

**DECISION DOCUMENT FOR THE PARTIAL APPROVAL / PARTIAL
DISAPPROVAL OF ILLINOIS' SUBMISSION OF THE STATE'S
INTEGRATED REPORT WITH RESPECT TO SECTION 303(d) OF THE
CLEAN WATER ACT (CATEGORY 5 WATERS)**

U.S. EPA has conducted a complete review of Illinois' 2008 Section 303(d) list and supporting documentation and information. Based upon this review, U.S. EPA has determined that Illinois' list of impaired waters still requiring total maximum daily loads (TMDLs) does not meet the requirements of Section 303(d) of the Clean Water Act (CWA or Act), and U.S. EPA's implementing regulations. Therefore, U.S. EPA hereby partially approves and partially disapproves Illinois' 2008 Section 303(d) list. Illinois' list of impaired waterbodies still requiring TMDLs appears in Category 5 of the Illinois 2008 Integrated Water Quality Monitoring and Assessment Report (IR); and U.S. EPA's approval/disapproval extends only to the waterbodies in Category 5 of the IR. The statutory and regulatory requirements, and U.S. EPA's review of Illinois compliance with each requirement, are described in detail below.

I. Statutory and Regulatory Background

A. **Identification of Water Quality-Limited Segments (WQLSs) for inclusion on Section 303(d) List**

Section 303(d)(1) of the Act directs each state to identify those waters within its jurisdiction for which effluent limitations required by Section 301(b)(1)(A) and (B) are not stringent enough to implement any applicable water quality standard, and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. The Section 303(d) listing requirement applies to waters impaired by point and/or nonpoint sources, pursuant to U.S. EPA's long-standing interpretation of Section 303(d).

States do not need to list WQLSs for which the following controls are adequate to implement applicable water quality standards: (1) technology-based effluent limitations required by the Act; (2) more stringent effluent limitations required by state or local authority; and (3) other pollution control requirements required by state, local, or federal authority.¹ All other WQLSs must be listed.²

B. **Consideration of Existing and Readily Available Water Quality-Related Data and Information**

In developing Section 303(d) lists, states are required to assemble and evaluate all existing and readily available water quality-related data and information -- including, at a

¹ 40 C.F.R. § 130.7(b)(1).

² 40 C.F.R. §§ 130.7(b)(1) and (b)(2).

minimum, consideration of existing and readily available data and information about the following categories of waters: (1) waters identified in the state's most recent Section 305(b) report as partially meeting or not meeting designated uses, or as threatened; (2) waters for which dilution calculations or predictive modeling indicate nonattainment of applicable standards; (3) waters for which water quality problems have been reported by governmental agencies, members of the public, or academic institutions; and (4) waters identified as impaired or threatened in any Section 319 nonpoint assessment submitted to U.S. EPA.³ In addition to these minimum categories, states are required to consider any other data and information that is existing and readily available. U.S. EPA has described the categories of water quality-related data and information that may be existing and readily available.⁴ While states are required to evaluate all existing and readily available water quality-related data and information, states decide whether to rely on particular data or information in determining whether to list particular waters.

States must provide documentation to U.S. EPA to support its determination to list or not to list waters. This documentation must include, at a minimum, the following information: (1) a description of the methodology used to develop the list; (2) a description of the data and information used to identify waters; (3) a rationale for any decision not to use any existing and readily available data and information for any category of waters; and (4) any other reasonable information required by U.S. EPA.⁵

C. Priority Ranking

Section 303(d)(1)(A) of the Act requires each state to establish a priority ranking for listed waters. Each state must include a priority ranking for all listed WQLSs, and must identify those WQLSs targeted for TMDL development in the next two years.⁶ In prioritizing and targeting waters, states must take into account the severity of the pollution and the uses to be made of such waters.⁷ States may consider other factors relevant to prioritizing waters for TMDL development, including immediate programmatic needs, vulnerability of particular waters as aquatic habitats, recreational, economic and aesthetic importance of particular waters, degree of public interest and support, and state or national policies and priorities.⁸

³ 40 C.F.R. § 130.7(b)(5).

⁴ See *Guidance for Water Quality-Based Decisions: The TMDL Process*, U.S. EPA (April, 1991) ("U.S. EPA's 1991 Guidance"), at Appendix C.

⁵ 40 C.F.R. § 130.7(b)(6).

⁶ 40 C.F.R. §130.7(b)(4).

⁷ CWA Section 303(d)(1)(A).

⁸ See 57 Fed. Reg. 33040, 33045 (July 24, 1992); see also U.S. EPA's 1991 Guidance.

II. Analysis of Illinois' Submittal

A. Listing Methodology and Reporting

U.S. EPA issued guidance for integrating the development and submission of Section 305(b) water quality reports and Section 303(d) lists of impaired waters.⁹ This Integrated Report Guidance recommends that states develop an integrated report on the quality of their waters by placing all waters into one of five assessment categories, with Category 5 consisting of water quality-limited segments for which available information indicates that at least one designated use is not being supported or is threatened, and for which a TMDL is needed.

On June 30, 2008, U.S. EPA received the *Illinois Integrated Water Quality Report and Section 303(d) List -2086* (IR). Consistent with U.S. EPA's Integrated Report Guidance, this IR combines the listing requirements of Sections 303(d), 305(b) and 314 of the Clean Water Act. Appendix A of the IR is the Section 303(d) list, consisting of Category 5 waters, which are the subject of this decision document. (The terms "water" or "water body" in the IR and this decision document refer to water segments as identified in this list.)

Section C-2 of the IR explains the assessment methodology used to categorize waters in terms of attainment of designated uses and causes of impairment. The designated uses include aquatic life, indigenous aquatic life, fish consumption, primary contact, secondary contact, public and food processing water supply, and aesthetic quality. IEPA determined the resource quality of each segment by identifying the level of attainment of each applicable designated use as either "fully supporting" or "not supporting" each applicable designated use in that segment. Uses that are not supported are impaired, and any water with at least one unsupported use is considered impaired. For each impaired use in each water body, IEPA attempted to identify potential causes and sources of the impairment. If the cause or source could not be determined, it was listed as unknown.

IEPA employs the following methodology for each designated use and water body type:

Aquatic Life –Streams

Assessments of aquatic life use are based on water body-specific monitoring data. Illinois has three primary stream monitoring programs. Data from these programs are used in assessing aquatic life use. The programs are as follows:

- 1) The Intensive Basin Survey program provides, for each site: a fish community sample used to quantify relevant biological indicators of human impact, including a fish Index of Biotic Integrity score; a macroinvertebrate community sample used to quantify relevant biological indicators of human impact, including a Macroinvertebrate Biotic Index score; water chemistry data from two or three

⁹ *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Section 303(d), 305(b), and 314 of the Clean Water Act*, U.S. EPA Office of Water (July 29, 2005) ("Integrated Report Guidance").

- water samples; and physical-habitat data from field measurements and observations.
- 2) The Ambient Water Quality Monitoring Network (AWQMN) program provides, for each site, water chemistry data from water samples collected once every six weeks (approximately nine per year). Some AWQMN stations are also sampled during Intensive Basin Surveys.
 - 3) The Facility-Related Stream Survey program provides, per site (each survey comprises multiple sites): a macroinvertebrate sample used to calculate a Macroinvertebrate Biotic Index score; water chemistry data from at least one water sample; physical-habitat data from field observations; and sometimes a fish community sample (as in the Intensive Basin Surveys). Typically, the assessment of aquatic life use in this program is based on the information from the site(s) having the most severe aquatic life impairment.

While assessments of aquatic life use are based on data from individual monitoring stations, they are extrapolated to represent larger stream segments, also called assessment units. The primary biological measures used to evaluate waters are the fish Index of Biotic Integrity (fIBI), the new macroinvertebrate Index of biotic integrity (mIBI) and the Macroinvertebrate Biotic Index (MBI). Physical-habitat information used in assessments includes qualitative or qualitative measures of stream-bottom composition and qualitative descriptors of channel and riparian conditions. Physicochemical water data used include measures of “conventional” parameters (e.g., dissolved oxygen, pH, and temperature), priority pollutants, non-priority pollutants, and other pollutants. In a minority of streams for which biological information is unavailable, *aquatic life use* (from water and sediment) and habitat information play primary roles in identifying potential causes and sources of *aquatic life use* impairment.

Table C-1 of the IR is the “Decision Table for Assessing Attainment of Aquatic Life Use in Streams.” Tables C-2, C-3, and C-4 of the IR identify the guidelines used for listing of aquatic life use impairments. U.S. EPA had some concerns about the adequacy of IEPA’s methodology. When only one biological index is available and it shows no impairment, but the water chemistry data shows a moderate impairment, IEPA generally considers the one biological index to overrule the water chemistry data because it believes the biological index to be of superior information value, or if one biological index shows supporting, but the other indicates a moderate impairment, IEPA will consider the water fully supporting unless the water chemistry data shows impairment. The range for IEPA’s moderate impairment in the biological indices are fairly broad, such that it raises a question whether the methodology will identify all impaired waters. However, IEPA states that the last stage of its assessment process is to carefully examine all available biological, water-chemistry and habitat data and any other site-specific information or knowledge. Based on this final review a biologist can modify the use-attainment decision that resulted from the Decision Table and thus IEPA assures U.S. EPA that impaired waters are identified.

Table C-5 of the IR lists the potential causes of impairment for the aquatic life use in streams. When a stream segment is determined to be Not Supporting aquatic *life use*, generally, one exceedance of an applicable Illinois water parameter results in identifying that parameter as a potential cause of impairment. Additional guidelines IEPA uses to determine potential causes of impairment include site-specific standards (35 Ill. Adm. Code 303, Subpart C), adjusted standards (published in the Illinois Pollution Control Board's *Environmental Register* at <http://www.ipcb.state.us/Archive/dscgi/ds.py/View/Collection-11>), or narrative standards (35 Ill. Adm. Code 302.203) intended to protect waters from “. . . *sludge or bottom deposits, floating debris, visible oil, odor plant or algal growth, color or turbidity of other than natural origin.*”

Aquatic Life Use – Inland Lakes

IEPA relies primarily on the Aquatic Life Use Index (ALI), set out in Tables C-6 and C-7 of the IR, to assess aquatic life use in inland lakes. The mean Trophic State Index (TSI), the percent surface area of macrophyte coverage during the peak growing season (June through August), and the median concentration of nonvolatile suspended solids are used to calculate and ALI score. Higher ALI scores indicate increased impairment.

Assessments of aquatic life use are based primarily on physical and chemical water quality data collected via the Ambient Lake Monitoring Program, the Illinois Clean Lakes Program, or by non-Illinois EPA persons under an approved quality assurance project plan. The physical and chemical data used for aquatic life use assessments include: Secchi-disc transparency, chlorophyll *a*, total phosphorus, (epilimnetic sample only), and percent surface area macrophyte coverage. Data are collected a minimum of five times per year (April through October) from one or more established lake sites. Data are considered usable for assessments if meeting the following minimum requirements (Figure C-2): (1) At least four out of seven months (April through October) of data are available, (2) At least two of these months occur during the peak growing season of June through August (this requirement does not apply to the non volatile suspended solids (NVSS)) and (3) Usable data are available from at least half of all a lake sites within a given lake each month. As outlined in figure C-2, a whole-lake TSI value is calculated for the median Secchi-disk transparency, median total phosphorus (epilimnetic sample depth only), and median chlorophyll *a* values. A minimum of two parameter-specific TSI values are required to calculate parameter-specific use support determinations. The 0.05 mg/l Illinois General Use Water Quality Standard for total phosphorus in lakes (35 Ill. Adm. Code 302.205) has been incorporated into the weighting criteria used to assign point values for the ALI.

As shown in Table C-7 of the IR, an inland lake is designated as not supporting the aquatic use if the associated ALI score is greater than or equal to 75. Guidelines used to determine the potential causes of impairment of aquatic use are listed in Table C-8.

Aquatic Life Use – Lake Michigan

Aquatic life use assessments are based on the applicable Lake Michigan Basin Water Quality Standards (listed in Table B-4 of the IR), using the most recent three years of water quality data. Table C-9 of the IR sets out the guidelines for assessing aquatic life use in Lake Michigan-basin waters. The primary methods for identifying and listing potential causes of specific use impairments for aquatic life use in Lake Michigan are set out in Table C-10 of the IR.

Indigenous Aquatic Life

The indigenous aquatic life use represents aquatic-life conditions that are reasonably attainable for certain highly-modified waters, including some of the extensively modified streams and canals in the Chicago metropolitan area and Lake Calumet. Unlike most assessments of aquatic life use, assessment of indigenous aquatic life use is based primarily on surrogate water chemistry data rather than direct measures of aquatic life. All available water chemistry data are compared to the appropriate Secondary Contact and Indigenous Aquatic Life standards (Table B-2 of the IR). Assessments of indigenous aquatic life use rely on “frequency of exceedance” guidelines to better represent the true risk of impairment to aquatic life than would a single exceedance of a water quality criterion. Table C-10, of the IR, provides the guidelines used to assess indigenous aquatic life use in applicable streams and in Lake Calumet. Table C-11, of the IR, provides the guidelines for identifying potential causes of indigenous aquatic life impairment.

Fish Consumption – Streams, Inland Lakes and Lake Michigan

IEPA assesses fish consumption use based on water body-specific fish-tissue data and on fish consumption advisories issued by the Illinois Fish Contaminant Monitoring Program. For any contaminant except mercury, the issuance of a fish-consumption advisory for a specific water body provides the basis for a determination that fish consumption use is impaired. Currently, fish-consumption advisories are only in effect for PCBs, chlordane and mercury. For mercury, IDNR issued a state-wide fish consumption advisory applicable to all waters even though not all water bodies were sampled and not all samples exceed the criteria levels in the advisory.

IEPA does not assess fish consumption use as Not Supporting based on the IDNR statewide fish-consumption advisory for mercury because the advisory does not identify specific waters where the contaminants are known to occur. IEPA assesses fish consumption use as Not Supporting for mercury only for those specific waters where at least one fish-tissue sample is available and where at least one fish species exceeds the 0.06 mg/kg criterion for mercury.

Listing for PCB, Chlordane, and Mercury levels are identified using the health protection values developed by the FDA. These levels can be found in Table C-13. The state will

determine a water to be impaired based on site specific data where there is a level of restriction. The State level of restrictions are identified as 1 meal/week, 1 meal/month, 2 meals/month or do not eat. These are based on the sensitive population which includes pregnant or nursing women, women of child bearing age, and children under 15. Table C-14 identifies the guidelines for assessing *fish consumption* use impairment.

Primary Contact Use – Streams and Inland Lakes

To assess *primary contact* use, Illinois EPA uses all fecal coliform bacteria from water samples collected in May through October, over the most recent five-year period (i.e., 2002 through 2006 for this report). Based on these water samples, geometric means and individual measurements of fecal coliform bacteria are compared to the concentration thresholds in Tables C-16 and C-17. To apply the guidelines, the geometric mean of fecal coliform bacteria concentration is calculated from the entire set of May-through-October water samples, across the five years. No more than 10% of all the samples may exceed 400/100 ml for a water body to be considered Fully Supporting.

Some portions of stream segments are exempt from the fecal coliform bacteria water quality standard under 35 Ill. Adm. Code 302.209, and primary contact use does not apply in these portions.

Primary Contact – Lake Michigan

For Lake Michigan open waters, the assessment of *primary contact* use is based on fecal coliform bacteria. Fecal coliform bacteria data are collected as part of the Lake Michigan Monitoring Program, but insufficient numbers of samples are collected during a 30-day period to appropriately apply the standard (Table B-4). In addition, these samples are collected in the open lake from one to six miles off shore and may not reflect conditions at beaches. At approximately 51 Lake Michigan beaches, local agencies collect daily *Escherichia coli* bacteria samples during the swimming season. Beaches are closed by these agencies if samples exceed 235/100 ml *Escherichia coli* bacteria (77 Ill. Adm. Code 820). *Primary contact* use is assessed by using criteria in Tables C-18 (beaches) and C-19 (open waters). Criteria for identifying causes of impairment for *primary contact* use are shown in Table C-20. For Lake Michigan beaches, the assessment is based on the number of beach closings and the duration of those closings averaged over the past three years.

Secondary Contact – Streams, Inland Lakes and Lake Michigan

Secondary contact use is associated with all waters of the state. IEPA does not have assessment guidelines for secondary contact use, because existing water quality standards have no water quality criteria that specifically address this use. In any water body where primary contact use is assessed as Fully Supporting, secondary contact use is also assessed as Fully Supporting. In all other circumstances secondary contact use is not assessed.

Public and Food Processing Water Supply – Streams, Inland Lakes and Lake Michigan

The public and food processing water supply use is assessed in waterbodies where there is an active intake for this use. Table C-21 of the IR provides the guidelines for assessing this use, based on conditions in both untreated and treated water and using data acquired through the Clean and Safe Drinking Water Programs. Table C-22 of the IR provides the guidelines for identifying potential causes of impairment for this use.

Aesthetic Quality – Inland Lakes

Aesthetic quality use is associated with all water bodies in the state except those Chicago area water bodies where Secondary Contact and Indigenous Aquatic Life Standards apply. However, methods for assessing *aesthetic quality* use have only been developed for inland lakes and *aesthetic quality* use is not assessed in other water body types.

The Aesthetic Quality Index (AQI) (Table C-23) is the primary tool used to assess *aesthetic quality* for inland lakes. The AQI represents the extent to which pleasure boating, canoeing, and aesthetic enjoyment are attained at a lake. The Trophic State Index (TSI; Carlson 1977), the percent-surface-area macrophyte coverage during the peak growing season (June through August), and the median concentration of nonvolatile suspended solids are used to calculate the AQI score. Higher AQI scores indicate increased impairment (Table C-24).

Assessments of *aesthetic quality* use are based primarily on physical and chemical water quality data collected by the Illinois EPA through the Ambient Lake Monitoring Program or the Illinois Clean Lakes Program, or by non-Illinois EPA persons under an approved quality assurance project plan. The physical and chemical data used for *aesthetic quality* use assessments include: Secchi-disk transparency, chlorophyll *a*, total phosphorus (epilimnetic samples only), nonvolatile suspended solids (epilimnetic samples only), and percent surface area macrophyte coverage. Data are collected a minimum of five times per year (April through October) from one or more established lake sites. Data are considered usable for assessments if meeting the following minimum requirements (Figure C-3): 1) At least four out of seven months (April through October) of data are available, 2) At least two of these months occurs during the peak growing season of June through August (this requirement does not apply to NVSS) and 3) Usable data are available from at least half of all lakes sites within any given lake each month. As outlined in Figure C-3, a whole-lake TSI value is calculated for the median Secchi-disk transparency, median total phosphorus (epilimnetic sample depths only), and median chlorophyll *a* values. A minimum of two parameter-specific TSI values are required to calculate a parameter-specific use support determination. An assessment is then made based on the parameter specific use support determinations.

B. Changes in Assessment and Listing Methodologies

U.S. EPA reviewed a number of changes to the State's assessment and listing methodologies, as discussed below.

Macroinvertebrate Index of Biotic Integrity (mIBI)

A new macroinvertebrate Index of Biotic Integrity (mIBI) has been incorporated into the assessment of *aquatic life* use in streams. The mIBI, which has been under development for several years, provides a more comprehensive assessment of the health of the macroinvertebrate community than does the older Macroinvertebrate Biotic Index (MBI). Therefore, when a macroinvertebrate sample has been collected which allows the calculation of an mIBI score, the MBI score is not independently used in the assessment process. The MBI score will still be used when it is not possible to calculate an mIBI score. See Section C-2 of the IR, Aquatic Life – Streams for more information.

Assessment of Indigenous Aquatic Life Standard

On October 26, 2007, Illinois EPA filed a comprehensive rulemaking notice with the Illinois Pollution Control Board to change use definitions, use designations, and associated water-quality standards for the water currently co-designated for *secondary contact* use and for *indigenous aquatic life* use. The proposal is available on the Illinois Pollution Control Board website at:

<http://www.ipcb.state.il.us/documents/dsweb/Get/Document-59147/>. Because of these proposed comprehensive changes, (see Section B-2 of the IR) no new assessments of *indigenous aquatic life* use have been made in this listing cycle. All previous assessments of *indigenous aquatic life* use which were approved in the 2006 cycle have been carried forward to 2008 without changes as described above.

Water Quality Standard Changes

Illinois recently revised two water quality standards—the sulfate standard (which affects sulfates and total dissolved solids (TDS)), and dissolved oxygen (DO). IEPA's 2008 303(d) list is based on the new standards; however, as of the date of this Decision Document the new water quality standards have not been approved by U.S. EPA. See Section B-2 of the IR, Revisions to Illinois General Use Water Quality Standards for more information on these changes. More specifically:

(1) The Illinois Pollution Control Board adopted a revised standard for sulfates in general use waters that is intended to protect *aquatic life* use and eliminated the numeric standard for TDS for general use waters as part of a revised standard for sulfates. IEPA used the new sulfate standard in this cycle for determining attainment and causes of *aquatic life* use impairment. Therefore, IEPA delisted TDS as a cause of aquatic life use impairment for waters on its 303(d) list and delisted sulfate impairments if the water is meeting the revised sulfate standard. U.S. EPA has not received the proposed rule change and thus has not taken final action on the revised standard for sulfate/TDS. At this time all the

impairments delisted due to this standard change are being disapproved. U.S. EPA will publish a notice in the Federal Register identifying the waters/impairments to be placed back into Category 5 and provide an opportunity for comment. These waters/causes of impairment may be removed in the 2010 listing cycle if the new standard is approved at that time and the water is meeting the approved new standard.

(2) The Illinois Pollution Control Board adopted a revised standard for dissolved oxygen. This standard has been partially submitted to U.S. EPA. U.S. EPA is currently waiting for the Illinois Attorney Generals Office to provide the final required information. Once this is received, U.S. EPA will take final action on this standard change. IEPA used the new DO standard in this cycle in determining attainment and causes of *aquatic life* use impairment. At this time all the impairments delisted due to this standard change are being disapproved by U.S. EPA. U.S. EPA will publish a notice in the Federal Register identifying these impairments to be placed back into Category 5 based on the current standard and provide an opportunity for comment. As stated above, these causes of impairments/waters maybe removed from the list in 2010 if the new standard is approved and these waters are determined to be meeting the new standard.

Dissolved Oxygen

IEPA has removed DO as a cause of impairment from waters on the final 2008 303d list because DO is not a pollutant under the CWA, and IEPA only lists pollutant causes of impairment on the 303(d) list. This resulted in removing over 250 DO causes of impairment.¹⁰ In the proposed 303d list, IEPA had identified the waters on the 303d list and noted “Dissolved Oxygen (Nonpollutant).” Where a water had been designated with “Dissolved Oxygen (Nonpollutant)” or just “DO”, that meant that the water was impaired and not meeting the DO water quality standard. IEPA removed the DO causes of impairment after the public notice period.

U.S. EPA is adding this information back on the 303d list. These impaired waters not meeting the DO standard will be identified as “cause unknown—DO”. This informs the public as to the type of impairment of the water and, more importantly, helps ensure that the low DO will be addressed. If IEPA’s investigation, as part of TMDL development, concludes that it’s low flow causing the DO problem, then a TMDL will not need to be completed for the DO impairment. U.S. EPA’s decision to add the DO information back on the list is a clarification of the impairments on the list.

One commenter on IEPA’s proposed 2008 303(d) list stated that “removal of the low dissolved oxygen cause means that the Agency must be exhaustive in ensuring that pollutant causes and sources that can lead to low dissolved oxygen levels are included in the 303(d) list,” and also expressed concern that the underlying information will be lost. As just discussed, U.S. EPA is also concerned that without the information identifying the low DO problem on the list, IEPA could complete TMDLs for the pollutants identified, but not address the DO problem. By including “cause unknown—DO”, IEPA

¹⁰ In most instances the waters remain on the 303(d) list for other pollutants.

will need to determine the pollutant causes that are leading to low DO before the water is removed from the list.

Total Nitrogen

For the 2008 303(d) list Illinois EPA has stopped using total nitrogen (which appeared as nitrogen [total] on the 2006 303[d] list) as a cause of impairment for *aquatic life* use in streams. The methods, criteria and the manner in which nitrogen was reported as a cause of impairment of *aquatic life* use have changed many times over previous assessment cycles. In 2004, IEPA switched from using total ammonia nitrogen (cause code 920) to total nitrogen (using nitrate in water or measures of Kjeldahl nitrogen in sediment) saying that total nitrogen was “a better indicator of potential negative effects of excessive nutrient in streams”.¹¹ In 2004, IEPA considered total nitrogen an indicator of potential negative effects of excessive nutrients. IEPA now believes that the criteria by which it placed total nitrogen on previous 303(d) Lists were not scientifically valid. 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. IEPA also notes that it does not have a numeric standard for total nitrogen. Because IEPA now believes that those previous listings of total nitrogen (TN) were based on flaws in the listing methodology, IEPA delisted total nitrogen as a cause of impairment for all water bodies.

U.S. EPA disagrees with the removal of the TN cause of impairment. While IEPA does not have a numeric standard for TN related to aquatic life use, the waters are impaired for aquatic life use and IEPA identified total nitrogen as a pollutant. IEPA has not provided any data or information showing that total nitrogen is not a cause of or contributing to the impairment. IEPA states that there was no direct evidence of nutrient impact,¹² however, IEPA has no evidence to show that total nitrogen is not connected to the biological impairments for these waters.

IEPA listed waters in the past if the concentration of nitrate + nitrite was 7.8 mg/L or higher. Based on ecoregional nutrient criteria documents U.S. EPA developed, the value used by IEPA for listing a water represents the high end of the range of waters in Illinois. These criteria documents provide a frequency distribution of waters within each ecoregion. In Ecoregion 54 for example, (which includes most of northern Illinois) the minimum nitrate + nitrite value is 0.115mg/L, the maximum value is 10.65 mg/L, and the 25th percentile value is 1.798mg/L. Given that 7.8 mg/L is among the higher concentrations seen in Illinois and the upper Midwest, and that even lower levels of nitrogen can cause adverse effect in aquatic systems, there is justifiable concern that concentrations above 7.8 mg/L are negatively impacting aquatic life use. U.S. EPA is working with IEPA to develop nutrient criteria which should address the level used to determine if the use is impaired by the total nitrogen.

¹¹ July 13, 2004 email from Bruce Yurdin, Manager IEPA Watershed Management Section to Christine Urban, U.S. EPA Region 5.

¹² See Response to comments e-mail from Gregg Good , IEPA to Donna Keclik, U.S.EPA, dated June 17, 2008

Sedimentation/siltation

IEPA changed the methodology for determining when a waterbody is impaired due to siltation/sedimentation. In the 2006 listing cycle the criteria was the 85th percentile of the statewide data, and 34% silt/mud coverage. In the 2008 list the criteria is 98th percentile of the statewide data with 75% coverage (i.e. only 2% of waters have >75% silt/mud coverage). U.S. EPA considers >75% coverage high. Information reviewed by U.S. EPA shows data levels of sedimentation at 40-50% are problematic. Impairment is likely occurring before the sedimentation coverage is at 75%. IEPA thinks that the previous methodology at 34% coverage will result in errors of listing waters impaired for sedimentation; however IEPA acknowledges it has no information showing a relationship between >75% silt/mud and impairment of aquatic life use. IEPA did provide a scatter plot of data showing that >75% represents the worst case scenarios and IEPA can be assured that sedimentation is a cause of impairment when sediment coverage is at this level.¹³ However, by choosing the worse case scenarios to determine a cause of impairment, IEPA will certainly be missing waters that are impaired for sedimentation. IEPA has not provided adequate support to show that this revision to its methodology will identify all waters impaired by sedimentation.

C. Consideration of Existing and Readily Available Water Quality-Related Data and Information

40 C.F.R. §130.7(b)(5) describes the data and information that each state should consider in developing its 303(d) list. U.S. EPA has also provided guidance on sources of data and information that states should consider. Each state “should maintain a record of their decision process not to use specific data or information for a specific water in developing its list.”¹⁴

U.S. EPA has reviewed Illinois’ description of the data and information it considered for identifying waters, Illinois’ methodology for developing the list, and other relevant information submitted by IEPA. U.S. EPA concludes that the State of Illinois properly assembled and evaluated all existing and readily available data and information, including data and information relating to the categories of waters specified in 40 C.F.R. §130.7(b)(5). In addition, the State provided its rationale for not relying on particular existing and readily available water quality-related data and information as a basis for listing waters.

Generally, in the 2008 IR, IEPA only assessed surface waters for which new information had become available since the 2006 report, which was based mostly on data collected through September 2006. All new information collected by IEPA or submitted to IEPA was reviewed for quality assurance prior to use in the 2008 IR. The new information

¹³ See e-mail from Gregg Good, IEPA to Donna Keclik, U.S.EPA, dated September 3, 2008

¹⁴ See U.S. EPA’s “Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Section 303(d) of the Clean Water Act” (July 21, 2003), pages 20-21.

used for this IR consists mainly of biological, water, sediment, physical habitat, and fish-tissue information collected through 2005 (some in 2006) from various state monitoring programs.¹⁵ To assess primary contact use, Illinois EPA uses all fecal coliform bacteria from water samples collected in May through October, over the most recent five-year period (i.e., 2001 through 2006 for this report).

The programs at IEPA used to collect data include: the Ambient Water Quality Monitoring Network, Intensive Basin Surveys, Facility-Related Stream Surveys, the Ambient Lake Monitoring Program, the Illinois Clean Lakes Monitoring Program, the Volunteer Lake Monitoring Program, and the Lake Michigan Monitoring Program. Similarly, chemical and biological data were collected on groundwater resources throughout the state. Groundwater-quality monitoring programs include the Ambient Network of Community Water Supply Wells (CWS Network), the Pesticide Monitoring Subnetwork of the CWS Network, the Rotating Monitoring Network, and the Dedicated Pesticide Monitoring Well Network.

To assess surface waters, Illinois EPA routinely considers physico-chemical water data provided by the city of Chicago (Lake Michigan data), the United States Geological Survey, and the Lake County Public Health Department. Data sets were received from nine external organizations by August 15, 2007 (date for submittal of data requested in the solicitation notice requesting information for inclusion in the 2008 IR): the Conservation Foundation (DuPage River/Salt Creek Workgroup), Tri-County Regional Planning Commission (Peoria), City Water Light and Power, National Park Service, Rock River Water Reclamation District, Sinnissippi Coalition for Restoration of the Environment (SCORE), Fox River Study Group, Thorn Creek Basin Sanitary District, Sierra Club, North Shore Sanitary District and Wheaton Sanitary District. Additional data sets received and/or requested after the August 15 deadline included the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC), Conservation Foundation (DuPage River/ Salt Creek Workgroup - continuous monitoring data) and Lake Michigan bacteria/beach closing information from Lake County Public Health Department and USEPA Beach Advisory and Closing On-line Notification (BEACON). All submitted data that met Illinois EPA Quality Assurance/Quality Control requirements were considered for assessments in this report.

Data not used by IEPA

In January 2005, Illinois EPA developed “Guidance for Submittal of Surface Water Data For Consideration in Preparing the 2006 Integrated Report on Illinois Water Quality.” This guidance and associated data-solicitation information were made available on the Illinois Environmental Protection Agency website (www.epa.state.il.us/water/water-quality/guidance.html). The guidance describes the required format for data packages and associated quality assurance documentation and provides instructions on how and

¹⁵ The state depends on several different monitoring programs within the IEPA. IEPA’s “*Surface Water Monitoring Strategy*” (IEPA 2002) provides a detailed discussion of each of these programs. The *Surface Water Monitoring Strategy* has six different programs for streams, three programs for lakes and one program for Lake Michigan. Pages 29 through 34 of the IR discuss these programs.

when (by February 28, 2005) to submit data for consideration for assessments in this report. The guidance document and associated data-solicitation information was sent to over 100 individuals and organizations representing watershed groups, wastewater facilities, environmental consultants, universities, environmental groups, various governmental organizations, participants on various Illinois EPA workgroups, and people who commented on previous 303(d) lists.

Datasets which were not used in this report include the following:

- Lake Springfield data submitted by City Water Light and Power were collected under IEPA's Volunteer Lake Monitoring Program (VLMP). Currently, IEPA does not use VLMP data in their assessments because these data are not collected under an approved QAPP. These data are used to supplement other data; however IEPA has plans to use selected, high-quality data sets from the VLMP in the future.

D. Delisting of Waters/Impairments

IEPA set out its delistings of waters and impairments in Appendix A-4 to the IR. The changes in assessment and listing methodologies reviewed in Section II.B above resulted in a large number of delistings of causes of impairment. A state can remove WQLSs (or waterbody/pollutant combinations) from the 303(d) list for good cause. Good cause includes, but is not limited to: more recent or accurate data; more sophisticated water quality monitoring; flaws in the original analysis that led to listing of the water; or changes in conditions.¹⁶

IEPA delisted waters for the following reasons:

1. The assessment and interpretation of more recent or more accurate data in the record demonstrate that the applicable WQS(s) is being met.
2. The results of more sophisticated water quality modeling demonstrate that the applicable WQS(s) is being met.
3. Flaws in the original analysis of data and information led to the segment being incorrectly listed.
4. Documentation that the state included on a previous Section 303(d) List an impaired segment that was not required to be listed by EPA regulations, e.g., segments where there is no pollutant associated with the impairment.
5. Approval or establishment by EPA of a TMDL since the last Section 303(d) List.
6. Other relevant information that supports the decision not to include the segment on the Section 303(d) List.

¹⁶ See 40 C.F.R. § 130.7(b)(6)(iv)

Below is a discussion of various categories of IEPA's delistings on which U.S. EPA is taking an action to add the waters/impairments back on the list.

1. Waters/Impairments Meeting the Revised, but Unapproved WQS

IEPA delisted 141 waters/impairments based on the new standards for DO, TDS and sulfates.

According to Appendix A-4, these waters are now "meeting WQS." Since the standards have not been approved by U.S. EPA, they cannot be used for listing purposes¹⁷ and the waters are not meeting the existing standards. These waters and causes of impairments are being placed back into Category 5. IEPA delisted seven of the 141 impairments into Category 2 for the 2008 IR, since it had determined that the only pollutant(s) identified on the 2006 303(d) list were now meeting the new unapproved standards. The 141 waters/impairments are identified in Tables 1-3 in Attachment 1.

2. Flaws in Original Listing

DO as a non pollutant

Illinois identified 254 delistings of impairments for DO due to "flaws in original listings." IEPA identified the flaw as the fact that DO is not a pollutant, so IEPA did not include the DO cause of impairment on the final 2008 303(d) list. IEPA had public noticed these waters identifying the cause of impairment as "Dissolved Oxygen (nonpollutant) on the 2008 public notice version of the list. When IEPA submitted its list to U.S. EPA for final approval, IEPA had delisted these impairments. As discussed in Section B of this Decision Document, U.S. EPA disagrees with removal of this information from the 303(d) list. Although DO is not considered a pollutant under the CWA, the waters are impaired for aquatic life use or indigenous aquatic life use and not meeting the DO standard. U.S. EPA has included DO back on Category 5 for these 254 waters as "Cause Unknown—DO". By identifying this specific impairment U.S. EPA believes this informs the public as to the type of problems in the waterbodies. Some of the waters listed as impaired do not have other pollutants causes of impairment related to DO. When a TMDL is completed or additional monitoring is done for the pollutants that are identified, the DO impairment may not be addressed since IEPA has not identified DO on the 303(d) list. The information on the DO impairments being added back on the list is identified in Attachment 2.

Total Nitrogen

IEPA delisted waters for Total Nitrogen (TN) as a cause of impairment for aquatic life use. As discussed above in Section B, IEPA now believes that those previous listings of total nitrogen were based on flaws in the listing methodology. IEPA delisted total

¹⁷ 40 C.F.R. §131.21

nitrogen as a cause of impairment for 191 water bodies.¹⁸ Most of the waters remained in Category 5 for other pollutants; however nine had been moved to Category 4C¹⁹.

As previously discussed, U.S. EPA disagrees with IEPA's rationale for removing TN as a cause of impairment. U.S. EPA does not find that IEPA has provided good cause for delisting TN as a cause of impairment. Table 4 in Attachment 1 identifies the waters/TN cause of impairment that U.S. EPA will be placing back into Category 5.

Sedimentation/Siltation

IEPA changed the listing methodology for determining the cause of impairment due to sedimentation/siltation (sediment). In the past IEPA listed sediment as the cause if the bottom sediment was >34%. The state now believes that $\geq 75\%$ coverage is a more appropriate value, and delisted sedimentation as a cause of impairment for all waters that didn't exceed 75% sedimentation. As discussed above in Section B, U.S. EPA does not agree with IEPA revised methodology, and concludes that IEPA has not provided good cause for removing sedimentation/siltation as a cause of impairment based on "flaws in original listing."

IEPA removed 23 impairments due to sedimentation/siltation based on the new listing methodology. The removal of these impairments resulted in delisting 8 waters to Categories 2, 3 or 4C. The remaining 15 waters remained on the list for other pollutants.²⁰ Table 5 in Attachment 1 identifies the waters being placed back into Category 5 with the sedimentation cause of impairment.

E. 4C Waters

For the 2008 listing cycle, IEPA determined several waters were impaired but placed the waters in Category 4C instead of Category 5. Category 4C is for waters where the state demonstrates that the failure to meet an applicable water quality standard is not caused by a pollutant, but instead is caused by pollution, usually where the impairment is due solely to low water flow. An impaired waterbody may be channelized, with vegetation and cover removed from the streambank, but if there is a pollutant in the waterbody causing or contributing to the impairment, the waterbody must still be listed in Category 5. For waters PB-08 (Green River), PBJA-03 (Coal Creek), PBS-01 (Winnebago Ditch), FLIE-01 (unnamed tributary), ATF-06 (N.Fk. Saline River), and LF-08 (Edwards River), IEPA states that monitoring did not identify any pollutants. However, IEPA is applying its 2008 methodology to these waters. As previously discussed, U.S. EPA does not consider the revised methodology and changes in listing were appropriate for sedimentation, total nitrogen, and dissolved oxygen, so U.S. EPA asked IEPA to provide DO, sedimentation

¹⁸ See Methodology dated June 2008.

¹⁹ Note that five other waters were delisted to Category 2 as meeting WQS, four were placed in Category 4A because TMDLs had been done, and five of the waters were combined with other segments. These 14 waters/causes of impairment are not included in the 191 total identified above.

²⁰ In addition to the 30 waters, one water was removed from the list due to TMDL development and placed in Category 4A and three segments were delisted and combined with other segments.

and total nitrogen data for these waters to show that the cause of impairment was not total nitrogen or sedimentation, or that the water is meeting the current DO standard. IEPA has not yet provided this information. At this time, U.S. EPA is leaving these waters in 4C because U.S. EPA does not have the data for these waters. U.S. EPA has requested that IEPA provide all the data related to the aquatic life use on these waters after a final decision on the 2008 303(d) list has been issued. Upon review, U.S. EPA will make a decision for the next listing cycle as to whether the waters should be in Category 5 or remain in Category 4C.

In addition, for many waters IEPA moved to or placed in 4C for the 2008 listing cycle (Appendix A4), including those discussed above, IEPA states that monitoring has not identified any pollutant cause of impairment, “it is unlikely there is a significant pollutant impairment” and the impairment “is likely due to limited habitat.” This explanation suggests that IEPA doesn’t know what is causing the impairment (rather than showing that the impairment is caused by pollution). U.S. EPA has requested that IEPA provide its data for all waters with impairments of the aquatic life use standard and U.S. EPA will review the data for these 4C waters, in particular, to evaluate their 4C listing.

F. Waters Included on the List Which May be in Indian Country.

U.S. EPA's approval of Illinois' Section 303(d) list extends to all waterbodies on the list with the exception of those waters that are within Indian Country, as defined in 18 U.S.C. Section 1151. U.S. EPA is taking no action to approve or disapprove the State's list with respect to those waters at this time. U.S. EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under Section 303(d) for those waters.

G. State's Listing of Waters Impaired by Nonpoint Sources

U.S. EPA has also determined that the State properly listed waters with nonpoint sources causing or expected to cause impairment, consistent with Section 303(d) of the Act and U.S. EPA guidance. Section 303(d) lists are to include all WQLSs still needing TMDLs, regardless of whether the source of the impairment is a point and/or nonpoint source. U.S. EPA's long-standing interpretation is that Section 303(d) applies to waters impacted by point and/or nonpoint sources. In *Pronsolino v. Marcus*, the District Court for the Northern District of California held that Section 303(d) of the CWA authorizes U.S. EPA to identify and establish total maximum daily loads for waters impaired by nonpoint sources.²¹

H. Priority Ranking and Targeting

U.S. EPA has reviewed the State's priority ranking of listed waters for TMDL development, and concludes that the State took into account the severity of pollution and the uses to be made of such waters. Illinois' prioritization process was done on a

²¹ See *Pronsolino et al. v. Marcus et al.*, 91 F. Supp.2d 1337, 1347 (N.D. Ca. 2000); see also U.S. EPA's 1991 Guidance; see also National Clarifying Guidance for 1998 Section 303(d) Lists (August 17, 1997).

watershed basis instead of prioritizing individual waters or water segments. The State's prioritization process is a three-step process. The first step looks at the designated uses within a watershed which are not being met and assigns a high, medium, or low priority, with public and food processing water supply use being high priority. The next step takes into account the severity of pollution by considering the number of potential causes of impairments for each water within the watershed. The last step prioritizes the watersheds within the three priority groups established in the first step, by considering the water body's potential for improvement and the degree of public support for water body improvement. Waters where the potential causes have no numeric standards, interstate waters, waters with legacy pollutants, waters impaired by natural background levels, and waters for which the cause of use impairment is unknown are prioritized below other waters.²²

Title 40 C.F.R. § 130.7(b)(4) requires the 303(d) list to identify "waters targeted for TMDL development in the next two years." U.S. EPA refers to this identification as the two-year schedule. The State provides its two-year schedule in Table C-29 of the IR. U.S. EPA reviewed the State's two-year schedule and concludes that the State has identified those WQLSs targeted for TMDL development and completion in the next two years.

U.S. EPA has received Illinois' long-term schedule for TMDL development for all waters on the 303(d) list. As a policy matter, U.S. EPA has requested that States provide such schedules.²³ U.S. EPA is not taking any action to approve or disapprove this schedule pursuant to Section 303(d). The long-term schedule reflects the State's prioritization. TMDLs for watersheds are scheduled from 2006 to 2019, with all TMDLs to be initiated no later than 2019.

I. Public Participation

In June 2007, IEPA developed "*Guidance for Submittal of Surface Water Data For Consideration in Preparing the 2008 Integrated Report on Illinois Water Quality, including the List of Clean Water Act Section 303(d) Impaired Waters*" (Illinois EPA 2007b). This guidance and associated data-solicitation information were made available on the IEPA website (www.epa.state.il.us/water/water-quality/guidance.html) by June 15, 2007. The guidance describes the required format for data packages and associated quality assurance documentation and provides instructions on how and when (by August 15, 2007) to submit data for consideration for assessments in the 2008 IR. Postcards requesting water quality monitoring data with reference to the submittal guidance on the web site were sent to over 400 individuals and organizations representing watershed groups, wastewater facilities, environmental consultants, universities, environmental

²² See pages 85 through 87 of the 2006 IR.

²³ See Memorandum from Robert Perciasepe, Assistant Administrator for Water, to Regional Administrators and Regional Water Division Directors, "New Policies for Developing and Implementing TMDLs" (August 8, 1997).

groups, governmental organizations, participants on various Illinois EPA workgroups, and people who commented on previous 303(d) Lists.

A draft of the 2008 Integrated Report was placed on the Illinois EPA website (<http://www.epa.state.il.us/water/tmdl/303d-list.html>) for public review on March 21, 2008 and IEPA sent a notice out to all known interested parties of its availability. Hard copies of the report were available for those who requested them. Notice of a public hearing was published on March 24, 2008; March 31, 2008; and April 7, 2008 in the Edwardsville Intelligencer. A public hearing was held on April 24, 2008 to accept public comments. The hearing record remained open for written comments through May 27, 2008. IEPA received written comments from four commenters. The agency responded to all pertinent comments and incorporated changes into the existing document. Responses to comments are documented in Appendix F of the IR.