

**PUBLIC PARTICIPATION RESPONSIVENESS SUMMARY
FOR IOWA'S 2010
SECTION 303(d) LIST OF IMPAIRED WATERS**

**IOWA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL SERVICES DIVISION
GEOLOGICAL & WATER SURVEY
WATERSHED MONITORING & ASSESSMENT SECTION**

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INTRODUCTION:

The following constitutes a summary of the comments received in response to the draft 2010 Section 303(d) list of impaired waters as developed by the Iowa Department of Natural Resources (IDNR). Notice of availability of the draft 2010 list was published on January 18, 2011 in the *Des Moines Register*. In addition, notice of the availability of the list was sent to interest groups and a network of statewide news organizations in the January 20, 2011 edition of IDNR's "EcoNews Wire" (<http://www.iowadnr.gov/news/eco/11jan20eco.pdf>). Additional materials for the draft 2010 list were available at the Iowa DNR's "impaired waters" web site (<http://www.igsb.uiowa.edu/wqm/ImpairedWaters/303d.html>). Public comments were accepted from January 18 through March 4, 2011.

Comments were submitted to IDNR by one government agency (U.S. EPA) and two individuals (Appendix 1). This responsiveness summary provides a discussion of the issues raised by the comments received and how the comments were incorporated into the development of IDNR's final 2010 list. IDNR's responses to the comments received are organized by commenter.

As distributed for public comment, IDNR's draft 2008 Section 303(d) list included 446 waterbodies with a total of 604 impairments. Only U.S. EPA identified waters that should be added to Iowa's final 2010 list of impaired waters. These waters are summarized in Tables 1 and 2, and these waters are discussed in the responses to U.S. EPA's comments below. Given these and other changes to IDNR's draft list, IDNR's final 2010 list of impaired waters (Integrated Report Category 5) includes a total of 467 waterbodies with a total of 620 impairments.

RESPONSES TO COMMENTS RECEIVED:

COMMENTER 1: U.S. Environmental Protection Agency, Region 7:

GENERAL COMMENTS:

305(b) Guidance:

EPA comment on IDNR's reliance on old guidance for Section 305(b) reporting: While past 305(b) guidance may be helpful for assessing a water body for placement in categories 1 – 3, 303(d) guidance should be used for decisions regarding category 5.

IDNR Response: Although prepared prior to both the arrival of the current Integrated Reporting format and EPA's Consolidated Assessment and Listing Methodology (U.S. EPA 2000), past 305(b) guidance (e.g., U.S. EPA 1997) contains more detailed and relevant (i.e. nuts & bolts) information and guidance than does either CALM or the annual IR guidance documents (e.g., EPA 2005). Thus, some states tend to rely on the assessment methods described in these older pre-CALM documents. EPA should consider updating CALM to incorporate more relevant and realistic assessment/listing approaches that can be used by states to assess water quality in a Section 305(b) context and to prepare Section 303(d) lists.

Bacteria Assessment and EPA-approved WQS

EPA comment regarding IDNR's methodology for identifying bacterial impairments: Waterbodies must be assessed against Iowa's EPA-approved water quality standards (WQS). Bacterial assessments must be made for each recreation season. The approach set forth in IA's methodology allowing assessment over multiple recreation seasons is inconsistent with Iowa's WQS and EPA guidance.¹

IDNR Response: Although not noted in EPA's comment, IDNR does use recreational season assessments at lakes and swimming beaches where more frequent (e.g., weekly) monitoring supports such an assessment approach. For streams and rivers, however, the typical monthly monitoring frequency generates relatively few samples per recreational season (approximately seven samples) and thus does not generate a sufficient number of data points to be used with EPA's recommended approach of using geometric means of at least five samples collected over a 30-day period to identify bacterial impairments. If, however, monitoring frequencies at stream/river stations generate sufficient data to support a recreation season assessment, this approach is used and described in the

assessment narrative. For example, such assessments were developed for the following Iowa stream segments:

- Silver Creek, Scott County (IA 01-NEM-0068_1
- Pheasant Creek, Scott County, IA 01-NEM-0064_0

Iowa DNR has used the same river/stream bacteria listing methodology that combines bacteria data over multiple years for the last five Section 303(d) listing cycles (approximately 12 years) without comment from EPA. IDNR is curious why, after over a decade of approved listings for stream/river bacteria impairments, EPA now takes issue with this particular aspect of IDNR's listing methodology? While combining samples over multiple years may not be consistent with EPA guidance, IDNR believes that such an approach is necessary and justified when sampling frequencies are monthly or less frequent.

IDNR also disagrees that Iowa's methodology is necessarily inconsistent with Iowa's EPA-approved water quality standards. Iowa's criteria for indicator bacteria (*E. coli*), as described in Section 61.3(3)(a)(1) of the *Iowa Water Quality Standards*, do not specify how data are to be summarized for comparison to the respective criterion for *E. coli*. While recreation seasons are defined in the "bacteria criteria table" in this section, there is no specification regarding how data are to be summarized for comparison to these criteria. Rather, for the recreational seasons defined, the geometric mean and single-sample criteria are simply stated. IDNR's contention is that the assessment confidence gained by combining the few annual stream/river samples collected over three recreation seasons improves the ability to accurately characterize bacteria concentrations in the river/stream segment being assessed.

Also, EPA's recommendations for assessment and listing procedures are, after all, non-binding guidance. IDNR has historically attempted to adhere to EPA guidance and recommendations as much as possible. Where EPA guidance appears more focused on identifying impairments than on scientific rigor, however, IDNR has chosen to modify EPA guidance to allow more confidence in the final water quality assessment based on the available data.

EPA Comment regarding IDNR's use of Iowa's single-sample maximum criterion for *E. coli*: Iowa's EPA-approved WQS currently contain a single sample maximum (SSM value for *E. coli*; because the state is required to assess against all of its current WQS, the SSM criterion cannot be disregarded. If the state believes that the use of this criterion is inappropriate, it may choose [sic] to revise its WQS.

IDNR Response: IDNR agrees with EPA's comments and will consider waters showing impairment based only on Iowa's single-sample maximum criterion as Section 303(d) impaired. These waters will be added to Iowa's final 2010 Section 303(d) list prior to submittal to EPA for list approval/disapproval.

EPA Comment regarding IDNR's requirement for a minimum number of samples to identify bacterial impairments: EPA guidance also states that it is inappropriate to set the minimum number of samples required for assessment purposes (ten independent bacteria samples over a recreational season for river segments) at a value greater than the number typically collected.² EPA's guidance cites a common misconception of how water quality data should be used to determine whether or not a water body has attained the applicable geometric mean values. Some states and authorized tribes have mistakenly interpreted the water quality criteria as requiring a minimum number of samples in order to determine the attainment of the geometric mean component of the water quality criteria. The confusion may arise because EPA recommends a monitoring frequency of five samples taken over a 30-day period. The recommendation does not intend to imply that five samples are needed before a geometric mean can be calculated. The minimum number of samples used in the 1986 *Water Quality Criteria for Bacteria* document is for accuracy purposes only; clearly, more frequent sampling yields more confidence when determining whether or not a water body is meeting its geometric mean. The geometric mean should be calculated based on the total number of samples collected over the specified monitoring period (which can be an entire recreation season), and used in conjunction with an upper percentile value to determine attainment of the numeric water quality criteria.³

IDNR Response: IDNR's decision to require that at least 10 samples be collected over a three-year period in order to support a Section 303(d) listing is not based on a reading or interpretation of EPA assessment/listing guidance. IDNR began identifying a minimum sample size needed for bacterial assessments (10 samples over a two-year period) for the 1994 Section 305 assessment cycle, and IDNR has used this assessment approach for every Section 305(b)/Section 303(d) cycle since that time. This assessment/listing approach is based on the need to have, as much as possible, good confidence that IDNR's data-based listing decisions are accurate.

A journal article in 2001 (Smith et al. 2001) added support for IDNR's assessment/listing approach requiring minimum sample sizes:

Smith, E.P., K. Ye, C. Hughes, and L. Shabman. 2001. Statistical assessment of violations of water quality standards under Section

303(d) of the Clean Water Act. Environmental Science and Technology, 35:606-612.

The conclusions from this article were included with IDNR's 2004 assessment/listing methodology and have been a part of IDNR methodologies in all subsequent listing cycles. The following is an excerpt from Iowa's 2004 assessment/listing methodology that expands on the statistical confidence issues discussed by Smith et al. (2001):

At samples sizes less than 10, the probability of incorrectly concluding that impairment exists (Type 1 error) with U.S. EPA's approach is approximately 60%; with 10 samples, the probability of this type of error decreases to approximately 30% (Smith et al. 2001). IDNR views this approach [i.e., of requiring at least 10 samples] as a reasonable balance between the probability of Type I decision error (listing an attaining waterbody as "impaired") and Type II decision error (assessing an impaired waterbody as fully supporting).

This approach was used for the current (2010) assessment listing cycle. See pages 42 and 43 of Iowa's draft assessment/listing methodology for more information

<http://www.igsb.uiowa.edu/wqm/ImpairedWaters/Year2010/Draft2010Methodology.pdf>).

In addition, IDNR disagrees that its listing methodology sets the minimum number of samples required for assessment at a value greater than the number typically collected. The instances where fewer than 10 samples are collected as part of ambient monitoring networks in Iowa are rare. Networks conducted by IDNR, Iowa State University (via the U.S. Army Corps of Engineers), and by Iowa State University Limnology (which account for the bulk of the data used for Section 303(d) listing in Iowa) collect samples at least monthly and often more frequently. Monthly monitoring produces from seven to nine samples per recreation season (March 15 to November 15) and thus from 21 to 27 samples over three recreation seasons. Although data from more frequent sampling is preferred, IDNR considers the 20+ bacteria samples collected over three years of monthly monitoring as adequate for developing Section 305(b) assessments and for identifying Section 303(d) impairments.

At monitoring sites where fewer than 10 samples have been collected over a three-year period, Iowa's assessment/listing methodology provides for identifying impairments based on fewer than 10 samples if "overwhelming evidence of impairment" is indicated. The following is an excerpt from the portion of IDNR's draft 2010 assessment/listing methodology that

describes examples of when “overwhelming evidence” justifies determination of a Section 303(d) listing in the absence of complete data (see page 42):

The *E. coli* geometric mean of at least five samples collected at regular intervals over a summer recreational season, and that meet [Iowa’s] credible data requirements, would exceed Iowa’s geometric mean criterion even if the remainder of the 10 samples needed for a high-confidence (“monitored”) assessment all has less than the IDNR’s detection level for *E. coli* (i.e., 10 orgs/100 ml).

For example, this approach was used to identify a bacterial impairment for Whitewater Creek in Dubuque County (waterbody IA 01-NMQ-0100_1).

IDNR believes that the ambient concentration of *E. coli* in a stream/river segment cannot be accurately characterized with fewer than five samples regardless of sample levels. Thus, the identification of an impairment based on few samples comes with a high probability of identifying an impairment where none exists (Type I error); this approach is neither scientifically defensible nor conducive to efficient use of state resources for TMDL development.

Biological Assessments:

EPA comment on IDNR’s change in biological assessment methodology:

For biological assessments, Iowa’s methodology requires that two samples be taken within a five year period. Discounting older data based solely on age is not consistent with EPA guidance. If the data was valid when collected, it should be used until documentation can be made that the information is no longer reliable.⁴ Please provide a rationale that would justify discounting data collected at intervals greater than five years.

IDNR Response:

IDNR feels that EPA has misinterpreted IDNR’s change in methodology requiring two samples be taken within a five year period: IDNR has not discounted older biological data due to age of data. Biological assessments older than five years have been used for purposes of assessment and listing as part of previous Section 305(b)/303(d) cycles. If results of a biological assessment older than five years was used to identify a Section 303(d) impairment, then that impairment remains on Iowa’s current Section 303(d) list: impairments were not de-listed simply because the biological assessment upon which they were based had aged beyond five years. Such assessments are identified as “5b-t” in the context of the Integrated Report. That is, these biological assessments tentatively remain in Category 5

(303(d)-impaired). Due to the change in methodology for the 2010 listing cycle, however, additional sampling will be needed to be able to identify a verified (“5b-v”) impairment. The new subcategories provide the IDNR with a better method of tracking impairment decisions and prioritizing follow-up monitoring.

As stated, the revised methodology only affects new impairment decisions based on new sampling data. IDNR believes this change will improve the accuracy of impaired water listings based on biological monitoring data. In previous listing cycles, an uncertainty adjustment value (UAV) was applied to waterbody assessments based on a single IBI sample. The UAV served as a confidence interval for the single sample value when comparing the IBI score against the biological impairment criterion (BIC). In practice, a stream would not be assessed as impaired for aquatic life uses when the single sample IBI score plus the UAV equaled or exceeded the applicable BIC. The revised methodology replaces the UAV approach by requiring two or more IBI samples collected in two or more sample years within the current five-year data period in order to make a Category 5 impairment determination. IDNR believes this approach better addresses assessment uncertainty caused by inter-annual climate/hydrology-based effects on biological assemblages, thus allowing IDNR to more accurately recognize streams that are not meeting biological expectations because of anthropogenic impacts.

Fish Kills:

EPA comment regarding naturally-occurring fish kills: Low dissolved oxygen as a result of algal decomposition cannot automatically be assumed to be a natural condition. Algal growth is often the result of anthropogenic nutrient loads to the water body; in such instances, there is a pollutant cause even if a responsible party is not identified. Therefore, placement of the water body into category 2b or 3b may not be appropriate. The state should provide documentation in its submittal to support its assertion that the condition’s cause is natural or list the water as impaired by an “unknown” pollutant.

IDNR Response: In terms of Section 305(b) and Section 303(d) listing, the reality of fish kill investigations in Iowa is a wide variety of the available amounts of information on causes of fish kills. Depending on the type of kill and the investigator, some reports are very detailed and some are extremely brief. And, if the kill is attributed “natural causes” (e.g., winterkill due to ice cover or summer kill due to reduction or cessation of stream flow and algal growth) there is very little investigation conducted or information available. Beyond the fish kill reports (which are summarized in IDNR’s fish kill database:

<http://programs.iowadnr.gov/fishkill/default.aspx>), there is no additional source of documentation upon which to draw; thus, there is thus no

additional information upon which to develop documentation. The assessment narratives in IDNR's water quality assessment database (ADBNet: <http://programs.iowadnr.gov/adbnnet/index.aspx>) contain a summary of the documentation available for each fish kill assessed, whether the kill is placed into Category 5, 4d, or Categories 2b/3b. In terms of Section 303(d) listing, IDNR staff use all the information available to determine whether a Section 303(d) listing is justified. Iowa's draft 2010 list contains a number of fish kills attributed to "unknown causes" where there was some indication on the fish kill report that a pollutant may have been responsible for the kill. If, however, the IDNR staff investigating the kill attributes the kill to natural causes, IDNR staff—rather than simply ignore the kill—place the kill into either Category 2b or 3b of the Integrated Report. Placement into Categories 2b and 3b is not an attempt to somehow hide a fish kill but is done to keep the kill on the water quality assessment radar screen in the event that additional kills occur on this assessment segment that are, in fact, caused by a pollutant. IDNR identifies a relatively large number of pollutant-caused fish kill impairments relative to other impairment causes. For Iowa's draft Section 303(d) list, "fish kills" is the third most commonly identified cause of impairment (81 impairments) in streams/rivers behind bacteria (186 impairments) and biological impairments (118 impairments).

EPA comment regarding suitability of fish kill impairments for TMDL

development: An allocation process in a response to a fish kill is possible for a pollutant discharged only once or at irregular intervals. Where the pollutant discharge is identified and an enforcement action as a control requirement is instituted, a TMDL is not required (40 CFR 130.7(b)(iii)). In such a case, the state would be expected to submit documentation of said control action as a good cause for not including the water body as impaired on the state's 303(d) list.

IDNR Response: regarding allocation process for fish kills: IDNR maintains that the one-time accidental/intentional release of a pollutant (e.g., break in pipe that allows animal waste to reach a stream or a spill caused by a tank overturn) that causes a fish kill is not appropriate for the pollutant allocation process and calculation of a TMDL: there is no daily (or weekly or monthly) loading issue to address. To the best of IDNR's knowledge, and based on information in reports of fish kill investigation, the causes of the majority of kills on Iowa's draft 2010 Section 303(d) list are causes by this type one-time release of pollutants.

The IDNR assessment/listing methodology does, however, provide for placing fish kills in to Category 5a (pollutant-caused impairment appropriate for TMDL development) if the kill is related to a known ongoing discharge or if the available information suggests the possibility of an ongoing or intermittent discharge of a pollutant such that repeated fish

kills are occurring. The following is an excerpt from IDNR's 2010 assessment listing methodology (page 53):

Fish kills attributed to authorized discharges (i.e., a wastewater discharge meeting permit limits) are considered for Section 303(d) listing (subcategory 5a) as the existing, required pollution control measures are not adequate to address this impairment, and a TMDL is needed.

Moreover, these impairments are, after all, in Category 5 of Iowa's Integrated Report and are thus on the state's Section 303(d) list. If further investigation (e.g., stressor identification process) shows that a TMDL is appropriate for this impairment, a TMDL will be developed for the impairment.

TMDL applicability

EPA comment regarding TMDL loading capacities and public review: For a TMDL to apply to a water body/pollutant combination there must be a loading capacity calculated for each segment; this loading capacity must be made available for public review. A TMDL is composed of certain components which must be defined for each specific segment before that segment can be placed into Category 4a of a state's IR.⁵

IDNR Response: IDNR is uncertain as to how this EPA comment is relevant to IDNR's assessment/listing methodology. All Iowa waters placed into Category 4a have had a TMDL developed, the TMDL has been available for public review and comment, and the TMDL has approved by EPA.

Specific Comments and Questions

EPA comment regarding IDNR's method for correcting for autocorrelation of bacteria samples: Iowa's methodology refers to bacteria samples collected within four days showing temporal autocorrelation in large rivers. While this may be a valid point in large rivers, the paper that was cited described a statistically significant correlation between bacteria and flow. In the case of a small stream, where flow events tend to have shorter durations, one would not expect the same autocorrelation in bacteria sample concentrations. As such, a shorter time frame for averaging, or a sliding scale based on stream size, would be more appropriate.

IDNR Response: IDNR agrees that the degree of autocorrelation of levels of bacteria in samples collected in large versus small rivers likely

differs, with autocorrelation occurring over a longer interval in larger rivers and over a shorter interval in smaller streams. While autocorrelation intervals have been estimated for large Iowa rivers (Schilling, K.E., Y-K. Zhang, D.R. Hill, C.S. Jones, C.F. Wolter. 2009. *Temporal variations of Escherichia coli concentrations in a large Midwestern river. Journal of Hydrology: 365:79-85*), no similar estimates exist for smaller streams. Thus, until an estimate of autocorrelation for small streams is available—and assuming that the need arises (which is doubtful)—IDNR will continue to use the 4-day interval suggested for large Iowa rivers on smaller rivers and streams. The purpose of accounting for autocorrelation, of course, is to get an unbiased estimate, at least to the extent possible, of the *E. coli* concentration in a stream during a sampling period and to avoid overestimations of the geometric mean concentrations due to repeated measures in datasets where some samples are collected at fixed (weekly or monthly) intervals and other samples are collected on consecutive days (or the same day). While use of a four-day interval for autocorrelation of *E. coli* samples in smaller streams may be excessive, the accuracy in geometric means gained by (1) avoiding repeated (correlated) measures of bacteria levels, and (2) the use of an arguably independent measure of bacteria levels during a given time period, likely outweighs any gains in accuracy by somehow guessing at what might be an appropriate autocorrelation interval for small Iowa streams. Regardless of the respective arguments regarding autocorrelation intervals, this issue is relatively minor relative to Iowa's 2010 Integrated Report. Only two river segments (Shell Rock River, IA 02-SHL-0010_2 and Winnebago River (IA 02-WIN-0010_2) had unbalanced datasets with potentially auto-correlated samples for *E. coli*. The only small stream where *E. coli* samples were combined was the TMDL site on Silver Creek in Clayton County (IA 01-TRK-0381_0) where daily duplicate values (which were collected within one hour of each other) were averaged prior to calculating geometric means.

EPA comment regarding discrepancy in the lake trophic state index (TSI) value indicating “full support”: There is a discrepancy in Table 4-3 of the methodology. The narrative section for full support states TSI < 65 while the TSI column lists ≤ 65

IDNR Response: Table 4-3 has been corrected to be consistent with the methodology narrative (i.e., “full support” is indicated at TSI values less than 65.

EPA comment regarding changes in how IDNR uses biological data for listing decisions: Please explain in more detail how bioassessments are used to make listing decisions. Some of the proposed decisions seem to be based upon full support when either the FIBI or BMIBI failed in two successive samples.

IDNR Response: IDNR does not fully understand EPA's comment. Regardless, the change in IDNR's biological assessment methodology that requires two samples within a five-year period has not resulted in any de-listings based simply on age of data: if the biological impairment was identified on Iowa's 2008 Section 303(d) list, the impairment will be identified on Iowa's 2010 list unless newer data (i.e., two samplings in different years within the last five years) have shown improved biological quality. The change in assessment methodology, has, however resulted in several assessments based on biological monitoring now being considered "fully supporting/evaluated", although these assessments remain on Iowa's 2010 Section 303(d) list. These are assessments for previously biologically impaired stream segments where a more recent biological assessment suggests "full support" of aquatic life uses. Because, however, there has been only one biological sampling within the last five years or two or more samples in the same year, there is insufficient data to verify that biological conditions have improved and that the biological impairment should be de-listed. A second biological sampling within the five-year period would be needed to confirm "full support" and to de-list the impairment. Until such verification is obtained, the previously-identified biological impairment will be identified as IR Category 5b-t (tentative) and will remain on Iowa's Section 303(d) list.

EPA comment on violations of Iowa's narrative criteria suggested in results of IDNR's use attainability analyses: Are DNR staff's best professional judgments used to assess a water body as impaired due to excursions of the narrative criteria discovered during the preparation of a UAA?

IDNR Response: Lacking any summary of potential "excursions" of Iowa's narrative water quality criteria observed by IDNR staff during field work for use attainability analyses (UAAs), IDNR had not incorporated this information into water quality assessments for its draft 2010 Integrated Report and Section 303(d) list. To the best of IDNR's knowledge, EPA Region 7 staff are the only persons that have reviewed the approximately 1,700 UAAs and that have kept track of potential violations of Iowa's narrative criteria.

In response to IDNR's request for clarification on EPA's comment regarding narrative criteria excursions, EPA Region 7 supplied a partial list of these violations to IDNR (e-mail from John Reyna (EPA Region 7) to John Olson (IDNR) of March 4, 2011) (Table 1). IDNR reviewed this partial list for the purpose of incorporating this information into the 2010 Integrated Report and Section 303(d) list. As a result, IDNR has added five assessment segments to Iowa's 2010 Section 303(d) list of impaired waters:

1. Prairie Creek, Johnson Co.: waterbody segment IA 02-IOW-0098_0;
2. Unnamed tributary to Snyder Creek, Johnson Co.: waterbody segment IA 02-IOW-01485_0;
3. Roff Creek, Louisa Co.: waterbody segment IA 02-IOW-00865_2;
4. Unnamed tributary to unnamed tributary to Catfish Creek, Dubuque Co.: waterbody segment IA 01-TRK-01005_2;
5. Unnamed tributary to Brush Creek, Henry Co.: waterbody segment IA 03-SKU-00835_1.

All these impairments were placed into IR Category 5a and were attributed to wastewater impacts that, based on results of UAAs, violated Iowa's narrative water quality criteria. IDNR encourages EPA Region 7 to forward other examples where IDNR's UAA field work documented violations of Iowa's narrative criteria.

EPA Endnotes:

¹ "EPA recommends the use of the geometric mean when assessing and determining attainment of waters designated for primary contact recreation provided a sufficient number of samples have been taken over the course of the recreation season (emphasis added)."

² "EPA suggests that states avoid setting sample target sizes higher than the amount of data available at most sites." (Guidance for 2006 Assessment, Listing and Reporting Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act).

³ EPA Implementation Guidance for Ambient Water Quality Criteria for Bacteria March 2004, EPA-823-B-04-002.

⁴ "EPA believes that data should not automatically be treated as unrepresentative of relevant segments conditions solely on the basis of its age without supporting information indicating that the data are not a good indicator of current conditions." (Guidance for 2006 Assessment, Listing and Reporting Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act)

⁵ "Each State shall establish TMDLs for the water quality limited segments identified in paragraph (b)(1) of this section, and in accordance with the priority ranking. For pollutants other than heat, TMDLs shall be established at levels necessary to attain and maintain the applicable narrative and numerical WQS with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. Determinations of TMDLs

shall take into account critical conditions for stream flow, loading, and water quality parameters." 40 CFR 130.7 (c)(1).

COMMENTER 2: Gerald Neff:

Iowa's reputation for clean and safe water bodies has been tarnished in the past 20 years due to carelessness (littering) and increasing amounts of chemicals used in agriculture as well as urban areas. Controls on urban pollution, including herbicides, fertilizers and animal feces from urban lawns and runoff of pollutants from are needed. One thing that would help is to ban or limit the amount of phosphorous in lawn care products.

IDNR Response: DNR agrees that urban pollution is a significant contributor to the overall water quality picture in Iowa and that as urban areas continue to expand, urban nonpoint sources will play a larger role in Iowa's pollution picture.

COMMENTER 3: Iowa DNR staff:

1. **Elk Run in Carroll County** has had a recent [2004] fish kill but is not included on the 303(d) list. Is additional monitoring required before it could be placed on the list?

IDNR Response: This high-profile fish kill was somehow overlooked during preparation of the 2006 Integrated Report. Thus, this impairment was not included on the 2006 or 2008 lists of impaired waters. Based on this comment and a review of the fish kill report for Elk Run, this impairment has been added to Iowa's 2010 list of impaired waters.

2. **Union Grove Lake in Tama County** is shown as Section 303(d) impaired on the draft 2010 list, but a TMDL for the impairments at this lake (algae, turbidity, pH, and bacteria) was approved by EPA in December 2010. Shouldn't these impairments be removed from Iowa's Section 303(d) list?

IDNR Response: Based on this comment, the impairments for Union Grove Lake have been moved from Category 5a of Iowa's 2010 Integrated Report and moved to Category 4a (impaired but TMDL not required).

COMMENTER 4: Bill:

Nonpoint source contamination is the number one source of Iowa's water quality problems. If addressed, other water quality problems will be corrected. Livestock production (cattle) seems over-regulated but row-crop agriculture is not

regulated at all. Until nonpoint source pollution is addressed, attempts to improve Iowa's water quality will be cosmetic and only marginally effective.

IDNR Response: Iowa DNR agrees that nonpoint sources of pollution are significant, widespread, and need to be addressed. The Iowa DNR's ability to address nonpoint source pollution is limited by a shrinking budget for enforcement of existing regulations. In addition, the DNR can only act within the authority allowed by state and federal laws. To effectively reduce Iowa's nonpoint pollution problems, a combination of funding increases, legislation changes, federal oversight, voluntary or incentive-based programs and other innovative approaches will likely be needed.

Table 1. Summary of waters identified by U.S. EPA Region 7 that were assessed as part of Iowa DNR's use attainability analyses (UAAs) and that showed potential impacts from poorly or under-treated wastewater. 2010 Integrated Report (IR) categories: 5a: impaired and TMDL is required; 3b: potential impairment; further investigation needed to confirm existence of impairment.			
Waterbody Name	Waterbody ID	Location Description	2010 IR Category
Prairie Creek	IA 02-IOW-0098_0	Mouth of Prairie Creek (S31, T77N, R5W, Johnson Co.) to the Lone Tree wastewater treatment plant outfall (NE1/4, S16, T77N, R5W, Johnson Co.)] (5.8 miles):	5a
Unnamed tributary to Snyder Creek	IA 02-IOW-00485_0	Mouth (S36, T79N, R6W, Johnson Co.) to headwaters in NE1/4, S18, T79N, R5W, Johnson Co. (4.1 miles)	5a
Roff Creek	IA 02-IOW-00865_2	confluence of Unnamed Creek (SE1/4, NE1/4, S23, T73N, R4W, Louisa Co.) to the confluence with Unnamed Creek (NW1/4, S25, T73, R4W, Louisa Co.) (1.0 mile):	5a
Unnamed tributary to unnamed tributary to Mud Creek	IA 02-CED-0165_2	From unnamed tributary in W1/2, S1, T78N, R1E, Scott Co. to headwaters in S1/2 of S25, T79N, R1E, Scott Co. (4.9 miles)	3b
Unnamed tributary to unnamed tributary to Catfish Creek	IA 01-TRK-01005_2	from mouth (SW ¼, S7, T88N, R02E, Dubuque Co.) upstream for 750 feet to the outfall of Super 20 MHP WWTP in SW1/4, S7, T88N, R02E, Dubuque Co.). (0.1 miles)	5a
Unnamed tributary to Shell Rock R	IA 02-SHL-00238_0	Mouth (SW1/4, S7, T93N, R16W, Butler Co.) to outfall of Green WWTP (lagoon) in SW1/4, NW1/4, S7, T93N, R16W, Butler Co. 0.3 miles.	3b
Unnamed tributary to Brush Creek	IA 03-SKU-00835_1	Mouth (SE1/4, SE1/4, S31, T71N, R5W, Henry Co. to confluence with unnamed trib (w/ New London WW) in SE1/4, SW1/4, S27, T71N, R5W Henry Co. (3.2 miles)	5a
Rhine Creek	IA 02-IOW-01608_0	Mouth (NE/14, S28, T80N, R8W, Johnson Co.) to HW in S7, T80N, R8W, Johnson Co. 4.1 miles	3b
Mead Creek	IA 01-WPS-0222_1	Mouth (S1, T97N, R14W, Howard Co.) to the Garden Road Bridge Crossing (E. line S1, T97N, R14W, Howard Co.: 1.2 miles)	3b
Number of new Section 303(d) impairments:			5

Appendix 1. Persons and agencies providing comments on IDNR's draft 2010 Section 303(d) list of impaired waters:

Commenter	Affiliation / Location	Issue / Comment:
Bruce Perkins and John Reyna	U.S. Environmental Protection Agency, Region 7, Kansas City, KS	(1) 305(b) guidance; (2) bacteria assessments; (3) biological assessments; (4) fish kills; (5) TMDL applicability; (6) specific comments: autocorrelation of bacteria data, TSI threshold discrepancy, bioassessments, and use of UAA data for impairment decisions).
Gerald Neff	Pleasant Valley, IA	Iowans want to see clear water and have safe water to drink. Iowa's water quality has declined in recent years. Controls on urban runoff (especially from lawn fertilizers) are needed.
Jeff Berckes, Adam Kiel	Iowa Department of Natural Resources	Comments received regarding Elk Run (Carroll Co.), Union Grove Lake (Tama Co.),
Bill	[unknown]	Nonpoint source contamination is the number one source of Iowa's water quality problems. If addressed, other water quality problems will be corrected.

Appendix 2. Comments received during the public comment period on IDNR’s draft 2010 Section 303(d) list of impaired waters:

Comments received on Iowa’s Draft 2008 Section 303(d) list:	Page
U.S. Environmental Protection Agency, Region 7	18
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**Comments on Iowa’s 2010 303(d) List and Methodology
USEPA Region 7
March 4, 2011**

General Comments

- **305(b) Guidance**

While past 305(b) guidance may be helpful for assessing a water body for placement in categories 1 – 3, 303(d) guidance should be used for decisions regarding category 5.

- **Bacteria Assessment and EPA-approved WQS**

Water bodies must be assessed against Iowa’s EPA-approved water quality standards (WQS). Bacterial assessments must be made for each recreation season. The approach set forth in IA’s methodology allowing assessment over multiple recreational seasons is inconsistent with Iowa’s WQS and EPA guidance.¹

Iowa’s EPA-approved WQS currently contain a single sample maximum (SSM) value for *E. coli*; because the state is required to assess against all of its current WQS, the SSM criterion cannot be disregarded. If the state believes that the use of this criterion is inappropriate, it may chose to revise its WQS.

EPA guidance also states that it is inappropriate to set the minimum number of samples required for assessment purposes (ten independent bacteria samples over a recreational season for river segments) at a value greater than the number of samples typically collected.² EPA’s guidance cites a common misconception of how water quality data should be used to determine whether or not a water body has attained the applicable geometric mean value. Some states and authorized tribes have mistakenly interpreted the

¹ “EPA recommends the use of the geometric mean when assessing and determining attainment of waters designated for primary contact recreation provided a sufficient number of samples have been taken over the course of the recreation season (emphasis added).”

² “EPA suggests that states avoid setting sample target sizes higher than the amount of data available at most sites.” (Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act).

water quality criteria as requiring a minimum number of samples in order to determine the attainment of the geometric mean component of the water quality criteria. The confusion may arise because EPA recommends a monitoring frequency of five samples taken over a 30-day period. The recommendation does not intend to imply that five samples are needed before a geometric mean can be calculated. The minimum number of samples used in the 1986 *Water Quality Criteria for Bacteria* document is for accuracy purposes only; clearly, more frequent sampling yields more confidence when determining whether or not a water body is meeting its geometric mean. The geometric mean should be calculated based on the total number of samples collected over the specified monitoring period (which can be an entire recreation season), and used in conjunction with an upper percentile value to determine attainment of the numeric water quality criteria.³

- **Biological Assessments**

For biological assessments, Iowa's methodology requires that two samples be taken within a five year period. Discounting older data based solely on age is not consistent with EPA guidance. If the data was valid when collected, it should be used until documentation can be made that the information is no longer reliable.⁴ Please provide a rationale that would justify discounting data collected at intervals of greater than five years.

- **Fish Kills**

Low dissolved oxygen as a result of algal decomposition cannot automatically be assumed to be a natural condition. Algal growth is often the result of anthropogenic nutrient loads to the water body; in such instances, there is a pollutant cause even if a responsible party is not identified. Therefore, placement of the water body into category 2b or 3b may not be appropriate. The state should provide documentation in its submittal to support its assertion that the condition's cause is natural or list the water as impaired by an "unknown" pollutant.

An allocation process in response to a fish kill is possible for a pollutant discharged only once or at irregular intervals. Where the pollutant discharge is identified and an enforcement action as a control requirement is instituted, a TMDL is not required (40 CFR 130.7(b)(iii)). In such a case, the state would be expected to submit documentation of said control action as good cause for not including the water body as impaired on the state's 303(d) list.

³ EPA Implementation Guidance for Ambient Water Quality Criteria for Bacteria March 2004, EPA-823-B-04-002.

⁴ "EPA believes that data should not automatically be treated as unrepresentative of relevant segment conditions solely on the basis of its age without supporting information indicating that the data are not a good indicator of current conditions." (Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act).

- **TMDL Applicability**

For a TMDL to apply to a water body/pollutant combination there must be a loading capacity calculated for each segment; this loading capacity must be made available for public review. A TMDL is composed of certain components which must be defined for each specific segment before that segment can be placed into Category 4a of a state's IR.⁵

Specific Comments and Questions

- Iowa's methodology refers to bacteria samples collected within four days showing temporal autocorrelation in large rivers. While this may be a valid point in large rivers, the paper that was cited described a statistically significant correlation between bacteria and flow. In the case of a small stream, where flow events tend to have shorter durations, one would not expect the same autocorrelation in bacteria sample concentrations. As such, a shorter time frame for averaging, or a sliding scale based on stream size, would be more appropriate.
- There is a discrepancy in Table 4-3 of the methodology. The narrative section for full support states TSI < 65 while the TSI column lists ≤ 65.
- Please explain in more detail how bioassessments are used to make listing decisions. Some of the proposed decisions seem to be based upon full support when either the FIBI or BMIBI failed in two successive samples.
- Are DNR staff's best professional judgments used to assess a water body as impaired due to excursions of the narrative criteria discovered during the preparation of a UAA?

⁵ "Each State shall establish TMDLs for the water quality limited segments identified in paragraph (b)(1) of this section, and in accordance with the priority ranking. For pollutants other than heat, TMDLs shall be established at levels necessary to attain and maintain the applicable narrative and numerical WQS with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. Determinations of TMDLs shall take into account critical conditions for stream flow, loading, and water quality parameters." 40 CFR 130.7(c)(1).

From: gerald neff [_____]@mchsi.com]
Sent: Thursday, January 20, 2011 8:58 PM
To: Olson, John [DNR]
Subject: comment on Iowa water quality

Dear Mr. Olson, This is my comment on water quality in Iowa.

I have been a long time canoeist and have paddled most of the navigable streams in Eastern Iowa. There is something about being around water bodies where the water is so clear you can see your toes when you walk into several feet of water. Not only do we like to see clear water, we want to know that our water supplies are safe for drinking and other human uses.

Iowa's reputation for clean and safe water bodies has been tarnished in the past 20 years due to carelessness (littering) and increasing amounts of chemicals used in agriculture as well as urban areas. Urban lawns contribute large amounts of herbicides, fertilizers and animal feces. These, along with the nasty runoff of streets and parking lots has caused Iowa's water quality to droop. We can do one thing that would help control urban pollution and that is to ban or limit the amount of phosphorous in lawn care products.

The DNR has a big job taking care of Iowa's environmental issues. Keep up the good work.

May 27, 2011

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From: _____@aol.com

Sent: Thursday, January 20, 2011 12:57 PM

To: Olson, John [DNR]

Subject: Water quality issues

What needs to be done is start addressing the number 1 contributing source to 99% of our states water quality issues, pure and simple. (NON-POINT SOURCE CONTAMINATION) you guys get that under wraps and other issues would correct themselves.

Don't you find it funny that we are regulating to death those that raise cattle in Iowa and force those who have x number to buy a permit for manure storage or something like that but yet a guy who drives a big John Deere green applies more junk to the landscape unregulated? You guys have problems alright and until you start addressing the number 1 source, everything else you do is cosmetic and very marginal. That is the truth & fact!

Bill