 78.5% in 2008 to 85.9% in 2010. As pointed out on pages 9 and 13 of the draft report, the base layer National Hydrography Dataset (NHD) was upgraded from "medium," 1:100,000 resolution to "high," 1:24,000 resolution scale. This resulted in a significant increase in the total stream miles considered in this report (from 71,394 to 119,244 stream miles) due to the inclusion of many small first and second order streams. Therefore, the reduction in streams assessed for aquatic life use was a result of upgrading from medium to high resolution NHD, not a reduction in Agency monitoring and assessment effort. On the contrary, stream miles assessed for aquatic life use support increased from 15,314 miles in 2008 to 16,753 miles in 2010.

20. The TP level that IEPA has designated for impairment (610 µg TP/L; IEPA 2010, p.50) will not protect aquatic life use of Illinois waters. Water quality degradation has been documented in Illinois lakes and reservoirs at much lower concentrations than 610 µg TP/L. This point has been recognized by IEPA in its TP criterion of 50 µg TP/L to protect Illinois lakes and reservoirs larger than 20 acres in area and their inflowing streams. Importantly, it also has been recognized by IEPA (2010, p.59) in stating that “an observation of total phosphorus greater than 0.05 mg/L [50 µg/L] in lakes under 20 acres in size *is also used to indicate a cause of impairment*” [emphasis added]. All Illinois lakes, therefore, including smaller lakes, should be protected with numeric nutrient criteria and should be included in IEPA’s 303(d) list for impairment of aquatic life use if their TP concentrations exceed 50 µg/L. This recommendation is supported by U.S. EPA (2000), which recommended that for lakes in Ecoregions #54 and #72, including most of Illinois, the TP concentration should not exceed 20 µg/L and 30 µg/L, respectively.

Illinois EPA continues to work to develop effective ways to protect Illinois waters in which excessive amounts of nutrients can cause non-attainment of designated uses. However, it should be noted that the 610 µg TP/L criterion, reported on p. 50 of the 2010 Integrated Report, does not apply to Illinois lakes and reservoirs. As stated above, Illinois EPA recognizes 50 µg TP/L as the criterion to protect Illinois lakes and reservoirs. When there is non-attainment of *aquatic life* use in an Illinois inland lake or reservoir, a single exceedance of 50 µg TP/L results in listing total phosphorus as a potential cause of impairment, regardless of lake size. Please refer to table C-8 on page 57 of the 2010 report for the guidelines used to identify potential causes of impairment for *aquatic life* use in Illinois inland lakes.

21. U.S. EPA (2000c,d) recommended that streams in Ecoregions #54 and #72 should have TP concentrations ≤ 72.5 µg/L and ≤ 83.125 µg/L, respectively. Thus far, Illinois does not have numeric nutrient criteria for streams. IEPA (2010, pp.47-48) states that for parameters that have no numeric water quality standards, such as TP, a “numeric threshold” is used that is based upon an 85th-percentile value as a guideline for TP to be considered as a cause of aquatic life use impairment. This value is derived from all available data from water years 1978 through 1996. Explanation was not included as to why the available dataset has not been expanded to include the past 15 years. What is clear, however, is that the 85th percentile of all data is much higher (allows much higher TP concentrations to be evaluated as acceptable), and thus not nearly as protective of water aquatic life use, than the 25th percentile of all data that is recommended for use by U.S. EPA (2000) in setting thresholds for numeric nutrient criteria.

Illinois EPA continues to work with stakeholders and U.S. EPA Region 5 to identify appropriate numeric phosphorus criteria.

22. Nutrient supplies in agricultural areas of the Midwest repeatedly have been described as so excessive that neither suspended algae (seston) nor bottom-inhabiting algae (benthic algae or periphyton) are limited by them. This observation has been the basis for an assertion that numeric nutrient criteria are not needed to protect the designated uses of Illinois streams, as their algal biomass is primarily controlled by other factors such as light or flow. The following points correct that assertion and support the need both for numeric nutrient criteria and for a lower TP

threshold to indicate impairment, in order to protect Illinois streams and waters downstream from them.

- i) *Microbial heterotrophs are stimulated by nutrient pollution in turbid streams* - In the turbid waters that characterize many Illinois streams, microbial heterotrophs should be expected to be the primary responders to nutrient pollution. Nutrient pollution to surface waters commonly results in increased microbial production. From analysis of light-limited streams, heterotrophic microbes (bacterial processes), stimulated primarily by P and secondarily by N enrichment – not algae – are the major responders to nutrients and the major influence on biochemical oxygen demand.
- ii) *Reference or minimally degraded conditions should be used to develop nutrient criteria to protect aquatic life* – The excessive nutrient concentrations and loads in agricultural waters, are far from reference conditions. For example, nitrate-nitrite concentrations in the Illinois River near Peoria were reported to have increased by nearly 350%, from 1.9 to 6.5 mg/L, over the past 100 years, and a high proportion of nitrate in TN measurements is considered to indicate anthropogenic pollution. Tetra Tech (2008) noted that no reference stream sites have yet been identified for Illinois. Reference or minimally degraded conditions should be determined, including consideration of waters in nearby states with similar watershed characteristics if such waters can no longer be found in Illinois. The 75th percentile of nutrient concentrations in reference or minimally degraded streams should then be used to develop numeric criteria to protect aquatic life use (U.S. EPA 2000), and to assess impairment for the state’s 303(d) list. This approach is recommended over consideration of the 25th percentile of data available from all Illinois streams because nutrient concentrations in most Illinois streams are very high and clearly have sustained major impacts from cropland and industrialized animal agriculture, or from urbanization (e.g. in the Chicago area). IEPA’s present approach of using the 85th percentile of data from all streams (1978-1996) to indicate a “threshold” for impairment is not sufficiently protective of aquatic life use, exemplified by the fact that nutrient concentrations apparently are at saturation levels for algal growth. Reference stream data from nearby areas do not indicate such nutrient saturation, and threshold concentrations to protect aquatic life use and avoid impairment have been set far lower than 610 µg TP/L.
- iii) *Macroinvertebrate communities are strongly influenced by nutrient pollution in Illinois streams* - An analysis of 53 Illinois streams indicated that high-quality habitats for sensitive aquatic life typically have lower nutrient concentrations. Nutrient pollution was identified as an important determinant of biological integrity in these systems, although often confounded with physical habitat degradation. Nonmetric multidimensional scaling ordination analysis indicated that dissolved nutrients were, in fact, key variables for separating streams based on macroinvertebrate community structure.
- iv) *The protective criterion that has been developed by IEPA for inflow streams should be reflected in the evaluation of impairment of aquatic life use* - IEPA (2010, pp.19-20) has set a nutrient criterion of 50 µg TP/L for lakes and reservoirs greater than 20 acres in area, and for streams at the point of entry into such waters. IEPA’s designated level for impairment of Illinois streams by phosphorus, 610 µg TP/L, is more than ten-fold higher than this nutrient criterion. Thus, in IEPA’s present approach, lakes, reservoirs, and inflowing streams that have nearly ten-fold higher TP concentrations than the protective criterion are not included in the 303(d) list. Lakes and reservoirs greater than 20 acres in area and their inflowing streams that

have concentrations higher than 50 µg TP/L should be included in the 303(d) list because they are in violation of the state's water quality criterion for TP.

- v) *Downstream impacts should be minimized* - Nutrient enrichment can result in transport of nutrients downstream to river reaches where the sufficient conditions [exist] for unwanted algal blooms to occur. Such a situation describes Illinois' contribution to the expansive "dead zone" in the Gulf of Mexico (U.S. EPA/ Office of Inspector General 2009), and to increased abundance of certain harmful algae in the Mississippi River delta area.

These points also support the need to consider Illinois streams as impaired by phosphorus pollution at much lower levels than 610 µg TP/L in compiling the state's 303(d) list. Following the information presented by Tetra Tech (2008), threshold concentrations for impairment should be set at ~125 µg TP/L for streams in Ecoregion #54 of Illinois, and ~95 µg TP/L for streams in the Interior River Lowland Ecoregion. Furthermore, this recommendation is based upon macroinvertebrate bioindicators, in support of IEPA's (2010, p.40) preferred reliance upon biological indicators.

Thank you for your information on this issue. Illinois EPA continues to work with stakeholders and U.S. EPA Region 5 to identify appropriate numeric nutrient criteria.

23. Waters with excessive total nitrogen pollution should be evaluated as impaired and included in the state's 303(d) list. IEPA (2008, 2010) has been attempting to remove TN as a cause of aquatic life use impairment for all water bodies. The rationale given was that "IEPA does not believe that a scientifically valid criterion currently exists for determining when nitrogen is causing an impairment of aquatic life use in this state", and that IEPA does not have TN water quality standards (U.S. EPA 2008). U.S. EPA (2008) disagrees with removal of TN as a cause of impairment, pointing out that IEPA previously and appropriately identified TN as a pollutant, and that IEPA has no evidence to show that TN is *not* connected to biological impairment of Illinois waters. TN should be considered by IEPA as a cause of impairment of aquatic life use in compiling its 303(d) list, given the following considerations.

N as well as P over-enrichment from anthropogenic sources has degraded the water quality of many streams and rivers worldwide. Over time, the need to co-manage P and N has become well recognized in order to protect both in-stream aquatic life uses and the designated uses of downstream waters.

Secchi depth and chlorophyll *a* are established response variables for the levels of nutrients, especially total phosphorus (TP) *and* secondarily, total nitrogen (TN), present in lake waters, including lakes and reservoirs in agricultural areas of the Midwest. These excessive N concentrations are of concern because of (i) the stimulation of lake and reservoir algal assemblages, and undesirable changes in their composition (for example, favoring cyanobacteria including potentially toxic taxa; (ii) the cascading effects of nutrients "up the food web" to adversely affect macroinvertebrates and fish as a result of changes in algal assemblages; (iii) the potential toxicity of high levels of nitrate, nitrite, and ammonia to macroinvertebrate, amphibian, and fish species; and (iv) transport to downstream waters that contributes significantly to hypoxia in the Gulf of Mexico.

As rationale in support of omitting TN as a cause of impairment for aquatic life use, IEPA mentioned that Illinois does not have numeric TN criteria. While this rationale fails to justify

omission of TN in compiling Illinois' 303(d) list, IEPA's stance again illustrates that development of numeric nutrient criteria and adequate assessment of impairment are both important to protect Illinois waters from nutrient pollution. U.S. EPA (2000a,b) mandated TN criteria for sound scientific reasons, and such criteria are needed to protect Illinois lakes and reservoirs from degradation by nitrogen pollution. U.S. EPA (2000) recommended that lakes in Ecoregions #54 and #72, which includes most of Illinois, should not exceed TN concentrations of 620 µg/L and 614 µg/L, respectively. Concurrent adoption of P and N criteria would allow management decisions to address both P and N pollution simultaneously in Illinois waters, and would also take a large step toward addressing impacts of excessive nutrients to downstream waters. Nitrogen criteria are needed to prevent impairment of downstream uses, as required by U.S. EPA regulations (40 CFR§ 131.10 (b)). Moreover, it has been demonstrated that control of P without simultaneous control of N can actually make conditions worse in downstream estuaries, by reducing growth of freshwater algae upstream that would have taken up some of the N before it reached the estuaries and stimulated algal blooms. It is recommended that threshold concentrations for impairment of aquatic life use should be set, at a maximum, at 1,940 µg TN/L and 630 µg TN/L for streams in Ecoregions #54 and #72, respectively. This recommendation is also based upon use of sensitive biological indicators, as preferred by IEPA (2010, p. 40).

The commenter correctly points out that Illinois has no water quality standard for total nitrogen. The primary intent and essential requirement of CWA Section 303(d) is for states to identify waters where effluent limitations and other pollution control requirements are not sufficient to implement any water quality standard, and to identify the pollutants causing water quality standards violations. Where standards do not currently apply, the agency lacks a clear criterion or clear authority to list total nitrogen.

It is not true “that IEPA has no evidence to show that TN is not connected to biological impairment of Illinois waters.” Research to establish cause-effect relationships between nitrogen concentration and biological impairment failed to detect a correlation. Conditional probability analysis of Illinois data yielded a similar result. And an in-house analysis of Illinois data showed no correlation between total nitrogen and aquatic life use impairment.

Illinois stakeholders have shown no interest in adopting USEPA recommended nutrient criteria are appropriate for Illinois waters. Furthermore, no other state has adopted USEPA's recommended nutrient criteria.

Regulations in 40 CFR§ 131.10 (b) relate to the establishment of water quality standards, not section 303(d) listing. Section 303(d) and all federal regulations which implement Section 303(d) pertain only to existing, established water quality standards. Illinois does not use the 303(d) listing process to establish new standards.

24. Levels of other forms of nitrogen that are considered to impair Illinois waters should be decreased, and numeric criteria should be developed to protect aquatic life use. The N criteria adopted by IEPA should be those necessary to protect the most sensitive endpoints – prevention of eutrophication impacts, or prevention of acute or chronic toxicity. U.S. EPA (2000) recommended that in lakes of Ecoregions #54 and #72, concentrations of TKN should not exceed

620 µg/L and 609 µg/L, respectively, and nitrate+nitrite concentrations should be 15 µg/L and 5 µg/L, respectively. For rivers, U.S. EPA (2000) recommended that in Ecoregions #54 and #72, concentrations of TKN should not exceed 663 µg/L and 539 µg/L, respectively, and that nitrate+nitrite concentrations should not exceed 1,798 µg/L and 215 µg/L, respectively. IEPA has not yet considered impairment by TKN, but in previous 303(d) lists, IEPA included waters if the concentration of nitrate+nitrite was 7.8 mg/L or higher.

Ammonia nitrogen is regulated by water quality standards that protect aquatic life. There are no other forms of nitrogen potentially present in Illinois waters at concentrations that would cause toxicity to aquatic life. Prevention of impairments caused by nutrient over-enrichment is logically done through phosphorus regulation as explained in the response to Comment #18.

25. IEPA's (2010, p. 21) water quality standard states that for general use in most Illinois waters, "total ammonia nitrogen must in no case exceed 15 mg/L" (also see IEPA 2010, pp. 22 and 24). That level is ~100-fold higher than needed to promote nutrient over-enriched conditions and excessive algal blooms and to cause toxicity to sensitive aquatic life (U.S. EPA 2009). IEPA should compile and analyze the available databases for both total ammonia and nitrite aquatic life toxicity. IEPA should also further investigate the presence and levels of nitrite and total ammonia in Illinois waters, as well as currently available data on nitrite and ammonia toxicity. From this analysis, IEPA should assess whether sufficient data are available for criteria derivation to prevent toxic impacts of these components of nitrogen. If not, additional data needs should be specified.

Illinois General Use water quality standards for ammonia give 15 mg/L total ammonia as an absolute maximum relative to the acute standard. In other words, the acute water quality standard for ammonia must always be met and concentrations compliant with the acute standard may never exceed the 15 mg/L cap. USEPA has recently published draft National Water Quality Criteria for ammonia that would set new aquatic life toxicity concentrations but does not attempt to look at ammonia nitrogen from a plant nutrient perspective. States will be required to address the national ammonia criteria if these criteria are adopted as National Criteria under the federal process. Nitrate/nitrite is certainly toxic to aquatic life but not at concentrations normally found in the environment. For this reason, the USEPA and states have not adopted toxicity-based aquatic life criteria for this form of nitrogen.

25. Dissolved oxygen should be included by IEPA as a cause of impairment of Illinois waters for aquatic life use. IEPA (2010, p.1) identified low dissolved oxygen as a major potential cause of impairment of Illinois waters. Nevertheless, IEPA (2008, 2010) has attempted to remove dissolved oxygen (DO) as a cause of aquatic life use impairment for all water bodies, stating that DO should be removed as a cause of impairment because [low] dissolved oxygen is technically not a pollutant. Yet, Illinois has numeric water quality standards for DO (IEPA 2010, p.18) and many Illinois waters are impacted by hypoxia and anoxia (IEPA 2008). U.S. EPA (2008) disagrees with the removal of DO as a cause of impairment in IEPA's compilation of the state's 303(d) list. U.S. EPA (2008) has counseled that DO should be included as a cause of impairment in Illinois' 303(d) list, and that impaired waters not meeting the state's DO standard should be identified as "cause unknown – DO" to inform the general citizenry about the type of impairment

and, more importantly, to help ensure that the low DO stress problem will be addressed. U.S. EPA further counseled that if IEPA finds that low flow conditions rather than pollutants are causing the low DO problem, then a total maximum daily load will not be required to address the DO impairment. DO should be considered by IEPA as a cause of aquatic life use impairment in compiling its 303(d) list.

Dissolved oxygen is not a pollutant and is therefore not required to be placed on Illinois' 303(d) List. The decision to remove it from the 303(d) List was for data management purposes only, and in every other way, Illinois is handling violations of the dissolved oxygen standard as it did in previous cycles. Although Illinois removed dissolved oxygen from its 303(d) List, we continue to conduct TMDL studies for every waterbody impaired by low dissolved oxygen. When such studies determine that violations of the dissolved oxygen standard are caused by one or more pollutants, loadings are calculated for those pollutants.

26. Please list the non-state organizations that supply the 303(d) team the QHEI and IBI data.

North Shore Sanitary District and the DuPage River - Salt Creek Workgroup provided IBI, MBI/mIBI and QHEI data that were evaluated for the 2010 Integrated Report. However, much of the mIBI and IBI data provided by the DuPage River - Salt Creek Workgroup could not be utilized because several revisions of these data were received well after the deadline for data submittal.

27. Page 11 correction: The Conservation Foundation is a member of the DuPage River-Salt Creek Workgroup. DRSCW is the owner of the data and the Midwest Biodiversity Institute is the contractor.

Thank you, this has been corrected.

28. On Page 11 of the draft report, it states that the data submitted by the Alliance for the Great Lakes and by the Conservation Foundation/DuPage River-Salt Creek Workgroup /Midwest Biodiversity Institute was not in the requested format.

Actually the report states that none of the nine organizations submitted data in the requested format. Considerable time was spent contacting these organizations to clarify data and to request additional information.

30. Appendix B-5 lists several Lake Michigan Beaches as impaired for E. coli, mercury and PCBs. What is the timetable for developing TMDLs to correct these impairments?

The Illinois EPA is working closely with the U.S. EPA to develop a work plan for addressing the Lake Michigan beaches in Illinois. Development of the plan has been completed and preparation of the TMDLs is underway. TMDLs are expected to be completed by May 2013.

31. The methodology for Lake Michigan, page 36, is unclear concerning whether IEPA evaluated impairments from phosphorus, nitrogen, nutrients or algae. Please clarify whether these parameters were evaluated.

See response to Question #9.

32. It is unclear why IEPA uses fecal coliform to evaluate the open waters of Lake Michigan, yet uses *E. coli* to evaluate the beaches. Why not use *E. coli* to evaluate bacteria in the open waters?

The Agency currently does not collect the *E. coli* data used for Lake Michigan beach assessments. This data is collected and provided by other entities such as the Lake County Health Department and the City of Chicago. These entities measure *E. coli* to determine swim bans at beaches and make closures based on this data. The Agency assesses those beach segments based on the number of swim bans (beach closings). The fecal coliform data collected by the IEPA is used to assess compliance with the Lake Michigan bacteria standard in the open water/near shore waters of Lake Michigan. The current standard is based on fecal coliform as the indicator organism.

33. Exhibit 11 contains USEPA Region V's comments and views regarding IEPA's 2010 draft Integrated Report. Specifically, on June 1, 2010, USEPA submitted five documents for IEPA consideration. The first two documents provided specific USEPA comments and views primarily concerning IEPA use support and cause of impairment assessment and listing methodologies, as well as proposed delistings. The third document submitted was a technical memorandum suggesting the relationships between nitrogen and biological response. The fourth and fifth documents were reference documents concerning USEPA's evaluation of IEPA's sedimentation/siltation cause of impairment guideline, and a Tetra Tech analysis of Illinois stream and river nutrient and biological data, respectively. These comments, views, technical memorandum, and reference documents were fully considered before finalizing the 2010 Integrated Report.

Since release of the draft 2010 Integrated Report for public review and comment, USEPA and IEPA have met and discussed view points on many occasions in order to fully understand each Agency's issues regarding IEPA assessment and listing methodologies. Progress has and continues to be made to alleviate concerns expressed by both sides. A number of revised methodologies and listing/delisting decisions will be reflected in IEPA's draft 2012 Integrated Report that is currently under development.

Glossary

BOW	- Bureau of Water in the IEPA
CFR	- Code of Federal Regulations (U. S. EPA)
CFU	-Colony Forming Units
DO	- Dissolved Oxygen
IBI	- Index of Biotic Integrity
IEPA	- Illinois Environmental Protection Agency
ILCS	- Illinois Compiled Statutes
Ill. Adm. Code	- Illinois Administrative Code (IAC)
IPCB	-Illinois Pollution Control Board
MBI	- Macroinvertebrate Biotic Index
mIBI	- Macroinvertebrate Index of Biotic Integrity
mg/L	- Milligrams per liter
MWRDGC	- Metropolitan Water District of Greater Chicago
PCB	-Polychlorinated Biphenyl
Public Hearing Record	- Period of time before, and after the public hearing for collection of written testimony including the hearing transcript.
QHEI	- Qualitative Habitat Evaluation Index
Responsiveness Summary	- A document prepared by the IEPA that responds to relevant comments, questions and issues received during the public hearing record.
TDS	- Total Dissolved Solids
TKN	- Total Kjeldahl Nitrogen

TMDL	- Total Maximum Daily Load
TN	- Total Nitrogen
TP	- Total Phosphorus
µg/L	-Micrograms per liter
303(d)	- Section of federal Clean Water Act

Distribution of Responsiveness Summary

A letter announcing the completion of this responsiveness summary and its availability on the Agency website was mailed or emailed to all who registered at the hearing, to all who sent in written comments, and to anyone who requested a copy. Additional copies of this responsiveness summary are available from Shirley Durr, IEPA, Watershed Section, e-mail Shirley.Durr@illinois.gov , phone 217-782-3362.

Bureau of Water Staff Who Can Answer Your Questions

Questions Concerning the 2010 Integrated Report.....	Amy Walkenbach	217-782-3362
Legal procedures.....	Deborah Williams	217-782-5544
Hearing of April 29, 2010.....	Dean Studer	217-558-8280

The public hearing notice, the hearing transcript and this responsiveness summary are available on the Illinois web site: www.epa.state.il.us/water/tmdl/303d-list.html

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