

The FINAL 2008 Iowa list of Section 303(d) Impaired Waters

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Summary: Iowa's final 2008 Section 303(d) list of impaired waters contains 439 waterbodies with a total of 581 impairments. This list is Category 5 of Iowa's 2008 Integrated Report (Tables 1 and 2). The list includes 357 stream/river segments, 76 lakes, 4 segments of three federal flood control reservoirs, and 2 wetlands. This draft list is a subset of the 1,108 waterbodies assessed by IDNR staff for support of their designated beneficial uses as described in the [Iowa Water Quality Standards](#) as part of the Clean Water Act Section 305(b) reporting for 2008 assessment cycle. Impairments are identified for all classes of beneficial uses (primary contact recreation, aquatic life, drinking water, fish consumption, and general uses). The total number of impaired waters in Iowa's 2008 Integrated Report is 545, with 439 waters in Category 5 [impaired and TMDL (total maximum daily load) needed; the Section 303(d) list] and 106 waters in Category 4 [impaired but TMDL not required]. The most frequently identified causes of impairment of streams and rivers are indicator bacteria (*E. coli*), biological impairments, and fish kills. For lakes, the most commonly identified impairments are algae (including pH), non-algal turbidity (e.g., suspended sediment), and indicator bacteria (see Figures 1 and 2). All Section 305(b) assessments are available via Iowa DNR's on-line assessment database, [ADNet](#).

Federal Requirements for water quality reporting and impaired waters listing: The Federal Water Pollution Control Act (commonly referred to as the Clean Water Act (CWA)) requires each state to develop a program to monitor the quality of its surface waters (streams, lakes, and wetlands (=waterbodies)). Section 305(b) of the CWA requires states to prepare, every two years, a report that describes, based on the monitoring data available, the status of water quality and the extent to which state waters meet goals of the Act. Section 303(d) of the CWA requires each state, from time to time, to list its waters for which effluent limitations are not sufficient to meet state water quality standards. In [federal regulations for implementing Section 303\(d\)](#), U.S. EPA has defined "from time to time" to mean April 1 of even-numbered years, which coincides with the deadline for Section 305(b) reporting. Beginning with the 2004 water quality reporting cycle, U.S. EPA recommended that states provide a single water quality monitoring and assessment report—the Integrated Report—that combines the water quality reporting requirements of Section 305(b), the impaired waters listing requirements of Section 303(d), and the lakes reporting requirements of Section 314 of the Clean Water Act. This "Integrated Report" is composed of five categories that are designed to give the public and other stakeholders a comprehensive summary of the water quality status in the state (Table 1). According to U.S. EPA's guidelines, water quality problems identified in the Integrated Report should be emphasized and reflected in the state's water quality management plan and annual work programs under Sections 106, 205(j), and 319 of the Clean Water Act.

Iowa's Water Quality Monitoring Programs: The current IDNR surface water monitoring network consists of 84 stations mostly on the larger interior rivers with a few stations on larger streams. Sixty of these are ambient stations that are sampled monthly; 24 stations are monitored monthly as part of the upstream-downstream city monitoring. In addition, swimming beaches at 35 state-owned lakes are sampled for indicator bacteria (*E. coli*) weekly from April through October. During the period 2002-2006, 131 Iowa lakes were sampled during summer seasons either by Iowa State University or by UHL as part of the IDNR-sponsored statewide lake monitoring program. Approximately 70 stations on smaller rivers and streams are sampled yearly for fish and macroinvertebrates as part of biological monitoring conducted for the IDNR/UHL stream biocriteria project, the regional environmental monitoring and assessment program (REMAP), and TMDL-related monitoring. In cooperation with U.S. EPA (Region 7), IDNR conducts annual monitoring of toxic contaminants in fish from Iowa's rivers and lakes. Iowa DNR also uses data from monitoring networks operated by the Corps of Engineers, U.S. Geological Survey, and municipal water utilities (for example, Des Moines, Cedar Rapids, and the Rathbun Rural Water Association). Results of fish kill investigations are also used to develop water quality assessments and to identify impairments.

Qualifiers: The list of impaired waters is only as inclusive as the various water quality (WQ) monitoring networks in Iowa. In general, the greater the amount of monitoring, the greater the number of waters on the list. Iowa does not yet have numeric WQ criteria for nutrients, turbidity or siltation; any such impacts identified are based on violations of the state's narrative standards protecting against "aesthetically objectionable conditions." Eventual adoption of numeric criteria for nutrients, turbidity, and/or siltation will likely result in a substantial *increase* the number of waterbodies on Iowa's future lists of impaired waters.

Perspective on the meaning of "impairment": Severe water quality problems, although fortunately rare, do continue to occur in Iowa. Most of the impairments on Iowa's draft list of impaired waters, however, do not indicate severely or grossly polluted conditions. Often, the difference between assessing a waterbody as "impaired" versus "fully supported" can come down to contaminant levels in only one of 36 monthly samples or the absence of a few key aquatic species in a stream. Many waters assessed as "impaired" for aquatic life uses often continue to support a moderately diverse aquatic community. Similarly, high levels of indicator bacteria suggest "impairment" and potential risks to persons that use rivers and lakes for swimming, but reports of waterborne illness related to this use have historically been extremely rare and largely anecdotal.

Why does the number of impaired waters in Iowa continue to increase? A state's Section 303(d) list of impaired waters is largely an accumulation of impairments identified in past listing cycles. Once added to a state list, the impairment is likely to remain on the list. In general, impairments are identified faster than impairments are removed through the TMDL process. Thus, the number of waters on state lists tends to increase over time (see Figure 3 for the increase in the number of Iowa impairments). Also, as more state waters are monitored over time, the number of impairments continues to increase. U.S. EPA carefully scrutinizes any state proposal to remove an impairment from a Section 303(d) list. According to [U.S. EPA regulations](#), impairments can only be removed from a state list for specific reasons, including (1) more recent data showing that the impairment no longer exists, (2) discovery of an error in the data or rationale for the original listing, and (3) preparation and approval of a total maximum daily load (TMDL) that identifies sources of pollutant loadings and reductions in loadings necessary to fully attain applicable water quality standards. The primary mechanism for removing waters from Iowa's list of impaired waters has been preparation and U.S. EPA approval of TMDLs. Category 4a of the Integrated Report consists of 52 waterbodies that were previously on Iowa's list of impaired waters (IR Category 5) but that now have TMDLs approved for their impairments. Also, many impairments (for example, those due to bacteria and many biological impairments) are due to nonpoint sources (NPS) of pollution. Unless a state has authority to reduce levels of nonpoint source pollution, the NPS-related impairments will likely continue to reside on the state's list of impaired waters.

Why did the number of impaired waters increase so dramatically for the 2008 listing cycle? The number of impaired waters on Iowa's draft 2008 Section 303(d) list (439) is nearly 60% greater than the number on Iowa's final/approved 2006 list (279) (Figure 3). At first glance, this dramatic increase would suggest a serious and sudden decline in the level of water quality in Iowa's surface waters. The addition of approximately 40 percent (63) of the 160 new waterbodies, however, is due to a change in the *Iowa Water Quality Standards*. In March 2006, the primary contact recreation (Class A1) use was [presumptively applied](#) to all of Iowa's streams and rivers. Prior to 2006, only selected reaches of Iowa's larger streams and rivers were designated for Class A1 use. With the changes in the *Standards* in 2006, this designated use was presumptively applied to all Iowa streams, regardless of size. Given the abundance of the typically non-pathogenic indicator bacterium (*Escherichia coli*) in Iowa's streams and rivers—largely from nonpoint sources—it is likely that monitoring data, if available, would show bacterial impairments in nearly all of these streams and rivers. Where monitoring data have shown a bacterial impairment of this "presumptive" use, the impairment has been placed in subcategory 5p (presumptive) for Iowa's 2008 Integrated Report. Iowa DNR staff are in the process of conducting [use attainability analyses](#) for the presumptively designated streams to determine whether the presumptive use is, in fact, the [appropriate use](#) or whether the presumptive use needs to be changed to better reflect the particular physical limitations (small channels; shallow depth) presented by the presumptively designated streams. Without this change in the *Standards*, the number of impaired waters in the 2008 listing cycle would have increased by approximately 35 percent compared to the 2006 cycle.

The Integrated Report Format

As specified in [U.S. EPA's guidelines](#) for the 2008 water quality reporting and impaired waters listing cycle, the integrated report is a five-part list:

| | |
|-------------|---|
| Category 1: | All designated uses are met |
| Category 2: | Some of the designated uses are met, but there are insufficient data to determine if the remaining designated uses are met. |
| Category 3: | Insufficient data to determine whether any designated uses are met. |
| Category 4: | Waterbody is impaired or threatened but a TMDL is not needed. |
| Category 5: | Waterbody is impaired or threatened and a TMDL is needed. |

In their guidance to states, U.S. EPA has added the following Integrated Report subcategories:

- *4a: all TMDLs need to result in attainment of all applicable water quality standards have been approved or established by EPA [TMDL not needed].*
- *4b. other required control measures are expected to result in the attainment of water quality standards in a reasonable period of time [TMDL not needed];*
- *4c: the impairment or threat is not caused by a pollutant [TMDL not needed].*

The U.S. EPA guidelines allow states to create additional subcategories in order to refine the reporting process. In order to better track the attainment status of Iowa waterbodies, the following subcategories have been created by IDNR:

- Category 2b: At least one use is met with at least one other use potentially impaired.
- Category 3b: Insufficient data to determine whether any designated uses are met but at least one use is potentially impaired.
- Category 4d: Waterbody assessed as "impaired" due to a fish kill where enforcement action was taken by Iowa DNR to address the source of the kill: no TMDL required.
- Category 5b: Impairment is based on results of biological monitoring or a fish kill investigation where specific causes and/or sources of the impairment have not yet been identified.
- Category 5p: A presumptively-applied use is impaired (most often applied to bacterial impairments of the presumptively applied Class A1 (primary contact recreation) use). This subcategory is new for Iowa's 2008 Integrated Reporting cycle.

Iowa's List of Waters in Need of Further Investigation:

The list of waters in need of further investigation (WINOFI), as required by Iowa's "credible data law," is comprised of those waterbodies assessed (evaluated) as "potentially impaired" in IR subcategories 2b and 3b. As stated in the rationales for subcategories 2b and 3b above, the assessments of any impairments in these waterbodies are based on less than complete information that suggests a potential impairment. Thus, the assessments are of relatively low confidence and are not appropriate for addition to Iowa's impaired waters list. Iowa's final 2008 list of waters in need of further investigation contains 220 waterbodies (22 waterbodies in Category 2b, 178 waterbodies in Category 3b, and 10 waterbodies with existing Category 5 impairments). In addition, 12 waters on the 2006 WINOFI have new bacterial impairments with their potential biological and fish kill-related impairments remaining. Of the 139 waterbodies on the final 2006 WINOFI list, a total of 9 waterbodies were moved to other categories of the integrated report as follow:

- 2 waterbodies were assessed as "fully supporting" and were placed in Category 2a;
- 3 waterbodies were assessed as "impaired" but the impairment does not require preparation and approval of a TMDL; these waterbodies were placed in Category 4c;

- 4 waterbodies were assessed as “impaired” and in need of a TMDL and were placed in Category 5 (=Section 303(d) list).

Table 1. Summary of the number of waterbodies in each category of Iowa’s final 2008 integrated Section 305(b) / Section 303(d) report. Categories 5a, 5b, and 5p comprise Iowa’s final 2008 Section 303(d) list; Categories 2b and 3b comprise Iowa’s draft list of waters in need of further investigation.

| Integrated Report Category | Category Description | Number of Waterbodies |
|-----------------------------------|---|------------------------------|
| 1 | All designated uses met. | 15 |
| 2a | Some designated uses met; insufficient data to determine whether other uses are met. | 352 |
| 2b | At least one designated use is met with at least one other use potentially impaired based on an "evaluated" assessment. | 22 |
| 3a | Insufficient data to determine whether any designated uses are met. | 1,033* |
| 3b | Insufficient data to determine whether any designated uses are met but at least one use is potentially impaired based on an "evaluated" assessment. | 174 |
| 4a | All TMDLs need to result in attainment of all applicable water quality standards have been approved or established by EPA. | 52 |
| 4b | Other required control measures are expected to result in the attainment of water quality standards in a reasonable period of time; TMDL not required. | 0 |
| 4c | The impairment or threat is not caused by a pollutant; TMDL not required. | 27 |
| 4d | Waterbody assessed as “impaired” due to a fish kill where enforcement action was taken to address the source of the kill: TMDL not required. | 27 |
| 5a | Waterbody is impaired or threatened and a TMDL is needed. | 198 |
| 5b | Impairment is based on results of biological monitoring or a fish kill investigation where specific causes and/or sources of the impairment have not yet been identified. | 178 |
| 5p | A presumptively applied use is impaired. | 63 |

*Also includes all non-assessed waterbodies in Iowa’s Assessment Database ([ADBNet](#)).

Table 2. Summary of lake and stream/river waterbody types assessed as “impaired” for Iowa’s final 2008 305(b)/303(d) cycle by type of waterbody and placed in Category 5a (pollutant cause identified), Category 5b (impairment based on results of biological monitoring; cause of impairment not known), or 5p (impairment of a presumptively applied designated use).

| Waterbody Type | Cat. 5a | Cat. 5b | Cat. 5p | Total No. of waterbodies in Category 5: | Total Number of Waterbodies Assessed | Percent of Total Waterbodies Assessed as impaired |
|-----------------------|----------------|----------------|----------------|--|---|--|
| Streams and Rivers | 119 | 175 | 63 | 357 | 811 | 44% |
| Lakes | 75 | 2 | 0 | 77 | 163 | 47% |

Web links:

EPA guidelines for the 2008 Integrated Reporting cycle: http://www.epa.gov/owow/tmdl/2008_ir_memorandum.html.

ADBNNet: Iowa’s Section 305(b) assessment database: <http://programs.iowadnr.gov/adbnnet/index.aspx>.

Iowa Water Quality Standards: <http://www.iowadnr.com/water/standards/files/chapter61.pdf>.

Iowa DNR “use attainability analysis” web site: <http://www.iowadnr.com/water/uaa.html>.

Implementing the “rebuttable presumption” for Iowa streams: <http://www.iowadnr.com/water/standards/protectedflow.html>.

Identifying the appropriate contact recreation use of Iowa streams: <http://www.iowadnr.com/water/standards/recuse.html>.

Figure 1. Number of STREAM/RIVER segments impaired by various causes; from Iowa's final 2008 Integrated Report

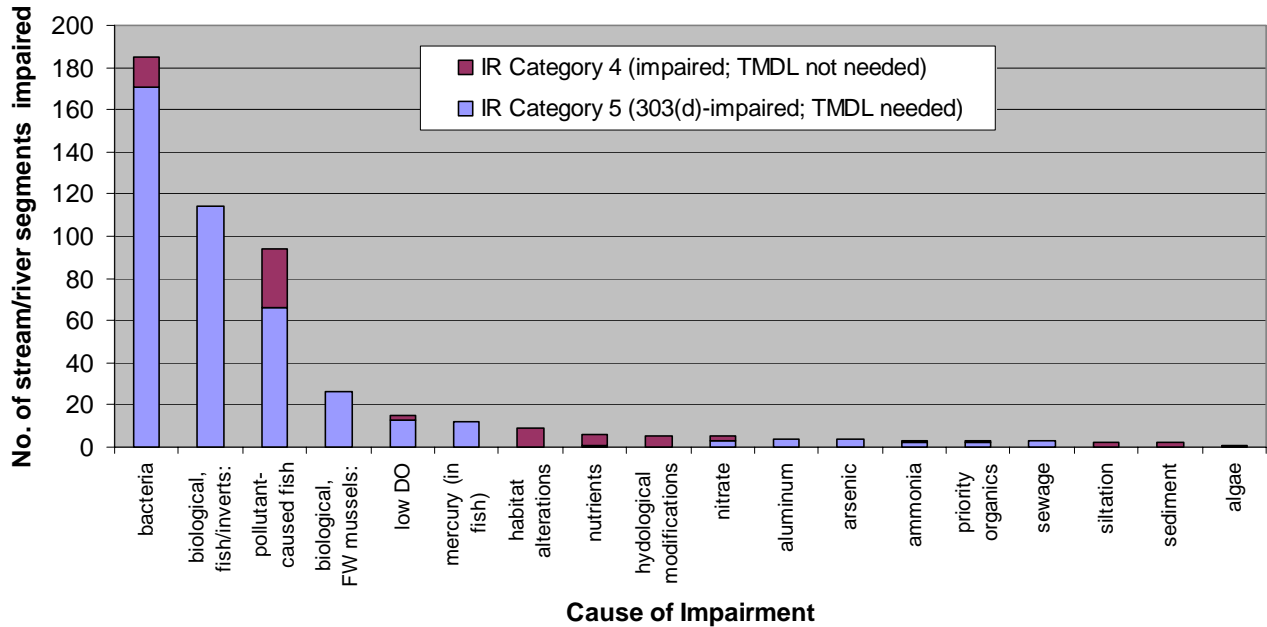


Figure 2. Number of LAKES impaired by various causes; from Iowa's final 2008 Integrated Report.

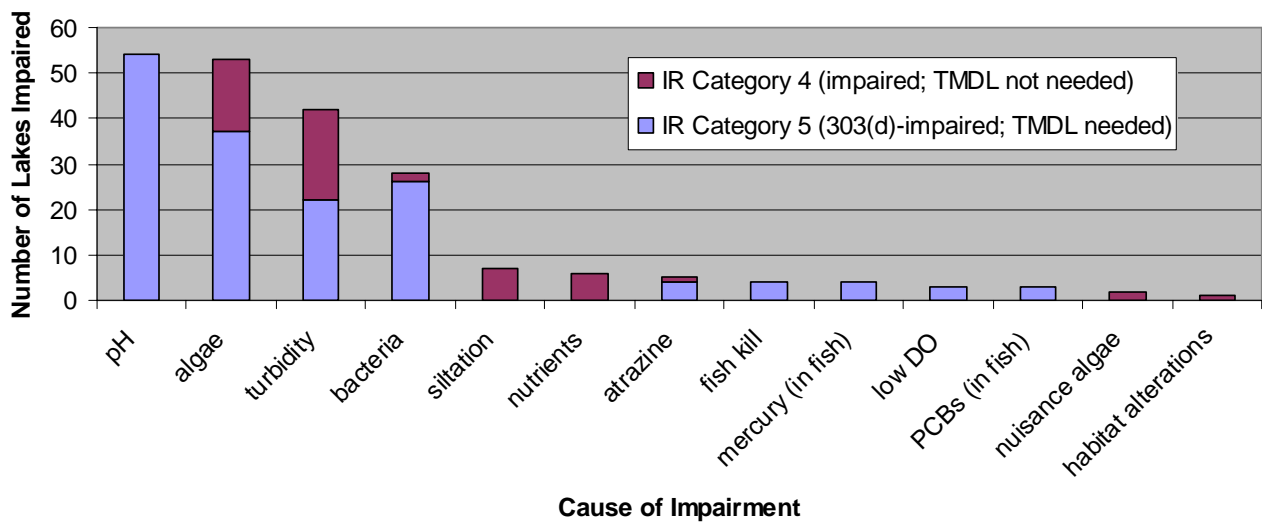


Figure 3. Comparison of numbers of impaired waterbodies on Iowa's Section 303(d) lists [IR Category 5], 1998-2008.

