

Iowa Department of Natural Resources
Environmental Protection Commission

Item 8

Decision

Topic - Adopted and Filed – Update to Wasteload Allocation Procedure document Chapter 61, “Water Quality Standards” and Chapter 62, “Effluent and Pretreatment Standards: Other Effluent Limitations or Prohibitions”

The purpose of this rule making is to revise the rule referenced document “Supporting Document for Iowa Water Quality Management Plans”, which was last updated in 2009. This document establishes the technical methodologies that the Iowa Department of Natural Resources uses to develop wasteload allocations and water quality-based effluent limits for point source dischargers. The proposed revision will incorporate the most up-to-date scientific information and provide more flexibility for facilities seeking to use alternative permitting options. For example, the revision will update the stream low-flow values based on the most recent published USGS low-flow study report, provide alternative methodologies for deriving site-specific permit limits, and streamline sampling requirements for site-specific data collection. These changes will result in cost savings for some permitted facilities and are also protective of designated uses. The document will be revised to make it more understandable and better describe the procedures used in wasteload allocation calculations. The proposed revision also changes the title of the document to more clearly reflect its contents. The revised document will be titled “Iowa Wasteload Allocation (WLA) Procedure.”

The Department received comments from eight different organizations or individuals in response to the revised document. A responsiveness summary has been prepared to address these comments. Some of these comments have led to changes in the revised document which have been detailed in the responsiveness summary. The final version of the “Iowa Wasteload Allocation (WLA) Procedure” document and responsiveness summary can be found at: <http://www.iowadnr.gov/Environmental-Protection/Water-Quality/Water-Quality-Standards>.

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ENVIRONMENTAL PROTECTION COMMISSION [567]

Adopted and Filed

Pursuant to the authority of Iowa Code sections 455B.105(11)“a,” and 455B.173(3), the Environmental Protection Commission (Commission) hereby amends Chapter 61, “Water Quality Standards,” and Chapter 62, “Effluent and Pretreatment Standards: Other Effluent Limitations or Prohibitions,” Iowa Administrative Code.

The purpose of the amendments is to update the name of the document referenced in the rules from “Supporting Document for Iowa Water Quality Management Plans, Chapter IV, July 1976, as revised on November 11, 2009” to “Iowa Wasteload Allocation (WLA) Procedure” to more clearly reflect the contents of the document. A wasteload allocation (WLA) is the portion of a water body’s assimilative capacity that is allocated to an existing or future point source discharge. This document establishes the technical methodologies the Department of Natural Resources (Department) uses to develop WLAs and water quality-based effluent limits for point source dischargers. In addition to updating its name, the document will be revised to make it more understandable and better describe the procedures used in WLA calculations. The revision will also provide greater flexibility to facilities seeking alternative permitting options.

The major elements of the Iowa WLA Procedure document revision are as follows:

- a. Update the Stream Low-Flow Values for United States Geological Survey (USGS) gaged sites and ungaged sites based on the USGS low-flow study report “Methods for Estimating Selected Low-Flow Frequency Statistics and Harmonic Mean Flows for Streams in Iowa,” by David A. Eash and Kimberlee K. Barnes, published in 2012 and revised in 2013. This change will incorporate the most up-to-date stream critical low flows published by USGS to better reflect actual stream low flows;
- b. Incorporate statewide default background chemical concentrations using the most up-to-date monitoring data available;
- c. Incorporate statewide default effluent chemical concentrations for different types of wastewater treatment plants using the most up-to-date effluent monitoring data available;
- d. Replace the total residual chlorine default decay value in the mixing zone with site-specific decay measurements;

e. Incorporate the current implementation procedures for the chloride and sulfate criteria that were adopted in 2009;

f. Revise the *E. coli* WLA procedures for both continuous and noncontinuous discharges in accordance with the limitation on end of pipe permit limits established at 62.8(2);

g. Revise the *E. coli* decay rate coefficient to be consistent with other Department programs;

h. Revise the temperature criteria implementation procedure to incorporate all elements of the temperature criteria in Chapter 61 for different designated uses. The proposed revision to the temperature criteria implementation procedure provides flexibility for facilities seeking alternative permitting options;

i. Modify the WLA procedure for pH so that pH criteria must be met at the boundary of the mixing zone instead of the boundary of the zone of initial dilution. This modification will result in increased dilution for pH WLA calculations;

j. Clarify the current mixing zone procedures and the requirements for mixing zone and diffuser studies;

k. Incorporate a Site-Specific Data Collection procedure in order to standardize the site-specific data collection process. The proposed revision will have fewer sampling requirements and will result in cost savings for point source discharge facilities seeking site-specific permit limits;

l. Revise the Water Quality Modeling section to replace previous models with commonly used and modernized QUALIK and modified Streeter-Phelps models. The revisions will also update decay rates and reaeration rates to reflect the latest scientific data;

m. Add a reference to the antidegradation implementation procedure document; and

n. Add a new section on Alternative Site-Specific Methodology for Water Quality Based Limits that provides point source discharge facilities with the flexibility to develop site-specific NPDES permit limits.

Other minor revisions to the document include improvements in the estimation of ammonia nitrogen decay calculations in discharge pipes and general use segments, clarification of the procedure for determining discharge flows used in WLAs, and clarification of various sections to make the document more understandable. The "Iowa Wasteload Allocation (WLA) Procedure" document is available

at www.iowadnr.gov/Environmental-Protection/Water-Quality/Wasteload-Allocations.

The amendments also update references to the Department's Web site.

Notice of Intended Action was published in the Iowa Administrative Bulletin as ARC 3202C on July 19, 2017. Public hearings were held on September 5, 6, and 7, 2017. Public comments were received and considered. A responsiveness summary has been prepared and is available at: <http://www.iowadnr.gov/Environmental-Protection/Water-Quality/Water-Quality-Standards>. The most notable change made in response to public comments is to retain the single sample maximum criterion for *E. coli* in Chapter 61. The Notice of Intended Action proposed to remove this criterion. The Department will instead consider potential changes to the *E. coli* criteria during its regular triennial review process and will solicit further public input at that time.

After analysis and review of this rule making, these amendments are expected to have a positive impact on jobs. The amendments are projected to result in a total cost savings for cities, industries, and semipublic entities ranging between \$26 million and \$58 million. This total savings is expected to be achieved by approximately 94 facilities across the state. These cost savings will likely lead to further investment in production and job growth.

These amendments are intended to implement Iowa Code sections 455B.105(11)"a," and 455B.173(3).

These amendments will become effective on February 21, 2018.

The following amendments are adopted.

ITEM 1. Amend paragraph 61.2(4)"a" as follows:

a. Due to extreme variations in wastewater and receiving water characteristics, spatial dimensions of mixing zones shall be defined on a site-specific basis. These rules are not intended to define each individual mixing zone, but will set maximum limits which will satisfy most biological, chemical, physical and radiological considerations in defining a particular mixing zone. Additional details are noted in the ~~"Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on November 11, 2009~~ "Iowa Wasteload Allocation (WLA) Procedure," as revised on February 21, 2018, for considering unusual site-specific features such as side channels and sand bars which may influence a mixing zone. Applications for operation permits under 567—subrule 64.3(1) may be required to

provide specific information related to the mixing zone characteristics below their outfall so that mixing zone boundaries can be determined.

ITEM 2. Amend paragraph 61.2(4)“b,” introductory paragraph, as follows:

b. For parameters included in Table 1 only (which does not include ammonia nitrogen), the dimensions of the mixing zone and the zone of initial dilution will be calculated using a mathematical model presented in the ~~“Supporting Document for Iowa Water Quality Management Plans,” Chapter IV, July 1976, as revised on November 11, 2009~~ “Iowa Wasteload Allocation (WLA) Procedure,” as revised on February 21, 2018, or from instream studies of the mixing characteristics during low flow. In addition, the most restrictive of the following factors will be met:

ITEM 3. Amend subparagraph 61.2(4)“d”(4) as follows:

(4) A discharger to interior streams and rivers, the Big Sioux and Des Moines Rivers, and the Mississippi or Missouri Rivers may provide to the department, for consideration, instream data which technically supports the allowance of an increased percentage of the stream flow contained in the mixing zone due to rapid and complete mixing. Any allowed increase in mixing zone flow would still be governed by the mixing zone length restrictions. The submission of data should follow the guidance provided in the ~~“Supporting Document for Iowa Water Quality Management Plans,” Chapter IV, July 1976, as revised on November 11, 2009~~ “Iowa Wasteload Allocation (WLA) Procedure,” as revised on February 21, 2018.

ITEM 4. Amend paragraph 61.2(4)“e,” introductory paragraph, as follows:

e. For ammonia criteria noted in Table 3, the dimensions of the mixing zone and the zone of initial dilution will be calculated using a mathematical model presented in the ~~“Supporting Document for Iowa Water Quality Management Plans,” Chapter IV, July 1976, as revised on November 11, 2009~~ “Iowa Wasteload Allocation (WLA) Procedure,” as revised on February 21, 2018, or from instream studies of the mixing characteristics during low flow. In addition, the most restrictive of the following factors will be met:

ITEM 5. Amend paragraph 61.2(4)“f” as follows:

f. For ammonia criteria noted in Table 3, the stream flow used in determining wasteload allocations to ensure compliance with the chronic criteria of Table 3 will be that value contained at the boundary of the allowed mixing zone. This stream flow may not exceed the percentages of the design low stream flow noted in 61.2(4)“e”(1) as measured at the point of discharge.

The pH and temperature values at the boundary of the mixing zone used to select the chronic ammonia criteria of Table 3 will be from one of the following sources. The source of the pH and temperature data will follow the sequence listed below, if applicable data exists from the source.

(1) Specific pH and temperature data provided by the applicant gathered at their mixing zone boundary. Procedures for obtaining this data are noted in the ~~“Supporting Document for Iowa Water Quality Management Plans,” Chapter IV, July 1976, as revised on November 11, 2009~~ “Iowa Wasteload Allocation (WLA) Procedure,” as revised on February 21, 2018.

(2) Regional background pH and temperature data provided by the applicant gathered along the receiving stream and representative of the background conditions at the outfall. Procedures for obtaining this data are noted in the ~~“Supporting Document for Iowa Water Quality Management Plans,” Chapter IV, July 1976, as revised on November 11, 2009~~ “Iowa Wasteload Allocation (WLA) Procedure,” as revised on February 21, 2018.

(3) The statewide ~~average~~ median background values ~~presented in Table IV-2 of the “Supporting Document for Iowa Water Quality Management Plans,” Chapter IV, July 1976, as revised on November 11, 2009~~ as determined by the department.

The stream flow in the zone of initial dilution used in determining effluent limits to ensure compliance with the acute criteria of Table 3 may not exceed 5 percent of the calculated flow associated with the mixing zone for facilities with a dilution ratio of less than or equal to 2:1, and not exceed 10 percent of the calculated flow associated with the mixing zone for facilities with a dilution ratio of greater than 2:1. The pH and temperature values at the boundary of the zone of initial dilution used to select the acute ammonia criteria of Table 3 will be from one of the following sources and follow the sequence listed below, if applicable data exists from the source.

1. Specific effluent pH and temperature data if the dilution ratio is less than or equal to 2:1.

2. If the dilution ratio is greater than 2:1, the logarithmic average pH of the effluent and the regional or statewide pH provided in 61.2(4)"f" will be used. In addition, the flow proportioned average temperature of the effluent and the regional or statewide temperature provided in 61.2(4)"f" will be used. The procedures for calculating these data are noted in the ~~"Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on November 11, 2009~~ "Iowa Wasteload Allocation (WLA) Procedure," as revised on February 21, 2018.

ITEM 6. Amend subparagraph 61.2(4)"g"(4) as follows:

(4) A discharger to interior streams and rivers, the Big Sioux and Des Moines Rivers, and the Mississippi and Missouri Rivers may provide to the department, for consideration, instream data which technically supports the allowance of an increased percentage of the stream flow contained in the mixing zone due to rapid and complete mixing. Any allowed increase in mixing zone flow would still be governed by the mixing zone length restrictions. The submission of data should follow the guidance provided in the ~~"Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on November 11, 2009~~ "Iowa Wasteload Allocation (WLA) Procedure," as revised on February 21, 2018.

ITEM 7. Amend paragraph 61.3(2)"g" as follows:

g. Cations and anions guideline values to protect livestock watering may be found in the ~~"Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on November 11, 2009~~ "Iowa Wasteload Allocation (WLA) Procedure," as revised on February 21, 2018.

ITEM 8. Amend subrule 61.3(5) as follows:

61.3(5) *Surface water classification.* The department hereby incorporates by reference "Surface Water Classification," effective June 17, 2015. This document may be obtained on the department's Web site at ~~<http://www.iowadnr.gov/InsideDNR/RegulatoryWater/WaterQualityStandards/Rules.aspx>~~ <http://www.iowadnr.gov>.

ITEM 9. Amend subrule 61.3(6) as follows:

61.3(6) *Cold water use designation assessment protocol*. The department hereby incorporates by reference “Cold Water Use Designation Assessment Protocol,” effective December 15, 2004. This document may be obtained on the department’s Web site at ~~<http://www.iowadnr.com/water/standards/index.html>~~—<http://www.iowadnr.gov>.

ITEM 10. Amend subrule 61.3(7) as follows:

61.3(7) *Warm water stream use assessment and attainability analysis protocol*. The department hereby incorporates by reference “Warm Water Stream Use Assessment and Attainability Analysis Protocol,” effective March 22, 2006. This document may be obtained on the ~~department’s~~ department’s Web site at ~~<http://www.iowadnr.com/water/standards/index.html>~~<http://www.iowadnr.gov>.

ITEM 11. Adopt the following new subrule 61.3(9):

61.3(9) *Iowa wasteload allocation (WLA) procedure*. The department hereby incorporates by reference “Iowa Wasteload Allocation (WLA) Procedure,” as revised on February 21, 2018. This document may be obtained on the department’s Web site at <http://www.iowadnr.gov>.

ITEM 12. Amend subrule 62.8(2) as follows:

62.8(2) *Effluent limitations necessary to meet water quality standards*. No effluent, alone or in combination with the effluent of other sources, shall cause a violation of any applicable water quality standard. When it is found that a discharge that would comply with applicable effluent standards in 567—62.3(455B), 567—62.4(455B) or 567—62.5(455B) or effluent limitations in 567—62.6(455B) would cause a violation of water quality standards, the discharge will be required to meet the water quality-based effluent limits (WQBELs) necessary to achieve the applicable water quality standards as established in 567—Chapter 61. Any such effluent limit shall be derived from the calculated waste load allocation, as described in ~~“Supporting Document for Iowa Water Quality Management Plans,” Chapter IV, July 1976, as revised on November 11, 2009~~—“Iowa Wasteload Allocation (WLA) Procedure,” as revised on February 21, 2018, or the waste load allocation as required by a total maximum daily load, whichever is more stringent. The translation of waste load allocations to WQBELs shall use Iowa permit derivation methods, as described in the ~~“Supporting Document for Iowa Water Quality Management Plans,”~~

~~Chapter IV, July 1976, as revised on November 11, 2009, "Iowa Wasteload Allocation (WLA) Procedure,"~~
~~as revised on February 21, 2018~~ except that the daily sample maximum criteria for *E. coli* set forth in ~~Part~~
~~E of the "Supporting Document for Iowa Water Quality Management Plans" 567—Chapter 61~~ shall not
be used as an end-of-pipe permit limitation

PUBLIC PARTICIPATION RESPONSIVENESS SUMMARY

FOR

RULEMAKING ON CHAPTER 61 & CHAPTER 62

Iowa Wasteload Allocation Procedure Document
&
E. coli Criteria Update

DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL SERVICES DIVISION

November 27, 2017

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RESPONSIVENESS SUMMARY

INTRODUCTION

This is a summary of and response to the comments received in response to amendments proposed for 567 IAC Chapter 61 “Water Quality Standards” and the “Iowa Wasteload Allocation Procedure” adopted therein by reference as well as 567 IAC Chapter 62 “Effluent and Pretreatment Standards: Other Effluent Limitations or Prohibitions.” The proposed amendments were published as a Notice of Intended Action (NOIA) in the Iowa Administrative Bulletin on July 19, 2017 as ARC 3202C.

The following amendments were proposed:

Item 1: Iowa Wasteload Allocation Procedure

Update the rule referenced document “Supporting Document for Iowa Water Quality Management Plans, Chapter IV, July 1976, as revised on November 11, 2009.” The revision of this document will include a title change to “Iowa Wasteload Allocation (WLA) Procedure” to more clearly reflect the contents of the document. A wasteload allocation (WLA) is the portion of a water body’s assimilative capacity that is allocated to an existing or future point source discharge. This document establishes the technical methodologies that the Department of Natural Resources (Department) uses to develop WLAs and water quality-based effluent limits for point source dischargers. The revision will make the document more understandable and better describe the procedures used in WLA calculations. The update will also provide greater flexibility to facilities seeking alternative permitting options.

Item 2: *E. coli* Criteria Update

Revise the bacteria water quality criteria table at 567 IAC Chapter 61.3(3) “a”(2). The revision will eliminate the single sample maximum values of 235 organisms per 100 milliliters of water for Recreational Use Classes A1 and A3 and 2,880 organisms per 100 milliliters of water for Recreational Use Class A2. Also, to eliminate the reference to the sample maximum *E. coli* standard in 567 IAC Chapter 62.8(2) due to the fact that the *E. coli* sample maximum criterion is recommended to be removed in the proposed rule in 567 IAC Chapter 61.3(3) “a”(2) as stated above.

Public hearings were held on September 5th, 6th, and 7th, 2017 at the towns of Washington, Urbandale, and Harlan in Iowa. Written comments were accepted through September 8th, 2017. A total of eight persons or organizations provided oral or written comments on the proposed Item 1: Iowa Wasteload Procedure during the public comment period; more than 700 persons or organizations provided oral or written comments on the proposed Item 2: *E. coli* Criteria Update during the public comment period. The responsiveness summary addresses all of the comments received. The commenters’ names are listed in the Appendix.

TOPIC: Comments in Support of the Proposed Rule

Item 1: Iowa Wasteload Allocation (WLA) Procedure

Comments:

- We commend the IDNR on updating the language, procedures, and making clarifications to the WLAP document; the language is easier to read, and the concepts and procedures provided within the document are much clearer.
- The proposed manual more clearly defines the permit limit derivation procedures than the current process. As part of the advisory committee, we provided technical review and input in the development of this most important document that is used as the basis for establishing wastewater discharge permit limits.
- The proposed rule would create more flexibility for industrial NPDES permit holders and potentially save companies money, while still providing adequate and desired environmental protections for Iowa's water resources. We also support encouraging site-specific sampling, incorporating better science, and more accurate assumptions as part of the Wasteload Allocation Procedure (WLAP). Additionally, we appreciate DNR's long process for public comment and stakeholder participation. IDNR has done its part to carefully evaluate the basis for the proposed changes as well as the potential impact to NPDES permit holders and the environment.
- The proposed rule makes our flows and background data accurate compared to what is on the books now which I am in favor of. I think a WLA should be based on this science. I am in favor of these proposed changes.
- We appreciate that the DNR has incorporated updated USGS low flow study results in the proposed update to Iowa's WLA procedure. The use of the USGS low-flow study provides more accurate data for the purpose of calculating critical low flows for the purpose of setting protective effluent limits.

IDNR Response: Iowa DNR appreciates the support for the proposed rule.

Item 2: *E. coli* Criteria Update

Comment: We agree with the revision to the *E. coli* bacteria standards with the deletion of the single sample maximum values standard. The single sample maximum is not an appropriate parameter for water quality assessment.

IDNR Response: Iowa DNR has determined that it will no longer be seeking this revision at this time. For further explanation, please see pages 10-11, below.

TOPIC: Comments Recommending Revision of the Proposed Rule

Item 1: Iowa Wasteload Allocation (WLA) Procedure

Comment: Using monthly or seasonal variable low flow limits instead of the annual low flow (7Q10) to calculate permit limits decreases the margin of safety and reduces assurance that there will be no adverse impacts to the water body. We recommend some constraints to the use of monthly or seasonal variable low flow limits such as real-time monitoring of flow to confirm that the actual flow in the receiving stream is at or above the assumed monthly or seasonal low flow used to establish the effluent limit.

IDNR Response: The WLA Procedure document states that monthly or seasonal low flows will be explored on a case-by-case basis and the evaluation considers whether there is a nearby USGS gage that has an adequate flow record that can be used to reasonably estimate the monthly low flows at the discharge location. Thus, the proposed rule includes limitations to the use of monthly or seasonal low flows. It is important to note that the use of monthly or seasonal low flows is consistent with EPA's policies that allow seasonable stream low flows to develop effluent limits. The EPA letter dated on September 20, 1996 states that,

“Permits should be evaluated on a case-by-case basis for the appropriateness of seasonal limits. Where dilution is the primary factor affecting development of an appropriate wasteload allocation, permitting authorities might consider the use of seasonal limits based on seasonal receiving water flow.”

The monthly critical low flows are calculated using USGS standard methodology and take drought conditions into account. Since the monthly critical low flows are calculated based on the same frequency of occurrence (once in 10 years) as annual low flows, the margin of safety is preserved.

Comment: We appreciate that DNR is addressing multiple discharges into the same reach, but we still have concerns with the way that DNR has addressed assimilative capacity. DNR should assess the full assimilative capacity of the river for common pollutants of concern before starting to allocate capacity to single or multiple dischargers and specifically reserve a portion of the assimilative capacity as a margin of safety.

IDNR Response: The WLA Procedure will be revised as follows:

“The development of wasteload allocations for common pollutants is based on the impact to water quality resulting from the combined discharges, the assimilative capacity for the river reach, and the allocation of the assimilative capacity to each facility.”

The WLA Procedure calculates water quality based limits under critical low flow conditions. Thus, the margin of safety is implicit.

Comment: We have concerns that the proposed WLA procedure does not specifically address diurnal algal effects for permits that discharge to streams with significant algae present. DNR should require assessments to determine if algae are present in significant amounts in the receiving stream. This assessment would typically require a field visit in the growing season and incorporate visual observations and collect DO readings associated with varying times of day and sunlight conditions. If it is determined that algae is impacting the DO dynamics of the receiving stream, then permit limits should be determined based on the most critical time period to ensure adequate DO levels necessary for protection of aquatic life.

IDNR Response: Iowa DNR ambient monitoring program assesses stream conditions and the information is summarized in the 303(d)/305(b) report. If the waterbody is impaired, a Total Maximum Daily Load is performed on a watershed basis, which incorporates both point and nonpoint sources. The WLA procedure focuses on point sources. The QUALIIK model in the proposed Iowa WLAP can incorporate diurnal algal effects on a site-specific basis.

Comment: We continue to believe that it is better to use more representative travel time assumptions, such as using the median or mean flow of a stream to calculate bacteria die-off. We request that the IDNR provide a section in the WLAP that describes the process the IDNR will use in determining travel times and die-off rates and how they protect sensitive downstream uses, such as the children's recreational use.

Iowa DNR Response: It is important to note that as part of this rule making, the bacteria decay rate is reduced by more than 5-fold from 5.28/day to 1.0/day. The use of the 7Q10 flow to estimate bacteria decay for point source discharges is consistent with the EPA's "Implementation Guidance for Ambient Water Quality Criteria for Bacteria," March 2004, which states:

"Continuous loadings, that is, sources that discharge at about the same level regardless of the rainfall, often most greatly impact water quality under low-flow, dry-weather conditions, when dilution is minimal. For these sources, EPA recommends that the allowable loading be calculated for the geometric mean as the product of the geometric mean water quality criterion and the 30Q5 flow statistic (i.e., the lowest 30-day flow occurring once every five years), and for the individual sample as the product of the upper percentile value water quality criterion and 1Q10 flow statistic (i.e., the lowest one-day flow occurring once every 10 years) or the low flow specified in the state or tribal water quality standards, if one is so specified."

The draft Wasteload Allocation Procedure document includes a Section (9.2) on *E. coli* Decay Rate and a Section on Flow Velocity Calculations (Section 16.3.6). The information provided in these two sections is adequate to estimate the *E. coli* decay.

Comment: Page 10, Section 5.4 Mixing Zone and Zone of Initial Dilution as related to Ammonia Nitrogen: This section of the document discusses basing the dilution ratio for ammonia nitrogen WLA calculations on 7Q10, whereas the EPA bases ammonia nitrogen calculations on 30Q10. Did the IDNR intend to use 7Q10 for an ammonia MZ and ZID? (See the 1999 Update Ambient Water Quality Criteria for Ammonia for further clarification.)

Iowa DNR Response: 567 IAC Chapter 60.2(455B) defines the dilution ratio as follows:

"Dilution ratio means, for a specific wastewater discharger, the ratio of the seven-day, ten-year low stream flow to the effluent design flow, e.g., a dilution ratio of 2:1 has two parts stream flow to one part effluent flow."

Thus, the 7Q10 flow is required in Iowa rule to be used for the dilution ratio calculation.

Comment: The temperature limits calculated in the WLAP are not protective under conditions of variable background temperatures and variable heat discharge rates. For Monthly Average Limit calculations, in months where average temperatures were below the Maximum Background Temperature, facilities could comply with permit limits while still warming the mixing zone more than 3°C. In addition, Maximum Background Temperatures exceed, or are close to, temperature "cap" values in all months in Zones II and III on the Missouri River and in May-September on the Missouri River; the adding of a 3°C mixing zone to these background values would allow a violation of the Maximum Allowed River Temperature criterion in Iowa's WQS.

Iowa DNR Response: Iowa DNR addressed this comment in earlier communications with the EPA. Currently there are no 304(a) criteria for temperature. Iowa's temperature criteria are quite complex. In the past, Iowa only partially implemented the temperature criteria due to its complexity. The implementation procedure included in the WLAP implements all elements of the temperature criteria. To develop the temperature

implementation procedure, Iowa DNR staff conducted detailed research on EPA guidance documents and other states' implementation procedures. In addition, Iowa DNR staff worked with stakeholders for over a year to develop the new temperature procedure to ensure that the procedure is protective of the beneficial uses and is reasonable to implement.

Please note that the 3°C rise is not an instantaneous criterion that is a never to be exceeded value. The 3°C rise criterion is chronic criterion based on EPA's guidance [National Technical Advisory Committee, Water Quality Criteria, April 1, 1968 (the "Green Book")] on thermal discharges, which is the reason it is implemented as a monthly average limit in Iowa's proposed temperature implementation procedure. Excerpt from the EPA "Green Book",

"During any month of the year heat should not be added to a stream in excess of the amount that will raise the temperature of the water (at the expected minimum daily flow for that month) more than 5°F. In lakes, the temperature of the epilimnion in those areas where important organisms are most likely to be adversely affected should not be raised more than 3°F above that which existed before the addition of heat of artificial origin. The increase should be based on the monthly average of the maximum daily temperature."

Several other EPA guidance documents such as the "Quality Criteria for Water 1986" (the "Gold Book") also indicates that the 3°C rise is a weekly or chronic criterion. Due to the chronic nature of the 3°C rise criterion, it is implemented as an average limit in wasteload allocation calculations.

Due to the fact that the maximum temperature criteria are derived based on the upper incipient temperature it is implemented as daily maximum temperature. The daily maximum limit is calculated using 10-year critical low flows and the 90th percentile background temperature. Thus, the daily maximum limit ensures that the maximum temperature criteria are met. If the monthly temperature limits based on the 3°C rise criterion are higher than the daily maximum limits, the daily maximum limits will govern.

Comment: The WLAP allows pH criteria to be met at the boundary of the mixing zone instead of the ZID. While pH in and of itself is generally not thought to be acutely toxic, it can be an aggravating factor for other pollutants making them more toxic. If pH can be outside of the criteria range up to the edge of the chronic MZ, the extreme pH must be used to calculate other pH-dependent acute criteria in the ZID.

Iowa DNR Response: The technology based pH limit of 6 to 9 applies to the vast majority of point source discharges at the end of pipe and it ensures that the pH values in the zone of initial dilution will be close to the pH criteria of 6.5 to 9. Also, pH is not a pollutant and the criteria value of 6.5 to 9 does not constitute an acute criterion. In addition, the WLAP allows the use of site-specific pH values to calculate effluent limits to ensure that the designated uses are protected.

Comment: page 36, Section 12.1, General Use Segments (567 IAC Chapter 61.3(2))d, The narrative translator procedure uses one half of a 96 hour or 48 hour LC50 to represent a no-effect level. However, this value would not represent an acute no-effect level. We strongly recommend that an aquatic life ambient water quality criteria or a state's WQS be used when available. Acute AWQC are developed from a distribution of accepted acute toxicity values for at least one species from a minimum of eight different families to be representative of the aquatic community. Using the results of a single species acute toxicity test does not provide broader protection to the aquatic community.

The proposal for dividing the single toxicity value by two suggests using a "sensitive representative resident species" and identifies that species as the Fathead minnow for General Use Segments. Fathead minnows are in many cases unlikely to be sensitive relative to other species that potentially could be present in these waters.

Application of the approach described in the WLAP, using a single test species with data taken from a database (e.g., ECOTOX), does not appear to account for site-specific conditions (e.g., hardness, DOC, etc.), which could be taken into account (where applicable to a chemical) through the use of an aquatic life criterion.

The discussion above outlines the lack of scientific defensibility of using one half of a 96-hour or 48-hour LC50 to represent a no-effect level. Where specific numerical criteria for a chemical or biological parameter (such as toxicity) are absent, compliance with WQS must be based on the general narrative criteria and on protection of the designated uses.

We strongly recommends the IDNR adopt the EPA's recommended criteria for whole effluent toxicity as follows: to protect aquatic life against chronic effects, the ambient toxicity should not exceed 1.0 chronic toxic unit (TUc) to the most sensitive of at least three different test species. For protection against acute effects, the ambient toxicity should not exceed 0.3 acute toxic units (TUa) to the most sensitive of at least three different test species.

Iowa DNR Response After further consideration, the language related to the use of fathead minnow as the default most sensitive representative resident species for General Use segments is being eliminated in the revised WLAP (Section 12.1). As a result, the implementation of narrative criteria for General Use segments will revert to the existing language in the current Basin Support Document, which was previously approved by EPA on June 16, 2004. The Iowa DNR is no longer proposing to revise the approved current Iowa rule.

Please note that Iowa's current narrative criteria addresses "free from acutely toxic conditions." Chronic Whole Effluent Toxicity (WET) testing is a separate topic which would require a water quality standard change and will be addressed at a later date.

Comment: Page 37, Equation 12.1-1, last sentence:

"It is important to note that narrative criteria translator value is applied at the end-of-pipe for General Use waters since General Use segments are ephemeral streams with zero design low flows unless site-specific data prove otherwise."

This statement is not consistent with the definition of General use segments in 567 IAC Chapter 61.3(1)a.

Iowa DNR Response: Iowa DNR believes that the above statement is consistent with the General Use Segments definition in 567 IAC Chapter 61.3(1)a due to the fact that General Use Segments are ephemeral waters usually with critical low flows of zero. However, to make the sentence more clear, the sentence is revised as follows:

"It is important to note that narrative criteria translator value is applied at the end-of-pipe for General Use waters unless site-specific data prove otherwise. This approach is based on the definition of General Use segments in 567 IAC Chapter 61.3(1) "a"."

Comment: Page 40, Section 13.0 Mixing Zone Procedure: Please provide an explanation/justification as to why the reference to the General Water Quality (narrative) Criteria has been deleted at 61.2(4)

Iowa DNR Response: The paragraph is meant to refer to the purpose of the mixing zone as stated in 567 IAC Chapter 61.2(4), not to copy the entire section into the document.

Comment: Pages 51-52, Section 14.0 Flow Variable Limitation Procedure: When Flow Variable Limits are granted, permits must require reporting of both flow variable discharge (Ex. Pounds/day/cfs) and the actual mass discharged (Ex. Pounds/day). Knowing the mass discharged is essential for water quality planning, TMDLs, and full public disclosure of discharges such as ECHO or TRI databases.

Iowa DNR Response: Several conditions were added to the current flow variable procedure in the Basin Support Document in order to strengthen it. Section 14.0 Flow Variable Limitation Procedure states that,

“A facility with flow variable limits will need to monitor and report values for each of the factors in Equation 14.0-2.”

Thus, the discharge concentration, discharge flow and stream flow are reported along with the flow variable discharge (in lbs/day/cfs). With this information the actual mass discharged can be calculated.

Comment: Page 73, Section 17.1 Maximum Daily Limits and Average Monthly Limits: Under the statistical Based Procedure, it states “Modified 1991 EPA...” This appears to be a typo and should be changed to read “1991 EPA...”

Iowa DNR Response: The word “modified” will be removed.

Comment: Page 75, Section 19.0 Alternative Site-Specific Methodology for Water Quality Based Limits: This section states:

“This Section provides several alternative site-specific options to derive water quality based limits, which are recommended by U.S. EPA. Other alternative site-specific criteria will be reviewed and approved as long as they are scientifically defensible.”

Individual site-specific criteria are WQS and must be submitted to the EPA for review and approval, unless the SSC were developed using a performance-based approach that was previously approved by the EPA.

Iowa DNR Response: This comment is addressed in the response to another EPA comment below.

Comment: Page 75, Section 19.0 Alternative Site-Specific Methodology for Water Quality Based Limits: The WLAP states:

“Although these principals have been best demonstrated for metals (e.g., U.S. EPA, 1992; U. S. EPA, 1996), they hold true for all chemicals.”

Please provide specific evidence to support the statement that all chemicals behave similarly to metals in matters of species sensitivity.

Iowa DNR Response: The sentence will be removed from the document.

Comment: Page 76, Section 19.0 Alternative Site-Specific Methodology for Water Quality Based Limits: The WLAP states:

“State rulemaking is required before site-specific water quality criteria are used in a permit unless the method used to derive the site-specific criteria has been adopted in the state rule.”

As noted above in a previous comment, individual site-specific criteria are WQS and must be submitted to the EPA for review and approval, unless the SSC were developed using a performance-based approach that was previously approved by the EPA.

Iowa DNR Response: The sentence will be revised as follows:

“Site-specific water quality criteria are subject to the review and approval of the U.S. Environmental Protection Agency unless the criteria or methodology to derive the site-specific criteria have been approved by the U.S. EPA.”

Comment: Page 77, Section 19.2.1 Recalculation Procedure: The WLAP states:

“The approach may also require a biological assessment of the receiving stream to determine what criteria database organisms are not “resident to the site” and may not be expected to “occur at the site” as defined in the Recalculation Procedure.”

This evaluation must also take into account that some of the “resident species” may have been extirpated from the site due to toxic discharges; this needs to be reflected in the WLAP.

Iowa DNR Response: Section 19 states that,

“The appropriate EPA guidance document must be used to determine the specific steps to be followed for each of these methods.”

The recalculation procedure in the EPA Water Quality Standard Handbook takes into account the condition described in this comment.

Item 2: *E. coli* Criteria Update

Comment: If the IDNR removes the Single Sample Maximum (SSM) criteria from the water quality standard, the IDNR should adopt criteria protective of primary contact recreation use consistent with the EPA’s 2012 Recreational Criteria to replace the SSM. The EPA’s 2012 criteria recommendations are both for a geometric mean (GM) and a statistical threshold value (STV). Using the geometric mean alone would not reflect spikes in water quality.

Iowa DNR Response: Iowa DNR has made the decision to terminate the proposed rule to remove the Single Sample Maximum (SSM) criterion from 567 IAC Chapter 61.3(3) at this time. The comments received in regard to the elimination of the SSM criterion raised the issue of whether a replacement criterion can be identified which evaluates the risk of bacterial exposure over a shorter period than the seasonal geometric mean. Iowa DNR continues to believe, as indicated by the original scientific analysis used to develop the SSM, that the SSM is only appropriate for use in determining the need for beach advisories. The DNR is willing to assess identified alternatives as part of the water quality standards review process. As a result, the Single Sample Maximum (SSM) criterion will remain in the water quality standards. Iowa DNR will evaluate the EPA 2012 recreational criteria and address this topic during a future triennial review.

Comment: We are concerned that IDNR has been issuing NPDES permit for continuously discharging publicly-owned treatment works (POTWs) that do not include both monthly average and weekly average permit limits consistent with 40 CFR 122.45(d). Specifically, the IDNR is issuing continuously discharging POTW permits with *E. coli* limits that contain only monthly average limits and do not have weekly average limits.

Iowa DNR Response: 40 CFR 122.45(d) requires a short term limit where practicable. Bacteria criteria are based upon exposure over a recreational season and establish a geometric mean for protection over the full season. (1) The short term limit is not necessary since the limits based on the geometric mean criteria require point source facilities to disinfect; (2) the short term limit would be very high due to the use of a site-specific variability (coefficient of variation) based on Tetra Tech’s method (the short term limit would be derived based on the same distribution as the geometric mean criterion and the seasonal duration). Thus, it does not add more protection and is unnecessary; (3) Iowa’s current rule 567 IAC Chapter 62.8(2) does not allow the use of sample maximum criteria in NPDES permits.

Comment: 40 CFR 131.20(a) requires that the State shall provide an explanation if a State does not adopt new or revised criteria for parameters for which EPA has published new or updated 304(a) criteria. The EPA requests that the IDNR provide that explanation for not adopting the EPA 2012 recreational criteria in the response to comments prior to formal submittal of new and revised WQS to the EPA

Iowa DNR Response: 40 CFR 131.20(a) applies only during the triennial review process. That said, the EPA is in the process of a 5-year review of the 2012 recreational criteria. Iowa will evaluate the 2012 criteria during future triennial review after EPA finishes the 5-year review consistent with the commitment described in the response to table the proposed change to the single sample maximum

TOPIC: Comments Opposed to the Proposed Rule

Item 1: Iowa Wasteload Allocation (WLA) Procedure

Comment: EPA has final approval of state water quality standards and they have been told to stand down. It bothers me that this is all moving forward now at a time when there will be no effective oversight by region 7 EPA. I noticed changes to the low flow calculations will allow discharges of more ammonia. Greater dilution of the receiving stream means less stringent limits. Next, changes in the procedures calculating thermal limits will affect something like 67 of 177 dischargers. It is stated that almost half of the facilities would go from essentially non-compliance into compliance which means they are discharging at higher temperatures. It is very concerning to me.

Iowa DNR Response: The proposed wasteload allocation procedure incorporates the latest USGS low flow study results (developed under the contract by Iowa DNR), which replaces the low flow methodology developed in the 1970's. The use of the updated USGS low-flow study provides more accurate data for the purpose of calculating critical low flows that are in turn used in setting protective effluent limits.

Iowa's temperature criteria are quite complex. In the past, Iowa only partially implemented the temperature criteria due to its complexity. The implementation procedure included in the WLAP implements all elements of the temperature criteria for the first time. To develop the temperature implementation procedure, Iowa DNR staff conducted detailed research on EPA guidance documents and other states implementation procedures. In addition, Iowa DNR staff worked with stakeholders for over a year to develop the new temperature procedure to ensure that the procedure is protective of the beneficial uses and is reasonable to implement.

Iowa DNR conducted three rounds of stakeholder meetings to seek input on the Wasteload Allocation Procedure document and the stakeholders include environmental groups and regulated entities. Iowa DNR also had several meetings with the EPA Region 7 staff to discuss their comments. These proposed rules were thoroughly vetted over a long period of time. Iowa DNR also convened a technical advisory committee to discuss specific aspects of the proposed rule. The final proposed rule incorporated many stakeholders' comments and is based on the current scientific data. Stakeholders including environmental groups and regulated entities were supportive of this aspect of the proposed wasteload allocation procedure rule.

Item 2: *E. coli* Criteria Update

Summary of Comments:

Over 700 comments received oppose the removal of the Single Sample Maximum (SSM) *E. coli* criteria. The commenters believe that the proposed rule to remove the SSM criteria from Iowa's water quality standards is not sufficiently protective of public health. Using the Geometric Mean (GM) alone would not reflect spikes in water quality because the GM alone is not sensitive to them.

Comment: The proposed rule to remove the Single Sample Maximum (SSM) limit from Iowa's water quality standards is not sufficiently protective of public health. Using the Geometric Mean (GM) alone would not reflect spikes in water quality because the GM alone is not sensitive to them. Please explain why DNR believes the proposed *E. coli* criteria consisting of a geometric mean component alone is sufficiently protective of public health, contrary to the 2012 EPA recommendation. Please cite the scientific studies, sanitary surveys or other data that are the basis for the proposed revised *E. coli* water quality criteria for A1, A2 and A3 waters. In the absence of a scientifically valid justification for the proposed criteria, to address concerns about the SSM being overly stringent the Commission should adopt one of the sets of the 2012 recommended recreational water quality criteria. The Statistical Threshold Value (STV) component of each set of the 2012 criteria is less stringent than the SSM in Iowa's existing criteria for primary contact recreation (A1 and A3), yet still sufficiently protective of public health. Please clarify whether restorative efforts will

continue for the 3 lakes and 3 river segments currently listed as impaired due to violations of the SSM criteria for which a TMDL restoration plan has already been developed and approved by EPA. Please explain why DNR believes monitoring and assessing for short-term spikes in *E. coli* bacteria at certain lakes and reservoirs with public beaches, and not rivers designated for primary contact recreational uses, is sufficient to protect public health.

IDNR Response: Iowa DNR has made the decision to terminate the proposed rule to remove the Single Sample Maximum (SSM) criterion from 567 IAC Chapter 61.3(3) at this time. The comments received in regard to the elimination of the SSM criterion raised the issue of whether a replacement criterion can be identified which evaluates the risk of bacterial exposure over a shorter period than the seasonal geometric mean. Iowa DNR continues to believe, as indicated by the original scientific analysis used to develop the SSM, that the SSM is only appropriate for use in determining the need for beach advisories. The DNR is willing to assess identified alternatives as part of the water quality standards review process. As a result, the Single Sample Maximum (SSM) criterion will remain in the water quality standards. Iowa DNR will evaluate the EPA 2012 recreational criteria and address this topic during future triennial review.

TOPIC: Comments Not Directly Pertaining to the Proposed Rule

Comment: We believe that instream monitoring should be added as a permit condition for large dischargers to verify that permit limits based on WLA modeling are protective of water quality standards. DNR should require instream monitoring as a permit condition for large dischargers to verify that permit limits based on WLA modeling are protective of water quality standards.

IDNR Response: This issue is related to NPDES permit requirements and it not part of this rule making.

Comment: While not technically a part of the WLA procedure, we would like to suggest an improvement to the DNR's procedures for determining the minimum level of effluent quality for CBOD as part of secondary treatment standard limits. The Iowa procedure uses BOD for influent monitoring and CBOD for effluent monitoring. In order to determine compliance with the secondary treatment standard of 85% removal, the current procedure uses the assumed relationship of $CBOD = BOD - 5$. As noted in the EPA NPDES Permit Writers Manual, this relationship may not apply outside the range of 30 to 45 mg/l BOD. DNR should consider a new procedure for determining a site-specific BOD to CBOD relationship for permits where BOD is outside the range of 30 to 45 mg/l.

IDNR Response: As indicated in the comment, this issue is not part of this rule making

Comment: The phrase "when the Class "A1", "A2" or "A3" uses can reasonably be expected to occur" was previously disapproved by the EPA and needs to be removed from subrule 61.3(3) in order to reflect Iowa WQS rules that are actually in effect for CWA purposes.

Iowa DNR Response: This issue is not part of this rule making and will be addressed in a future triennial review.

APPENDIX

Commenters:

The following is a list of individuals and organizations that commented on the proposed rule during the public comment period. The commenters are listed in no particular order.

Item 1: Iowa Wasteload Allocation (WLA) Procedure

Government Agencies:

U.S. EPA Region 7

Non-Profit or Trade Organizations:

Iowa Environmental Council (IEC)
Environmental Law and Policy Center (ELPC)
The Iowa Association of Business and Industry (ABI)
The Iowa Water Environment Association (IAWEA)

Businesses:

Keith Hobson – Fox Engineering
Lance Aldridge – Fox Engineering

Private Citizens:

Steve Vesey

Item 2: *E. coli* Criteria Update

Government Agencies:

U.S. EPA Region 7

Non-Profit or Trade Organizations:

Iowa Environmental Council (IEC)
Environmental Law and Policy Center (ELPC)
The Iowa Association of Business and Industry (ABI)
The Iowa Water Environment Association (IAWEA)

Businesses:

Keith Hobson – Fox Engineering
Lance Aldridge – Fox Engineering

Private Citizens:

Over 700 private citizens submitted comments on the proposed *E. coli* rule. Due to the large number of commenters, the individual names are not listed and they are available upon request.