

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)	
)	
WATER QUALITY STANDARDS AND)	
EFFLUENT LIMITATIONS FOR THE)	R08-09
CHICAGO AREA WATERWAY SYSTEM)	(Rulemaking – Water)
AND THE LOWER DES PLAINES RIVER:)	Subdocket D
PROPOSED AMENDMENTS TO 35 Ill.)	
Adm. Code Parts 301, 302, 303 and 304)	

NOTICE OF FILING

To: John Therriault, Clerk
 Marie Tipsord, Hearing Officer
 James R. Thompson Center
 Illinois Pollution Control Board
 100 West Randolph Street, Suite 11-500
 Chicago, Illinois 60601
 (VIA electronic mail and First Class Mail)

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PLEASE TAKE NOTICE that I have filed electronically today with the hearing officer ILLINOIS EPA'S PRE-FIRST NOTICE COMMENTS, a copy of which is herewith served upon you.

ILLINOIS ENVIRONMENTAL
 PROTECTION AGENCY

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THIS FILING IS SUBMITTED ON RECYCLED PAPER

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IN THE MATTER OF:)
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WATER QUALITY STANDARDS AND)
EFFLUENT LIMITATIONS FOR THE) R08-09 (D)
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)

PRE-FIRST NOTICE COMMENTS OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY FOR SUBDOCKET D

The Illinois Environmental Protection Agency (“Illinois EPA” or “Agency”), by and through its attorneys, hereby submits its Pre-first Notice Comments to the Pollution Control Board (“Board”) pursuant to the Hearing Officer’s Orders of March 6 and March 26, 2014 in the above-captioned rulemaking proceeding.

I. Procedural Background

On October 26, 2007, the Agency filed a rulemaking proposal to update the designated uses and accompanying water quality standards for the waters currently designated for Secondary Contact and Indigenous Aquatic Life Use which includes most waters in the Chicago Area Waterway System (“CAWS”) and Lower Des Plaines River.

On March 18, 2010, the Board issued an Order dividing R08-09 into four separate subdockets. Pursuant to the Board’s March 18, 2010 Opinion and Order, Subdocket D was “created to address the issues dealing with water quality standards and criteria, which is necessary to meet the aquatic life use designations. See, Opinion, P. 1.

On December 21, 2007, the Agency submitted the pre-filed testimony of four witnesses in support of its proposal. These relevant witnesses for Subdocket D were Scott Twait and Roy Smogor of Illinois EPA and Chris Yoder of the Midwest Biodiversity Institute.

The Agency proposed revisions to its 2007 proposal with respect to the water quality standards in May 2013 and Scott Twait testified in July and September of 2013 on the proposed revisions. See, Hearing Exhibits 480-482. The Board also heard testimony on the Agency's proposal on water quality standards from CITGO and EXXONMOBIL in December 2013. Furthermore, CITGO provided the Board with a chloride water quality standard proposal and suggested amending the mixing zone rules found at 35 Ill. Adm. Code 302.102. See, Public Comment, 1394.

II. Purpose and Overview of Illinois EPA's Comments on Subdocket D

The purpose of these comments is to summarize the relevant portions of the Record for the Board's consideration in developing a First Notice Opinion on the issue of what water quality standards should apply to the waters designated in the CAWS and Lower Des Plaines River. These comments first review the specific regulatory provisions from its initial proposal and amended proposal that are to be addressed and adopted in Subdocket D. The comments will also address the proposals and concepts presented by EXXON and CITGO. Finally, the Post-Hearing Comments will argue in favor of the water quality standards presented by the Agency and again ask the Board to delay any action with respect to a chloride water quality standard at this time.

III. Summary of Illinois EPA's Proposed Water Quality Standards

The specific water quality standards from the Illinois EPA's initial rulemaking proposal that is ripe for consideration in this Subdocket D is found in proposed part 302 Sections 302.401, 302.402, 302.404, 302.405, 302.407¹, 302.408, 302.409, 302.410, 302.412, 302.601, 302.648, 302.657, 302.101 and 302.102. The proposed language for these sections can be found in Attachment B to this filing and the Statement of Reasons P. 53-92 and in Hearing Exhibits 2, 3, and 480. Attachment A to these comments also provides the documents relied on in developing the water quality standards.

The Agency testimony most relevant to the issues in Subdocket D was contributed by Scott Twait, Roy Smogor and Chris Yoder. See, Hearing Exhibits 2, 3, 13, 480, 481 and 482. In his initial testimony of January 2008, Mr. Twait summarized the proposed water quality standards. See, Hearing Exhibit 2. In most cases that proved to be USEPA's national criteria document or information supporting recent upgrades to an Illinois General Use Standard. Id. This type of information though was lacking for two very important parameters-temperature and bacteria. Id.

In general, the Agency attempted to use the most current criteria available when proposing water quality standards for the various toxic parameters. This was accomplished with all parameters except cadmium, copper, selenium, mercury (human health standard), ammonia and chloride. Id. P.3.

¹ It is the Agency's position that a water quality standard for chlorides is not ripe for consideration. See, P. 28-31 of these comments.

With regard to pH, the Agency has proposed to update the current standard of 6.0 to 9.0 to conform to the current General Use Standard of 6.5 to 9.0, which is also consistent with the most recent federal criteria. Id. P. 3.

With regard to ammonia, the water quality standard contained in the Agency's proposal to the Board is based on the most recent national criteria document at the time of the proposal. A new ammonia criterion was adopted by USEPA in April 2013. See, EPA 822-R-13-001. Because of the new criteria being adopted in April 2013, any changes the Agency plans on addressing with respect to the new criteria will be done on a state wide basis. In this rulemaking the ammonia proposal is also the same as the General Use water quality standards with two exceptions. The first exception is that the seasonal ammonia standard protecting the early life stage period is not applicable to those waters not being designated for the protection of early life stages. The waters that do not protect for early life stages are the Chicago Area Waterway System and Brandon Pool Aquatic Life Use B waters. The second exception is that the following sentence from 35 Illinois Administrative Code Section 302.212(e) is not proposed for inclusion in the CAWS and Lower Des Plaines River standards, "In addition, during any other period when early life stages are present, and where the water quality standard does not provide adequate protection for these organisms, the water body must meet the Early Life Stage Present water quality standard." This sentence was inserted in the General Use water quality standards to provide a heightened level of conservatism or an additional safety factor to the General Use water quality standards to address any unknown organisms that may be found to spawn extremely early or extremely late in the year. Illinois EPA is confident

this language is not necessary to protect the aquatic life uses designated for these waters. Chicago Area Waterway Aquatic Life Use A Waters, Chicago Area Waterway and Brandon Pool Aquatic Life Use B Waters and the Upper Dresden Island Pool Aquatic Life Use Waters will be fully protected by the adoption of the ammonia water quality standards proposed by the Agency. Id. P. 4-5.

When reviewing the available water quality criteria information, the Agency found that the existing General Use standards for several parameters were either more up-to-date than the current National Criteria Document or there was no available National Criteria Document. In those situations the Agency chose to propose that the Board adopt the General Use water quality standard for the CAWS and Lower Des Plaines River aquatic life uses. These parameters are lead, benzene, ethylbenzene, toluene, xylene, nickel, zinc, mercury (human health standard), benzene (human health standard), fluoride, manganese, sulfate, chromium (hex), and iron. On page 70 of the Statement of Reasons, the Agency indicated that U.S. EPA approval for benzene, ethylbenzene, toluene, xylene, nickel (dissolved) and Zinc (dissolved) was pending. USEPA formally approved the General Use water quality standards for these six parameters in a letter dated July 25, 2007. Id. P. 5.

In several cases, the Illinois EPA found that a USEPA National Criteria Document was available that was more current from what is currently adopted for General Use waters. Where possible, the Agency attempted to use this updated criteria for the Lower Des Plaines River and CAWS waters. These parameters are arsenic, chromium (trivalent), silver and the aquatic life standard for mercury and phenols (human health standard). The Agency has proposed to adopt the National

Criteria Document recommendations for these numeric water quality standards, because they represent the most up-to-date information available on the impacts of these metals on aquatic life. Id. P-6.

Cadmium

The proposed Cadmium water quality standard is the same as the General Use water quality standard. USEPA's most recent National Criteria Document for cadmium was finalized in 2001. The Agency considered basing the acute and chronic cadmium water quality standards on the recalculation procedure from the 2001 National Criteria Document by removing cold water species and species not native to Illinois. Based on stream data provided by MWRDGC, it appeared to the Agency that the chronic criteria would be periodically exceeded in these waters. This discovery led the Agency to investigate the potential cause of these exceedances and to review the cadmium national criteria document.

MWRDGC collects cadmium data once per month at twenty-six stream locations. The Agency reviewed the data and noted that periodic exceedances of the national criteria would occur mostly in the summer months and that cadmium was usually not detectable in the winter months when barge traffic was minimal. Contaminated sediment is scoured and resuspended by barge traffic. Photos showing the plume from sediment scoured and resuspended in the waterway are attached to the Statement of Reasons as Attachment CC. The Agency reviewed the stream data where there was not a known point source of cadmium and concluded that the exceedances of the chronic criteria were most likely the result of contaminated sediment, but could not rule out point sources that were not quantified, such as CSOs.

Based on an analysis of the data, the Agency believes that a legacy of contaminated sediment prevents full attainment of the Clean Water Act aquatic life use in these waters and is the primary reason that the chronic national criterion cannot be met in the segments of the CAWS. The Agency also investigated the Cadmium National Criteria document. The most sensitive species for the chronic criteria was an amphipod (*Hyaella azteca*). The Agency has concerns about the test results from this species, as chronic *Hyaella azteca* test methods are currently being reevaluated due to inconsistent and often overly sensitive test results with this species. The Society of Environmental Toxicology and Chemistry has recently formed the *Hyaella azteca* Advisory Group (HAAG), which is working towards standardizing the diet, culture water, and test water to be utilized in chronic testing with this species. The Agency's concerns regarding the chronic dataset used in the Cadmium National Criteria Document, including, but not limited to *Hyaella azteca*, have been brought to USEPA's attention and they have put together a committee to reevaluate the chronic cadmium dataset.

Therefore at this time, the Agency has concluded that the General Use dissolved cadmium water quality standards would fully protect the aquatic life uses that have been defined for the Lower Des Plaines River and the Chicago Area Waterway System. Id. P. 6-7

Copper

The acute and chronic copper water quality standards in this proposal are based on the recalculation procedure established in the 1995 National Criteria Document removing cold water species and species not native to Illinois. The

northern squawfish and chiselmouth are only found in the western states and viable populations of Coho salmon, sockeye salmon, cutthroat trout, Chinook salmon, rainbow trout, Atlantic salmon and brook trout are not found in Illinois outside of Lake Michigan. The proposed water quality standards for these waters are also being updated to include a translator from total copper to dissolved copper.

On February 22, 2007, U.S. EPA finalized a national criterion update for copper. Illinois EPA has not chosen to incorporate the 2007 criterion because it is based on a Biotic Ligand Model. This new methodology is quite complex and requires the ability to measure the presence of additional parameters that would impact copper's toxicity such as dissolved organics. This new methodology would be a significant departure from the way copper water quality standards have been used in the past. Illinois EPA will continue to evaluate whether this model is useful for General Use waters and the waters impacted by this proposal and will consider updating or supplementing the copper standards as appropriate.

On page 72 of the Statement of Reasons we state that: "Based on the compliance of the Agency samples and the closeness to compliance of the MWRDGC data, the Agency recommends that the water quality standard be set at the existing General Use standard." This statement is erroneous since the Agency is proposing to use a recalculation based on the National Criteria Document, which is more up-to-date than the General Use water quality standard. Id. P. 7-8.

Sulfate and Total Dissolved Solids

Currently, there are no sulfate or chloride ambient water quality standards applicable to the CAWS and Lower Des Plaines River. The Board adopted changes

to the General Use water quality standards for sulfate and total dissolved solids (or TDS) in docket R07-09, which was filed with the Board on October 23, 2006. The proposal in this rulemaking to address sulfate, chloride and TDS in the CAWS and the Lower Des Plaines River is patterned after the adopted criteria in R07-09. There are currently no applicable national criteria for sulfate.

While the proposed sulfate water quality standard in this rulemaking is based primarily on the proposal in R07-09, it does not include the limit of 2,000 mg/L for protection of livestock watering since this is not a designated use of the CAWS or Lower Des Plaines River. In addition, the Agency's proposal does not include provisions for instances when hardness is less than 100 mg/L or chloride is less than 5 mg/L since these conditions do not exist in the CAWS or Lower Des Plaines River. Monitoring data collected by MWRDGC was used to support this conclusion.

Sulfate and chloride are the key toxic components of dissolved solids. As a result of the improvements to the sulfate water quality standard the Agency also proposed elimination of the total dissolved solids standard in R07-09. Illinois EPA is proposing elimination of a TDS standard for the Lower Des Plaines River and CAWS as well. In addition to TDS, the Agency is proposing elimination of the barium, oil/fats/grease, and phenols water quality standards as unnecessary, inappropriate or outdated. Id. P. 8-10. However, the Agency is proposing to include human health criteria for phenols. Barium, oils and phenols will be protected by the effluent standard found in 35 Ill. Adm. Code 302.124.

Temperature

Due to extreme difference of opinion in the temperature discussions and the lack of an updated national criteria document, Illinois EPA decided to take advantage of an undertaking by the Ohio River Valley Water Sanitary Commission (or ORSANCO) to update their methodology and data for derivation of temperature criteria. Through funding from USEPA, an independent national temperature expert was retained to develop temperature criteria options to protect the aquatic life uses for the Lower Des Plaines River. The proposed temperature water quality standards utilized methods contained in the report by Midwest Biodiversity Institute and Center for Applied Bioassessment and Biocriteria titled *Temperature Criteria Options for the Lower Des Plaines River*. The authors are Chris O. Yoder and Edward T. Rankin. A version of that report dated October 11, 2005 is included as Attachment GG to the Agency's Statement of Reasons. A final version with non-substantive corrections dated November 23, 2005 was submitted as Attachment 2 to the pre-filed testimony of Chris Yoder. A transcription error effecting Table 3 of the November 2005 report is corrected in Attachment HH to the Agency's Statement of Reasons. The Agency used the conclusions and options presented in this report to develop temperature standards for the CAWS and Lower Des Plaines River.

The methodology contained in Chris Yoder's report relies on use of a Representative Aquatic Species list, referred to as an RAS list. The methodology uses the RAS list to develop summer daily maximum and period average thermal criteria. The MBI report had three main categories of RAS lists with some subcategories: General Use, Modified Use, and Secondary Contact/Indigenous

Aquatic Life Use with 49, 27, and 8 species RAS lists respectively. The categories are modeled after existing aquatic life uses in Illinois and Ohio's modified use, but should not be interpreted as being equivalent to existing Illinois and Ohio designated use labels. The Agency applied the RAS lists developed by Chris Yoder for the Lower Des Plaines River to the aquatic life use designations developed by the Agency for the CAWS and Lower Des Plaines River.

The Agency determined that the Chicago Area Waterway System and Brandon Pool Aquatic Life Use B waters listed in 35 Illinois Administrative Code 303.235 of the proposal should use the option of the 8 species RAS list (Secondary Contact/ Indigenous Aquatic Life) to determine the summer daily maximum and period average. This decision was made based on the aquatic life and habitat in the affected stream reaches. It is believed that those eight species are representative of the species that would be found in water capable of maintaining aquatic life populations predominated by individuals of tolerant types that are adaptive to the unique physical conditions, flow patterns and operational controls designed to maintain navigational use, flood control and drainage functions in deep-draft, steep-walled shipping channels.

Based on the fact that white sucker was present in certain waters, the Agency determined the Chicago Area Waterway System Aquatic Life Use A waters listed in 35 Illinois Administrative Code 303.230 of the rulemaking proposal should use the option of the 8 species RAS list plus white sucker to determine the summer daily maximum and period average. This decision was made based on the aquatic life and habitat in the affected stream reaches. It is believed that those nine species are representative of the species that would be found in water capable of maintaining aquatic life

populations predominated by individuals of tolerant or intermediately tolerant types that are adaptive to the unique physical conditions, flow patterns, and operational controls necessary to maintain navigational use, flood control, and drainage functions of this waterway system.

The Des Plaines River between the Brandon Road Lock and Dam and the I-55 bridge has incrementally more diverse aquatic life and higher quality habitat than the rest of the CAWS and Lower Des Plaines River. For this reason, the Agency determined it was appropriate to use the option of the 27 species RAS list (Modified Use) to determine the summer daily maximum and period average for the Upper Dresden Island Pool waters. The Agency was asked to look at the feasibility of including the stonecat madtom to the 27 species RAS list by staff of USEPA Region V. However, Illinois EPA biologists concluded that typical habitat for stonecat madtoms is higher-gradient creeks and rivers with moderate to swift currents and gravelly to rocky substrates. It is reasonable to not expect stonecats in Lower Des Plaines River, which does not have much of their typical habitat. Based on these recommendations from the Agency biologists, the Agency determined not to rely on the stonecat madtom when working with the Fish Temperature Model to develop the proposed temperature water quality standards.

Criteria for non-summer periods are derived to maintain seasonal norms and cycles of increasing and decreasing temperatures. Seasonal ambient temperature data were analyzed from eight locations in the CAWS and Lower Des Plaines River for the period 1998 through 2004. The data from these stations can be found in Appendix B of Chris Yoder's report which is included as Attachment 2 to his pre-filed testimony.

Because the source water of the CAWS is composed of the MWRDGC wastewater treatment plant effluents, the temperatures of these waters can be expected to exceed other measures of background or ambient temperature at certain times of the year. The Agency originally proposed using the 75th percentile of the temperature from the Route 83 Chicago Sanitary and Ship Canal. The Agency has since changed the period average temperatures during the non-summer months based on comments from USEPA and questions from Midwest Generation during the 2008 hearings. USEPA commented that they believed that the background station that the Agency picked (Chicago Sanitary & Ship Canal – Route 83) was not representative of the background temperature of the system. In discussions with USEPA, the Agency agreed to use the less impacted station (Cal-Sag Channel – Route 83). In the original proposal, the Agency used the 75th percentile of the temperatures from the MWRDGC effluent and Route 83 Chicago Sanitary and Ship Canal station data as the period average to ensure that the seasonal norms are preserved in the system. During the hearings in 2008, Midwest Generation asked the Agency if they expected violations of the period average for the background station that was selected. The Agency did not expect that the period average would be violated at the Chicago Sanitary and Ship Canal – Route 83 station, but the Agency committed to verifying this statement. The evaluation of the data revealed that the use of the 75th percentile data for the period average resulted in violations of the data from the background station. Therefore, the Agency has proposed using the 90th percentile of the temperature from the background station as the period average. In conclusion, the thermal standards for the monthly average for the non-summer months is based on the least restrictive of

the 75th percentile of the temperatures from the MWRDGC effluent and the 90th percentile of the temperature from the Cal-Sag Channel – Route 83 station.

Consequently, the Agency used the effluent temperature from MWRDGC's North Side, Calumet, and Stickney facilities as the background temperature instead of using temperatures at the Cal-Sag Canal - Route 83 station during periods of the non-summer months when the effluent temperature was higher than the background temperature. These periods were January, February, September 16-30, October, November, and December. For the non-summer periods of March, April, May, and June 1-15, the Agency used temperature values from the Cal-Sag Canal - Route 83 station in setting the period averages because the ambient values were higher than the effluent data values.

The effluent data used was submitted to the Agency by MWRDGC on May 22, 2007 and is included as Attachment W to the Agency's Statement of Reasons. Had the Agency not made this alteration to the recommendations Chris Yoder's temperature report in developing our water quality standards, the water quality standards for the three aquatic life use designations proposed for the CAWS and Lower Des Plaines River would have been lower than the MWRDGC effluents and would have required installation of cooling towers or other treatment technology to reduce the temperature of these effluents.

The Agency used the 75th percentile of the temperatures from the MWRDGC effluent and the 90th percentile of the temperatures from the Route 83 Cal-Sag Channel station data as the period average to ensure that the seasonal norms are preserved in the system. The daily maximum of the summer months was preserved

for the entire year to ensure that no acute lethal temperatures are present, rather than using the 98th percentile of ambient temperature values for the non-summer months or some other statistical method as suggested by Chris Yoder. This decision was made because the daily maximum is designed to protect acute (or lethal) impacts, while the chronic (or sub-lethal) impacts are protected through the period average. The Illinois EPA believes that seasonal norms are preserved with the period average as opposed to the daily maximum.

The proposed thermal water quality standards are more stringent than the current Secondary Contact and Indigenous Aquatic Life water quality standards for all months. The proposed thermal water quality standards are also more stringent than the current General Use standards for the months April through November, especially when considering the period average. During the remaining months, the proposed standards are approximately equivalent to the existing General Use standards. The proposed thermal water quality standards are more stringent than the current Adjusted Standard for temperature applicable at Interstate-55 for all of the months, especially when considering the period average.

Because fish can tolerate and avoid short-term elevations in temperature, the current water quality standards in Illinois allow for a certain amount of excursions before there is an exceedance of the standard. The excursions under the current General Use and Secondary Contact and Indigenous Aquatic Life Standards are limited both in their degree and frequency. The Agency is proposing to allow excursions from the daily maximum criteria to occur two percent of the time. This is between the one percent for General Use and five percent for the existing Secondary

Contact and Indigenous Aquatic Life Standards. Currently, the excursion hours allowed under Midwest Generation's thermal adjusted standard at the Interstate-55 bridge also allow two percent excursion hours. The Agency is also proposing to limit the allowable excursions of the daily maximum up to 2° Celsius (or 3.6° Fahrenheit). This is between the 1.7° C (or 3° F) excursion allowance for the General Use standard and 3.8° C (or 7° F) for the existing Secondary Contact and Indigenous Aquatic Life Standards. Id. P. 10-15, SOR P. 80-87. Hearing transcripts, January-April 2008, July 2013 and September 2013.

USEPA commented that they had concerns with our proposed language, "... shall not exceed the period average limits in the following table during any period on an average basis." It was agreed that the language was not clear. The Agency has proposed to remove the last phrase "on an average basis." See, Attachment B, to these comment,

In addition, USEPA commented that they thought that the Agency should protect aquatic life from cold shock. An example of cold shock would be during the winter time if the fish got acclimated to the warm water downstream of a thermal discharge and then the thermal discharge ceases. In this situation, the fish may not be able to handle the cold temperatures and could die. To the Agency's knowledge, this system has not had trouble with fish kills due to cold shock; however, the Agency has proposed a narrative standard that was developed from language that has been adopted in Wisconsin. See, WI NR §102.28 The proposed narrative standard states that "Water temperatures of discharges to the CAWS Aquatic Life Use A Waters and CAWS and Brandon Pool Aquatic Life Use B Waters shall be controlled in a manner to

protect fish and aquatic life uses from the deleterious effects of cold shock.” The Agency intends to interpret this standard in a similar manner as explained by Wisconsin in development of its cold shock standard. This standard is not intended to be applied to emergency shut downs, however, all efforts should be made through general operational planning to avoid an emergency action that would cause cold shock. See, Hearing Exhibits 480 and 481.

Dissolved Oxygen

The dissolved oxygen standards being proposed by Illinois EPA are based primarily on criteria and corresponding justification in U.S. EPA’s national-criteria document published in 1986. Illinois EPA used this document as a foundation from which to interpret and incorporate more-recent information specifically applicable to the dissolved oxygen needs of aquatic life in Illinois waters. The dissolved oxygen standards being proposed for the Chicago Area Waterway System and the Lower Des Plaines River are consistent with the standards already adopted by the Board in rulemaking, R04-25.

The proposed dissolved oxygen standards represent minimum concentration thresholds intended to protect aquatic organisms from acutely lethal effects and from chronic, sublethal effects of low dissolved oxygen. Protection against acutely lethal effects of low dissolved oxygen is provided by the standards that represent a daily minimum. These acute standards apply to organisms regardless of their life stage. Protection against chronic, sublethal effects—such as inhibited growth—is provided by two types of standards, based mostly on studies of various life stages of fishes. As a fish grows through life stages from embryo to hatchling to juvenile to reproductive

adult, its sensitivity to low dissolved oxygen can decrease. To address these physiological changes, two types of chronic standards are proposed. The first type of chronic standard is intended to apply to life stages older than 30 days; it is a seven-day average of daily minimum concentrations of dissolved oxygen. This type of chronic standard is designed to prevent continuous or regularly recurring exposures to dissolved oxygen concentrations at or near the acutely lethal threshold. The second type of chronic standard, which applies to all life stages, is a daily average concentration that is averaged across seven days—to protect early life stages; or averaged across thirty days—to protect older life stages. This second type of chronic standard is designed to ensure the long-term maintenance of aquatic life.

Illinois EPA proposes different dissolved oxygen standards for each of the three sets of waters designated for different aquatic-life uses. For the Upper Dresden Island Pool Aquatic Life Waters, the proposed standards are identical to standards adopted in R04-25, for the large majority of General Use waters throughout Illinois.

For the Chicago Area Waterway System Aquatic Life Use A Waters, Illinois EPA proposes dissolved oxygen standards similar to those for the Upper Dresden Island Pool, but designed to protect for less optimal fish growth that is consistent with the proposed aquatic-life use designation. One manifestation of the limited biological potential of Chicago Area Waterway System Aquatic Life Use A Waters is suboptimal growth conditions for fish. For sufficient protection under such limited growth situations, U.S. EPA's 1986 national-criteria document provides a chronic criterion of 5.0 mg/l as a daily mean averaged across seven days, for early life stages. For other life stages, U.S. EPA provides an analogous criterion of 4.0 mg/l. The 1986 national-

criteria document states that these two criteria protect for "...the persistence of existing fish populations...", but allow "...considerable loss of production." (Attachment X of the Statement of Reasons). Illinois EPA judges that this level of protection is sufficient to attain the already limited growth potential of fish in these waters. However, Illinois EPA does not propose these two chronic standards because this level of protection is already provided by the other applicable standards. Specifically, for early life stages, if dissolved oxygen concentrations remain at all times above the proposed acute standard of 5.0 mg/l, it is mathematically impossible for a daily mean averaged over seven days to be less than 5.0 mg/l. Similarly, for other life stages, if seven-day averages of daily minima remain above the proposed 4.0 mg/l standard, it is unnecessarily redundant to require that daily means averaged over seven days remain above 4.0 mg/l. Therefore, because suboptimal growth of fishes is a characteristic of the lower biological potential of these waters, the proposed dissolved oxygen standards based on daily minima alone provide sufficient chronic protection for all life stages in Chicago Area Waterway System Aquatic Life Use A Waters.

For the third set of waters, called Chicago Area Waterway System and Brandon Pool Aquatic Life Use B Waters, the proposed dissolved oxygen standards are consistent with the incrementally lower biological potential of these waters compared to Chicago Area Waterway System Aquatic Life Use A Waters. For the Chicago Area Waterway System and Brandon Pool Aquatic Life Use B Waters, Illinois EPA is proposing no standards to protect early life stages of fish because these waters do not have the potential to consistently support early life stages of fish, except for those of tolerant types. Similar to the Chicago Area Waterway System Aquatic Life

Use A Waters, these lower-potential group “B” waters can attain only suboptimal growth conditions for fish; therefore, only one of the two types of chronic standards is needed to provide sufficient protection against unacceptable effects of low dissolved oxygen. See, Hearing Exhibit, 3, SOR P. 56-61, and Hearing transcripts January-April 2008.

Human Health Criteria

The Agency is proposing the removal of the requirement from 302.407(c) that the human health standard cannot be exceeded when flow is above the harmonic mean flow. This change is based on questions raised by CITGO during the 2013 hearings. Additionally, the Agency is proposing that “an annual average” be replaced by “a 12-month rolling average”. This wording change indicates that the Agency plans to apply the human health water quality standard in the environment on a 12-month rolling average and not use the calendar year. In addition, this wording will allow the Agency to apply the human health water quality standard in an NPDES permit on a 12-month rolling average.

Chemical Constituents – General Terms and Requirements

The Agency has proposed language for 35 Ill. Adm. Code Section 302.407. See, P. SOR P.61-75 and Attachment B to these comments. Section 302.407(a) through (d) include the general provisions and definitions applicable to the individual numeric toxic pollutants regulated in the rest of the Section. It contains definitions for the acute, chronic and human health standards and implementation provisions specifying how the mixing zone and zone of initial dilution provisions in Section 302.102 are to be applied for acute, chronic and human health standards for these

constituents. Subsections (b) and (c) address the sampling required for determining attainment with chronic and human health water quality standards and subsection (b) also provides instructions for calculating dissolved metals water quality standards that depend on hardness.

The language in these Sections was taken directly from the parallel provisions in Subpart B, Section 302.208. The only change made between Sections 302.208(a) through (d) and 302.407(a) through (d) is a minor clarification in subsection (d)(1) of this Section.

In the existing language applicable to General Use waters in Section 302.208(d)(1), it reads “The AS shall not be exceeded in any waters except for those waters for ***which the Agency has approved a zone of initial dilutions (ZID) pursuant to Section 302.102.***” In the proposed Section 302.407(d)(1) the language which is bolded for emphasis, has been changed to “a zone of initial dilution (ZID) applies pursuant to Section 302.102 of this Part.” The Agency believes this revised language is clearer and more accurate than the existing language, but the proposed language is not intended to make a substantive change in the way the regulatory language is interpreted and applied.

Chromium and Total Residual Chlorine

The standards presented for these parameters are designed to protect aquatic life from acute and chronic toxicity resulting from the effect of these toxic metals and other toxic parameters in the environment. In each case, the water quality standards being proposed are the same for the three aquatic life uses applicable to the waterways being addressed in this proposal.

The chromium (hexavalent, total) and Total Residual Chlorine (or TRC) water quality standards contained in the Agency's proposal are all based on the existing General Use standards for these three parameters currently found in 35 Ill. Adm. Code 302.208. Each of these particular General Use standards is also identical to and based on the most recent USEPA national criteria document for the given pollutant.

The Agency's proposed standards regulate two forms of chromium, hexavalent chromium in total form ("Hex") and trivalent chromium in the dissolved form (see *below*). Hexavalent chromium is the +6 valence cation of chromium. The General Use standard for chromium (Hex) was updated during the R88-21(A) rulemaking that was adopted by the Board on January 25, 1990. The most recent national criteria document for chromium (Hex) is 1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water (EPA-820-B-96-001). See, Attachment Y. The 1995 Updates for chromium update but do not supersede the January 1985 national criteria document (EPA 440/5-84-029). The proposed acute standard is 16 micrograms per liter and the chronic is 11 micrograms per liter. Under the current regulations the total hexavalent chromium standard in 35 Ill. Adm. Code 302.407 is 0.3 mg/L. The effluent standard in Part 304 for this parameter is a monthly average of 0.1 mg/L, daily average value limit of 0.3 mg/L and an instantaneous maximum limit of 1.0 mg/L.

The proposed total residual chlorine (or TRC) water quality standards are also exactly the same as the General Use water quality standards and the most recent national criteria document. The total residual chlorine standard was updated during the R88-21(A) rulemaking that was adopted by the Board on January 25, 1990. The

most recent national criteria document for total residual chlorine is the "Gold Book" (EPA 440/5-86-001). (See Attachment V). The proposed acute standard is 19 micrograms per liter and the proposed chronic standard is 11 micrograms per liter. There is no standard for total residual chlorine currently applicable to Lower Des Plaines River and the CAWS. There is also no effluent standard for this parameter in Part 304.

Arsenic (Trivalent, Dissolved) and Chromium (Trivalent, Dissolved)

The proposed arsenic (trivalent, dissolved) and chromium (trivalent, dissolved) water quality standards for all three aquatic life use designations are exactly the same as the most recent national criteria document: 1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water (EPA-820-B-96-001). (See Attachment Y). This document updates the January 1985 national criteria document for arsenic (EPA 440/5-84-033) and the January 1985 national criteria document for chromium (EPA 440/5-84-029).

The proposed water quality standards are also being updated to include a translator from total arsenic (trivalent) to dissolved arsenic (trivalent) and total chromium (trivalent) to dissolved chromium (trivalent) based on The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion (EPA 823-B-96-007 (June 1996)). (See Attachment Z). Similar changes to the General Use standards were adopted by the Board on December 19, 2002 during the R02-11 rulemaking.

Lead (dissolved)

The proposed lead (dissolved) water quality standards for the three aquatic life uses are exactly the same as the General Use water quality standards. Lead (dissolved) was updated during the R94-1(A) rulemaking that was adopted by the Board on May 16, 1996 and further updated to include a translator from total lead to dissolved lead during the R02-11 rulemaking that was adopted by the Board on December 19, 2002. There are no national criteria updates for lead more current than those that the Agency is proposing in this rulemaking and USEPA has approved the existing General Use standard. This water quality standards revision was approved by Region V of U.S. EPA on December 1, 1999.

Benzene, Ethylbenzene, Toluene, Xylene, Nickel (Dissolved), Zinc(Dissolved)

The proposed nickel (dissolved), zinc (dissolved), benzene, ethylbenzene, toluene and xylene(s) water quality standards are exactly the same as the General Use water quality standards. Nickel (dissolved), zinc (dissolved), benzene, ethylbenzene, toluene, and xylene(s) were updated during the R02-11 rulemaking that was adopted by the Board on December 19, 2002. The technical support for these updates to the federal criteria documents is found in the docket for that rulemaking. There are no national criteria updates for any of these parameters that are more up-to-date than those that the Agency is proposing in this rulemaking. U.S. EPA approval of these standards is pending.

Mercury (Dissolved)

The proposed mercury (dissolved) water quality standard for the protection of aquatic life uses is based on the most recent national criteria document 1995 Updates:

Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water (EPA-820-B-96-001). See, Attachment Y. This document updates the January 1985 national criteria document for mercury (EPA 440/5-84-026). The proposed water quality standard for mercury is also being updated to include a translator from total mercury to dissolved mercury based on The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion (EPA 823-B-96-007 (June 1996)). See, Attachment Z. The General Use standard was updated to reflect this change during the R02-11 rulemaking that was adopted by the Board on December 19, 2002.

Standards to Protect Human Health: Mercury, Benzene

Since this system is not designated as source water for public water supply and food processing, human health exposure to environmental conditions of the waterway is primarily, if not exclusively, attributable to exposure through consumption of fish from the system that by bioaccumulation of substances from the waterway are toxic to humans. Mercury and benzene are such substances and therefore the Agency is proposing standards for the protection of human health from fish consumption for these parameters. Both standards mirror the existing provisions in Subpart B of Part 302.

Mercury Human Health Standard

The proposed mercury water quality standard for the protection of human health is exactly the same as the existing General Use standard of 0.012 micrograms per liter. The mercury human health standard was updated during the R94-1(A) rulemaking that was adopted by the Board on May 16, 1996. There are no national

criteria documents for mercury for the protection of human health that are more current than those that the Agency is proposing in this rulemaking other than the standards applicable to the Great Lakes Initiative waters of Lake Michigan. The General Use standard was approved by USEPA on December 1, 1999.

Benzene Human Health Standard

The proposed benzene water quality standard for the protection of human health is exactly the same as the human health General Use standard of 310 micrograms per liter. The General Use standard was adopted by the Board in R02-11 on December 19, 2002. There are no national criteria documents for this parameter that are more up-to-date than what the Agency is proposing in this rulemaking. USEPA approval of these standards is pending.

Iron

The current Secondary Contact water quality standard for iron is 2.0 mg/L total iron. Illinois EPA is proposing to replace this standard with a dissolved iron standard of 1.0 mg/L for the protection of the three aquatic life uses. If adopted, this standard would be identical to the one found in the Subpart B General Use water quality standards. Iron (dissolved) was updated during the R88-21(B) rulemaking that was adopted by the Board on June 21, 1990. The only USEPA national criteria document for iron is based on total iron and is contained in the July 1976 "Red Book" (EPA 440/9-76-023). See, Attachment D. The Board changed the General Use standard from total to dissolved in R88-21(B) and Illinois EPA proposes that the Board do the same for these waters.

Silver

The existing silver standard is presented in the total form and is 1.1 mg/L. The proposed silver (dissolved) water quality standard is exactly the same as the most recent national criteria document Ambient Water Quality Criteria for Silver (EPA 440/5-80-071)(October 1980). See Attachment EE. The metals translator value of 0.85 was taken from The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion (EPA 823-B-96-007)(June 1996). See, Attachment Z. This standard is more up to date than the General Use standard of 5.0 micrograms per liter.

The equation being proposed is as follows: Silver (dissolved) = $\exp[A + B \ln(H)] \times 0.85^*$ where A = -6.52, B = 1.72, $\exp[x]$ = base natural logarithms raised to the x-power, $\ln(H)$ = natural logarithm of Hardness in milligrams per liter, and * = conversion factor multiplier for dissolved metals. Current data from MWRDGC indicates that this standard is being met in the CAWS.

Selenium

The proposed selenium (total) water quality standard is exactly the same as the existing Secondary Contact and General Use water quality standards of 1.0 mg/L. These standards have not been updated since the original adoption. The most recent national criteria document for selenium (total) was published in 1987 (EPA 440/5-87-006). USEPA made minor adjustments in the criteria concentrations when it converted the selenium criteria from a total recoverable measurement basis to a dissolved measurement basis in 60 FR 15366, March 23, 1995, only for the Great Lakes Initiative and in 64 FR 19781, April 22, 1999, *optionally* for freshwater nationwide. See, Attachment Y at Section N.

USEPA proposed updating its 1987 national criteria document for selenium on December 17, 2004. See, 69 Fed. Reg. 75541-75546. This proposal has never been finalized and has been the subject of a good deal of controversy. It is a fish tissue-based criterion that is designed to protect waterfowl that feed on fish. This methodology has not been utilized in General Use water quality standards in Illinois to date. It is not expected that the CAWS or the Lower Des Plaines River will have issues with elevated selenium levels as might be found in western states with large ore mining industries.

Illinois EPA has chosen not to use the USEPA criteria for selenium at this time. This decision is based on the current uncertainty surrounding the science used in developing the last final and current draft standards. In the event a federal national criteria document for this parameter is finalized, Illinois EPA will review the final document and may propose additional or modified rules in a future state-wide Board regulatory proceeding.

Chlorides

There is currently no chloride standard applicable to the Secondary Contact and Indigenous Aquatic Life Uses segments of the CAWS and Lower Des Plaines River. The proposed chloride water quality standard originally proposed by the Agency was the exact same as the current General Use water quality standard of 500 mg/L. However, since proposing this in 2007, Illinois EPA still has not resolved outstanding issues with USEPA on a chloride water quality standard for this rulemaking. See, January 2010 letter from USEPA, Public Comment 286. Also,

Illinois EPA has been recently informed by USEPA that a new criterion is forthcoming with respect to chlorides.

Because of these various outstanding issues, Illinois EPA is still in discussions with USEPA about a chloride proposal that would perhaps maintain the General Use water quality standard in these waters as a single value of 500 mg/L for non-winter months. The Agency knows the biggest issue from chlorides comes in the winter months. Illinois EPA has testified that it expects that there will be violations of the chloride standard during the winter months when road salting takes place to address winter weather events and the safety of Illinois motorists. This problem is not unique to the CAWS and Lower Des Plaines River. See, SOR, P. 76.

The Agency filed a status with the Board on January 31, 2014, and requested another subdocket with respect to the issue of chlorides. See, Public Comment, 1396. The request was denied by the Board on March 6, 2014. The Board reasoned the Agency did not provide enough information and it was not clear what water quality standard for chlorides would be applicable if another subdocket was opened. See, Order, P. 2 .

At the time of filing the status, the Agency did not have a lot of details to provide the Board with respect to a delay in addressing the chloride water quality standards. However, since the filing of the request, the Agency has had several conversations and will continue to have conversations with USEPA about an approach Illinois EPA could propose to the Board that would address all the concerns raised by USEPA.

Illinois EPA is working with USEPA on an approvable water quality standard for chlorides and an approvable variance should one be needed. The variance would be

waterbody specific and would need to meet the requirements set forth in the proposed rule currently being considered by USEPA. See, 40 CFR Part 131, Water Quality Standards Regulatory Clarifications, Proposed Rule. It would also address the needs of several point sources.

As for chlorides, the Agency is in discussion with USEPA on a winter concept that would utilize best management practices for point sources and non-point sources. This is still a preliminary concept and the Agency needs more time to work with USEPA and then work with stakeholders to firm up the concept. Also, as stated earlier, USEPA anticipates a new criterion document for chlorides in the near future and would be in the best interest of all to wait and see what the new criterion will look like before moving forward with a proposal. With all the uncertainty surrounding an approvable chloride standard, the best and most efficient way to handle the chloride water quality standard would be to delay a decision on the standard or open another subdocket. The chloride issue is not just a CITGO issue. This has a much broader impact for the Agency and regulated community and needs to be carefully addressed. The Agency needs more time to work with USEPA and stakeholders. Therefore, the Agency is again requesting that another subdocket be opened for chlorides or the Board delay a decision with respect to a water quality standard for chlorides.

Finally, the Board asked in its March 2014 Order, what chloride water quality standard would apply if a delay was granted. The Agency would propose a 500 mg/L chloride water quality standard for non-winter months. The non-winter months would be defined as May 1-November 30. To make this determination, the Agency looked at twelve years-worth of chloride data (2001 - 2012) from the MWRDGC sampling

network. There were no instances of high chloride levels in November. High chloride levels started in December and continued until the end of April. There were 4 locations on 4 separate years where the data exceeded 500 mg/L in the month of May. Therefore, the Agency did not consider this significant enough to include May in the winter months.

Updates to Reflect Recent Board Rulemakings

The Agency has also made changes to its proposal to reflect changes in the Board rules that have been made since the original proposal was filed in 2007. These changes include dissolved oxygen wording changes, changing metals to chemical constituents, adding fluoride and manganese water quality standards, updating the chronic zinc standard, and including “total” to the mercury standard.

The changes to the dissolved oxygen standard in Section 302.405 makes the proposal consistent with the General Use water quality standards as they were adopted in R04-025.

In 302.407(b), the Agency changed “metals” to “chemical constituents” and removes the references to “metal” samples. This makes the proposal consistent with the General Use water quality standards as they were adopted in R11-018.

USEPA expressed concern that the Agency proposed to remove the fluoride and manganese water quality standards that were present in the secondary contact and indigenous aquatic life use standards and not replace them with something that is protective of the uses. The Agency is proposing to add the fluoride and manganese water quality standards to Section 302.407(e). The fluoride and manganese water quality standards are the same as the General Use water quality standards adopted in

the R11-018 rulemaking. Fluoride and manganese have no national criteria developed for the protection of aquatic life uses.

The Agency is proposing to correct the error in the chronic zinc water quality standard in Section 302.407(e) as was done in the R11-018 rulemaking. The testimony of Agency employee Brian Koch in R11-18 explains the change made to the zinc formula in detail. See, R11-18 Exhibit 1.

The Agency is proposing to add a foot note for cyanide to indicate which cyanide test methods may be used to determine compliance with the cyanide water quality standard in Section 302.407(e) as was done in the R11-018 rulemaking.

The Agency is proposing to clarify that the mercury water quality standard for the protection of human health located in Section 302.407(f) is in the total form as was done in the R11-018 rulemaking.

The Agency is amending its proposed language in Sections 302.401 and 302.402 to reflect language changes made by the Board to 35 Ill. Adm. Code 303.204 in its First Notice Opinion and Order in Subdocket C. These changes involve adding the phrase “except that waters designated as Primary Contact Recreation Waters in 35 Ill. Adm. Code 303.220 must meet the numeric water quality standard for bacteria applicable to protected waters in 35 Ill. Adm. Code 302.209” to the end of Section 302.401 and adding the term “primary contact,” before “incidental contact” in Section 302.402.

Cyanide

The Agency is amending its cyanide water quality standard proposal and has added a water quality standard for phenols to protect human health.

On August 4, 2008, Jenifer Wasik submitted prefiled testimony on cyanide which is Exhibit 230 in the record of this rulemaking. Ms. Wasik correctly pointed out that the Board had previously approved a site-specific chronic cyanide water quality standard of 10 ug/L in the R95-14 rulemaking for Salt Creek, Higgins Creek, the West Branch DuPage River, and the Des Plaines River. That site specific standard is found in Section 303.444.

The proposed cyanide acute water quality standard is exactly the same as the General Use water quality standard and also match the most recent national criteria document. Cyanide was updated during the R88-21(A) rulemaking that was adopted by the Board on January 25, 1990. The most recent national criteria document for cyanide is 1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water (EPA-820-B-96-001). This document is included as Attachment Y to the Agency's Statement of Reasons. The 1995 updates for cyanide updates, but does not supersede the January 1985 national criteria document (EPA 440/5-84-028).

In the Agency's original proposal, the chronic cyanide water quality standards was based on the recalculation procedure established in the 1995 national criteria document (EPA-820-B-96-001) which is Attachment Y to the Statement of Reasons.

For the amended cyanide chronic proposal, the Agency used the same recalculation procedures and used all of the tests from Table 1 of the 1995 national criteria document to revise the water quality standard for this proposal with the following exceptions from Table 3. See Attachment Y at F2. The following species were removed from the acute database along with their Genus Mean Acute Value

(GMAV) and Species Mean Acute Value (SMAV) because they are not representative of the aquatic life in the subject waters. Rainbow trout are not found in Illinois outside of Lake Michigan.

GMAV	Species	SMAV
44.73	Rainbow Trout, <i>Oncorhynchus mykiss</i>	44.73

The chronic standard was based on FAV/FACR. FAV stands for the final acute value and FACR stands for the final acute-chronic ratio.

If rainbow trout are not included in the cyanide chronic calculation, the four most sensitive species become the four fishes: brook trout, yellow perch, bluegill, and black crappie. When these four species are used, the calculated chronic value for cyanide becomes 9.799 ug/L. The Agency recommends that the Board rounds the chronic cyanide water quality standard to 10 ug/L.

As amended, the Agency's proposal for the cyanide acute standard is 22 micrograms per liter and the chronic standard is 10 micrograms per liter.

USEPA expressed concern that the Agency has proposed to remove the phenol water quality standard that was present in the secondary contact and indigenous aquatic life use standards and not replace it with something that is protective of the designated uses. USEPA has requested that the Agency protect the human health use by adopting the fish consumption only national criterion of 860 mg/L. USEPA has published the phenol human health criteria the Federal Register on June 10, 2009. The Agency agreed to make this change, but noted that the effluent standard (0.3 mg/L) would be applicable to dischargers, which is much more stringent than the proposed human health water quality standard.

Subpart F and Protection of Human Health for Fish Consumption

It was the Agency's original intent to protect all designated uses with the derived water quality procedures in Section 302.410. However, USEPA correctly point out that human health from fish consumption use was not being protected. The Agency is proposing language to ensure that Section 302.410 is protective of human health uses. After consideration of our most recently proposed language, the Agency is proposing to remove "toxic to aquatic life" from Section 302.410 to insure that the Section is not limited to substances or combination of substances that are toxic to aquatic life. The Agency has included the protection of human health and has included subsection (c) that references the derivation procedures in Sections 302.642 through 302.648 for Human Threshold Criterion and Sections 302.651 through 302.658 for the Human Nonthreshold Criterion.

The Agency is also proposing to add a clause to Section 302.601 to include Section 302.410(a), (b), and (c) to the applicability of Subpart F. In addition, the Agency is proposing to remove "General Use" from the phrase "other General Use waters:" in the definition of "W" for the equation in Sections 302.648 and 302.657. The Agency is removing "General Use" from the definition of "W" to ensure that the definition of "W" is applicable to these waters and can be used in the equation.

Other changes to the Agency's Original Regulatory Proposal

The Agency proposed changing the name of 302.410 to "Other Toxic Substances" from "Substances Toxic to Aquatic Life" to better describe the section and make it comparable to General Use.

The Agency previously removed 302.408(d) when the Board proposed making the Upper Dresden Island Pool a General Use water. Since that change, Subdocket C has been adopted and the Upper Dresden Island Pool has its own aquatic life use. The Agency has now included this section and made the appropriate changes to the period average temperature standards for March through June 15, September 16-30, and October 16-31 as was done in sections b and c.

The Agency previously removed 302.405(a) when the Board proposed making the Upper Dresden Island Pool a General Use water. The Agency has included this section in its proposal to reflect the adoption of an Upper Dresden Island Pool aquatic life use adopted in Subdocket C of this rulemaking.

Clarification with respect to a 316(a) demonstration

The Agency would like to correct a statement on the record that was made at the hearings in 2008. The Agency stated that a 316(a) demonstration (alternative thermal effluent limitations) was not applicable since the receiving stream was not meeting the Clean Water Act (CWA) goals. After conversations with USEPA on a separate rulemaking, it was made clear by USEPA that a 316(a) demonstration can be made regardless of meeting the CWA goals if the facility can make a showing that all of the 316(a) requirements are met.

Outstanding issue with water quality standards for Bubbly Creek

On February 21, 2013, the Board opened Subdocket E to examine issues surrounding Bubbly Creek as requested by MWRDGC and the Environmental Groups. There has been no activity in Subdocket E. After careful review, the Agency would like to point out to the Board there is a question of what water quality standards would

be in place until Subdocket E is resolved. The Agency would recommend that Secondary Contact water quality standards stay in place for Bubbly Creek until issues in Subdocket E are resolved.

IV. Proposed Water Quality Standards and Variance Concepts proposed by CITGO and EXXONMOBILE

In December 2013, CITGO and EXXON testified before the Board with respect to the water quality standards proposed by the Agency for Aquatic Life Use B waters. As stated earlier, no other participants testified before the Board with respect to Subdocket D.

EXXON raised the issue of temperature, chlorides and mercury and the need for an approvable variance process to address these water quality standards. See, Hearing Exhibit, 488. The Agency agrees with EXXON on the potential need for a variance, should the water quality standards proposed by the Agency be approved. However, as stated above, the Agency is still working with an approvable variance approach with USEPA, since the recent CITGO variance was disapproved by USEPA. See, PCB 2012-94.

Finally, the Agency would like to address the proposals by CITGO. First, CITGO is proposing a water quality standard of 991 mg/L for the acute standard and 624 mg/L for the chronic standard for Use B waters. See, Hearing Exhibit 491. CITGO indicated they had some discussions with USEPA. However, there are still outstanding issues and concerns USEPA has with their proposal. See, December 2013 Hearing Transcript, P. 169-171. It would be premature at this point for the Board to propose CITGO's chloride standard knowing outstanding issues still exists. An

even bigger question is would USEPA approve CITGO's water quality standard proposal?

Illinois EPA has reviewed the CITGO proposal and cannot support the proposed standards. Specifically, the Agency does not support the removal of *Ceriodaphnia dubia* from the chloride criteria dataset, and believes the removal of this species results in a criteria that may not be protective of other resident species. CITGO has indicated they have not found *Ceriodaphnia dubia* in this section of the Chicago Sanitary and Ship Canal during winter months. However, few studies have sought out to verify the presence of *Ceriodaphnia dubia* in these waters during winter months. The Agency does not believe that the minimal effort expended on winter collection, has sufficiently determined that this species is wholly absent from these waters during winter months. Furthermore, even if *Ceriodaphnia dubia* are in fact absent from these waters, the Agency is concerned that other organisms closely related to this species may be present and may exhibit similar sensitivity to chloride exposure. *Ceriodaphnia dubia* is a common test organism in aquatic toxicology that has nationally standardized culture procedures, test conditions, and reporting requirements. It is nationally recognized as a surrogate species for other planktonic crustaceans that have not undergone the same standardization of culturing and testing procedures. Given the limited research on the winter residency of *Ceriodaphnia dubia* in these waters, and the suitability of this species as a surrogate for other planktonic crustaceans, the Agency believes that the elimination of this species from the chloride dataset is not appropriate.

Second, CITGO has proposed amendments to the mixing zone rules. CITGO admitted they have had no conversation with USPEA or the Agency with respect to the proposal. See, December Hearing Transcript, P. 180. The Agency does not support these amendments, because it appears this proposal is contrary to federal law. In essences, compliance with the water quality standard is determined, not by the measurement of the effluent or receiving stream, but whether or not the facility is complying with the best management practices ("BMPs").

Therefore, based on the reasons above the Agency strongly encourages the Board reject the CITGO proposals and delay adopting water quality standards for chlorides. The Agency is working with USEPA on an approvable water quality standard for chloride and best management practices that could be used during the winter months. Once that is done, the Agency would then like time to work with stakeholders, so a water quality standard for chlorides can be properly developed and adopted.

V. Conclusion

Wherefore, for the reasons stated above and based on the evidence outlined in these comments, the Illinois EPA asks the Board to proceed to First Notice on R08-09(D) and adopt the water quality standards as proposed by the Agency. The Agency again asks the Board to delay adopting water quality standards for chlorides and reconsider opening another subdocket for chloride water quality standards and reject the proposals submitted by CITGO .

Respectfully submitted,

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ATTACHMENT A

Documents relied on from the Record

- 1) Lower Des Plaines River Use Attainability Analysis Final Report. AquaNova International, Ltd. and Hey & Associates, Inc., prepared for Illinois EPA (December 2003). (Initial filing, Attachment A)
- 2) Chicago Area Waterway System Use Attainability Analysis Final Report. Camp, Dresser and McKee, prepared for Illinois EPA (August 2007). (Initial filing, Attachment B)
- 3) Interim Economic Guidance for Water Quality Standards Workbook (Appendix M to the Water Quality Standards Handbook—Second Edition, EPA -823-B-94-005b). U.S. EPA Office of Water (EPA-823-B-95-002) (March 1995). (Initial filing, Attachment C)
- 4) 2001-2006 Effluent Sample Results for Temperature at Water Reclamation Plants, 2005 and 2006 Water Quality Sample Results for Temperature, pH, Alkalinity and Chloride, and Calculations of H₂CO₃ (soluble CO₂) in Chicago Area Waterways in 2005 and 2006. MWRDGC, Research and Development (June 4, 2007). (Initial filing, Attachment W)
- 5) Ambient Water Quality Criteria for Dissolved Oxygen. U.S. EPA Office of Water Regulations and Standards. Criteria and Standards Division. Washington, D.C (EPA 440/5-86-003) (April 1986). (Initial filing, Attachment X)
- 6) The Metals Translator: Guidance for Calculating A Total Recoverable Permit Limit From A Dissolved Criterion. U.S. EPA Office of Water 4305 (EPA-823-B-96-007) (June 1996). (Initial filing, Attachment Z)
- 7) 2001 Update of Ambient Water Quality Criteria for Cadmium. U.S. EPA Office of Water 4304 (EPA-822-R-01-001) (April 2001). (Initial filing, Attachment AA).
- 8) 2005 and 2006 Water Quality Sample Results for Hardness, Cadmium, Nickel and Zinc and Calculated Compliance Rates with Proposed Chronic Standards for the Respective Metals. MWRDGC, Research and Development (April 25, 2007). (Initial Filing, Attachment BB)
- 9) Quality Criteria for Water. U.S. EPA (PB-263 943) pp. 152-159 (1976). (Initial filing, Attachment DD)
- 10) Ambient Water Quality for Silver. U.S. EPA Office of Water (EPA 440/5-80-071) (October 1980). (Initial filing, Attachment EE)
- 11) Derivation of a Colorado State Manganese Table Value Standard for the Protection of Aquatic Life. William A. Stubblefield and James R. Hockett. ENSR Corporation (July 2000). (Initial filing Attachment FF)
- 12) Temperature Criteria Options for the Lower Des Plaines River. Chris O. Yoder, Research Director. Midwest Biodiversity Institute, Columbus, Ohio (October 11, 2005). (Initial filing, Attachment GG)
- 13) 1999 Update of Ambient Water Quality Criteria for Ammonia. U.S. EPA Office of Water (EPA-822-R-99-014) (December 1999). (Initial filing, Attachment KK).
- 14) Midwest Generation Comments on Lower Des Plaines River Temperature Criteria Options Report. Letter to Toby Frevert (June 1, 2006). (Initial filing, Attachment UU).
- 15) Scott Twait pre-filed testimony, Hearing Exhibit 2
- 16) Roy Smogor pre-filed testimony, Hearing Exhibit 3

- 17) Chris Yoder pre-filed testimony, Hearing Exhibit 13
- 18) Exhibit 4 ***review
- 19) Chris Yoder disc, Hearing Exhibit 37
- 20) Pre-filed testimony of Scott Twait, Hearing Exhibit 480
- 21) Illinois EPA's amended rule language changes for 302, Hearing Exhibit 481
- 22) Illinois EPA Errata Sheet, Hearing Exhibit 482
- 23) Table with RT. 83 (CSSC) at top, Hearing Exhibit 484
- 24) Group of tables with "Romeoville Road (CSSC) at top, Hearing Exhibit 485
- 25) Information on Wisconsin Cold Shock standard provided by USEPA, Hearing Exhibit 486
- 26) Table titled "Metropolitan Water Reclamation District of Greater Chicago Waterway Compliance with Proposed IEPA Temperature Standards Using 2007-2012 Hourly Temperature Monitoring Data", Hearing Exhibit 487
- 27) Hearing transcripts from January-April 2008, July 2013 and September 2013
- 28) USEPA January 2010 letter to Illinois EPA, PC #286

ATTACHMENT B

**Illinois EPA's Proposed Regulatory
Language for Subdocket D**

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE C: WATER POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD

PART 302
WATER QUALITY STANDARDS

SUBPART A: GENERAL WATER QUALITY PROVISIONS

Section	
302.100	Definitions
302.101	Scope and Applicability
302.102	Allowed Mixing, Mixing Zones and ZIDs
302.103	Stream Flows
302.104	Main River Temperatures
302.105	Antidegradation

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

Section	
302.201	Scope and Applicability
302.202	Purpose
302.203	Offensive Conditions
302.204	pH
302.205	Phosphorus
302.206	Dissolved Oxygen
302.207	Radioactivity
302.208	Numeric Standards for Chemical Constituents
302.209	Fecal Coliform
302.210	Other Toxic Substances
302.211	Temperature
302.212	Total Ammonia Nitrogen
302.213	Effluent Modified Waters (Ammonia)(Repealed)

SUBPART C: PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARDS

Section	
302.301	Scope and Applicability
302.302	Algicide Permits
302.303	Finished Water Standards
302.304	Chemical Constituents
302.305	Other Contaminants
302.306	Fecal Coliform
302.307	Radium 226 and 228

SUBPART D: CHICAGO AREA WATERWAY SYSTEM AND LOWER DES PLAINES
RIVER WATER QUALITY SECONDARY CONTACT AND INDIGENOUS AQUATIC
LIFE STANDARDS

Section	
302.401	Scope and Applicability
302.402	Purpose
302.403	Unnatural Sludge
302.404	pH
302.405	Dissolved Oxygen
302.406	Fecal Coliform (Repealed)
302.407	Chemical Constituents
302.408	Temperature
302.409	Cyanide (Repealed)
302.410	Substances Toxic to Aquatic Life <u>Other Toxic Substances</u>
302.412	<u>Total Ammonia Nitrogen</u>

SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

Section	
302.501	Scope, Applicability, and Definitions
302.502	Dissolved Oxygen
302.503	pH
302.504	Chemical Constituents
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AUTHORITY: Implementing Section 13 and authorized by Sections 11(b) and 27 of the Environmental Protection Act [415 ILCS 5/13, 11(b), and 27]

SOURCE: Filed with the Secretary of State January 1, 1978; amended at 2 Ill. Reg. 44, p. 151, effective November 2, 1978; amended at 3 Ill. Reg. 20, p. 95, effective May 17, 1979; amended at 3 Ill. Reg. 25, p. 190, effective June 21, 1979; codified at 6 Ill. Reg. 7818; amended at 6 Ill. Reg. 11161, effective September 7, 1982; amended at 6 Ill. Reg. 13750, effective October 26, 1982; amended at 8 Ill. Reg. 1629, effective January 18, 1984; peremptory amendments at 10 Ill. Reg. 461, effective December 23, 1985; amended at R87-27 at 12 Ill. Reg. 9911, effective May 27, 1988; amended at R85-29 at 12 Ill. Reg. 12082, effective July 11, 1988; amended in R88-1 at 13 Ill. Reg. 5998, effective April 18, 1989; amended in R88-21(A) at 14 Ill. Reg. 2899, effective February 13, 1990; amended in R88-21(B) at 14 Ill. Reg. 11974, effective July 9, 1990; amended in R94-1(A) at 20 Ill. Reg. 7682, effective May 24, 1996; amended in R94-1(B) at 21 Ill. Reg. 370, effective December 23, 1996; expedited correction at 21 Ill. Reg. 6273, effective December 23, 1996; amended in R97-25 at 22 Ill. Reg. 1356, effective December 24, 1997; amended in R99-8 at 23 Ill. Reg. 11249, effective August 26, 1999; amended in R01-13 at 26 Ill. Reg. 3505, effective February 22, 2002; amended in R02-19 at 26 Ill. Reg. 16931, effective November 8, 2002; amended in R02-11 at 27 Ill. Reg. 166, effective December 20, 2002; amended in R04-21 at 30 Ill. Reg. 4919, effective March 1, 2006; amended in R04-25 at 32 Ill. Reg. 2254, effective January 28, 2008; amended in R07-9 at 32 Ill. Reg. 14978, effective September 8, 2008; amended in R11-18 at 36 Ill. Reg. 18871, effective December 12, 2012; amended at in R08-_____ at _____ Ill. Reg. _____, effective _____.

SUBPART A: GENERAL WATER QUALITY PROVISIONS

Section 302.101 Scope and Applicability

- a) This Part contains schedules of water quality standards which are applicable throughout the State as designated in 35 Ill. Adm. Code 303. Site specific water quality standards are found with the water use designations in 35 Ill. Adm. Code 303.
- b) Subpart B contains general use water quality standards which must be met in waters of the State for which there is no specific designation (35 Ill. Adm. Code 303.201).
- c) Subpart C contains the public and food processing water supply standards. These are cumulative with Subpart B and must be met by all designated waters at the point at which water is drawn for treatment and distribution as a potable supply or for food processing (35 Ill. Adm. Code 303.202).
- d) Subpart D contains the Chicago Area Waterway System and the Lower Des Plaines River water quality secondary contact and indigenous aquatic life standards. These standards must be met only by certain waters designated in 35 Ill. Adm. Code 303.204, 303.220, 303.225, 303.227, 303.230, ~~and 303.235 and 303.237~~ 303.441.
- e) Subpart E contains the Lake Michigan Basin water quality standards. These must be met in the waters of the Lake Michigan Basin as designated in 35 Ill. Adm. Code 303.443.
- f) Subpart F contains the procedures for determining each of the criteria designated in Sections 302.210 and 302.410.
- g) Unless the contrary is clearly indicated, all references to "Parts" or "Sections" are to Ill. Adm. Code, Title 35: Environmental Protection. For example, "Part 309" is 35 Ill. Adm. Code 309, and "Section 309.101" is 35 Ill. Adm. Code 309.101.

(Source: Amended at ____ Ill. Reg.____, effective _____)

Section 302.102 Allowed Mixing, Mixing Zones and ZIDs

- a) Whenever a water quality standard is more restrictive than its corresponding effluent standard, or where there is no corresponding effluent standard specified at 35 Ill. Adm. Code 304, an opportunity shall be allowed for compliance with 35 Ill. Adm. Code 304.105 by mixture of an effluent with its receiving waters, provided the discharger has made every effort to comply with the requirements of 35 Ill. Adm. Code 304.102.

- b) The portion, volume and area of any receiving waters within which mixing is allowed pursuant to subsection (a) shall be limited by the following:
- 1) Mixing must be confined in an area or volume of the receiving water no larger than the area or volume which would result after incorporation of outfall design measures to attain optimal mixing efficiency of effluent and receiving waters. Such measures may include, but are not limited to, use of diffusers and engineered location and configuration of discharge points.
 - 2) Mixing is not allowed in waters which include a tributary stream entrance if such mixing occludes the tributary mouth or otherwise restricts the movement of aquatic life into or out of the tributary.
 - 3) Mixing is not allowed in water adjacent to bathing beaches, bank fishing areas, boat ramps or dockages or any other public access area.
 - 4) Mixing is not allowed in waters containing mussel beds, endangered species habitat, fish spawning areas, areas of important aquatic life habitat, or any other natural features vital to the well being of aquatic life in such a manner that the maintenance of aquatic life in the body of water as a whole would be adversely affected.
 - 5) Mixing is not allowed in waters which contain intake structures of public or food processing water supplies, points of withdrawal of water for irrigation, or watering areas accessed by wild or domestic animals.
 - 6) Mixing must allow for a zone of passage for aquatic life in which water quality standards are met. However, a zone of passage is not required in receiving streams that have zero flow for at least seven consecutive days recurring on average in nine years out of ten.
 - 7) The area and volume in which mixing occurs, alone or in combination with other areas and volumes of mixing, must not intersect any area of any body of water in such a manner that the maintenance of aquatic life in the body of water as a whole would be adversely affected.
 - 8) The area and volume in which mixing occurs, alone or in combination with other areas and volumes of mixing must not contain more than 25% of the cross-sectional area or volume of flow of a stream except for those streams where the dilution ratio is less than 3:1. In streams where the dilution ratio is less than 3:1, the volume in which mixing occurs, alone or in combination with other volumes of mixing, must not contain more than 50 % of the volume flow unless an applicant for an NPDES permit demonstrates, pursuant subsection (d) of this section, that an adequate zone of passage is provided for pursuant to Section 302.102(b)(6).

- 9) No mixing is allowed where the water quality standard for the constituent in question is already violated in the receiving water.
 - 10) No body of water may be used totally for mixing of single outfall or combination of outfalls, except as provided in Section 302.102(b)(6).
 - 11) Single sources of effluents which have more than one outfall shall be limited to a total area and volume of mixing no larger than that allowable if a single outfall were used.
 - 12) The area and volume in which mixing occurs must be as small as is practicable under the limitations prescribed in this subsection, and in no circumstances may the mixing encompass a surface area larger than 26 acres.
- c) All water quality standards of this Part must be met at every point outside of the area and volume of the receiving water within which mixing is allowed. The acute toxicity standards of this Part Sections 302.208 and 302.210 must be met within the area and volume within which mixing is allowed, except as provided in subsection (e).
- d) Pursuant to the procedures of Section 39 of the Act and 35 Ill. Adm. Code 309, a person may apply to the Agency to include as a condition in an NPDES permit formal definition of the area and volume of the waters of the State within which mixing is allowed for the NPDES discharge in question. Such formally defined area and volume of allowed mixing shall constitute a "mixing zone" for the purposes of 35 Ill. Adm. Code: Subtitle C. Upon proof by the applicant that a proposed mixing zone conforms with the requirements of Section 39 of the Act, this Section and any additional limitations as may be imposed by the Clean Water Act (CWA) (33 USC 1251 et seq.), the Act or Board regulations, the Agency shall, pursuant to Section 39(b) of the Act, include within the NPDES permit a condition defining the mixing zone.
- e) Pursuant to the procedures of Section 39 of the Act and 35 Ill. Adm. Code 309, a person may apply to the Agency to include as a condition in an NPDES permit a ZID as a component portion of a mixing zone. Such ZID shall, at a minimum, be limited to waters within which effluent dispersion is immediate and rapid. For the purposes of this subsection, "immediate" dispersion means an effluent's merging with receiving waters without delay in time after its discharge and within close proximity of the end of the discharge pipe, so as to minimize the length of exposure time of aquatic life to undiluted effluent, and "rapid" dispersion means an effluent's merging with receiving waters so as to minimize the length of exposure time of aquatic life to undiluted effluent. Upon proof by the applicant that a proposed ZID conforms with the requirements of Section 39

of the Act and this Section, the Agency shall, pursuant to Section 39(b) of the Act, include within the NPDES permit a condition defining the ZID.

- f) Pursuant to Section 39 of the Act and 35 Ill. Adm. Code 309.103, an applicant for an NPDES permit shall submit data to allow the Agency to determine that the nature of any mixing zone or mixing zone in combination with a ZID conforms with the requirements of Section 39 of the Act and of this Section. A permittee may appeal Agency determinations concerning a mixing zone or ZID pursuant to the procedures of Section 40 of the Act and 35 Ill. Adm. Code 309.181.
- g) Where a mixing zone is defined in an NPDES permit, the waters within that mixing zone, for the duration of that NPDES permit, shall constitute the sole waters within which mixing is allowed for the permitted discharge. It shall not be a defense in any action brought pursuant to 35 Ill. Adm. Code 304.105 that the area and volume of waters within which mixing may be allowed pursuant to subsection (b) is less restrictive than the area or volume or waters encompassed in the mixing zone.
- h) Where a mixing zone is explicitly denied in a NPDES permit, no waters may be used for mixing by the discharge to which the NPDES permit applies, all other provisions of this Section notwithstanding.
- i) Where an NPDES permit is silent on the matter of a mixing zone, or where no NPDES permit is in effect, the burden of proof shall be on the discharger to demonstrate compliance with this Section in any action brought pursuant to 35 Ill. Adm. Code 304.105.

(Source: Amended at _____ Ill. Reg. _____, effective _____)

SUBPART D: CHICAGO AREA WATERWAY SYSTEM AND LOWER DES PLAINES RIVER WATER QUALITY SECONDARY CONTACT AND INDIGENOUS AQUATIC LIFE STANDARDS

Section 302.401 Scope and Applicability

Subpart D contains the Chicago Area Waterway System and Lower Des Plaines River water quality secondary contact and indigenous aquatic life standards. These must be met only by ~~certain~~ waters specifically designated in Part 303. The Subpart B general use and Subpart C public water supply standards of this Part do not apply to waters described in 35 Ill. Adm. Code 303.204 and listed in 35 Ill. Adm. Code 303.220 through 303.235 303.237 as the Chicago Area Waterway System or Lower Des Plaines River, **except that waters designated as Primary Contact Recreation Waters in 35 Ill. Adm. Code 303.220 must meet the numeric water quality standard for bacteria applicable to protected waters in 35 Ill. Adm. Code 302.209** ~~designated for secondary contact and indigenous aquatic life (Section 303.204).~~

Section 302.402 Purpose

The Chicago Area Waterway System and Lower Des Plaines River standards shall protect **primary contact**, incidental contact or non-contact recreational uses, except where designated as non-recreational waters; commercial activity, including navigation and industrial water supply uses; and the highest quality aquatic life and wildlife that is attainable, limited only by the physical condition of these waters and hydrologic modifications to these waters. The numeric and narrative standards contained in this Part will assure the protection of the aquatic life and recreational uses of the Chicago Area Waterway System and Lower Des Plaines River as those uses are defined in 35 Ill. Adm. Code Part 301 and designated in 35 Ill. Adm. Code Part 303. Secondary contact and indigenous aquatic life standards are intended for those waters not suited for general use activities but which will be appropriate for all secondary contact uses and which will be capable of supporting an indigenous aquatic life limited only by the physical configuration of the body of water, characteristics and origin of the water and the presence of contaminants in amounts that do not exceed the water quality standards listed in Subpart D.

(Source: Amended at _____ Ill. Reg. _____, effective _____)

Section 302.404 pH

pH (~~STORET number 00400~~) shall be within the range of 6.5 ~~6.0~~ to 9.0 except for natural causes.

(Source: Amended at _____ Ill. Reg. _____, effective _____)

Section 302.405 Dissolved Oxygen

Dissolved oxygen (~~STORET number 00300~~) concentrations shall not be less than the applicable values in subsections (a), (b) and (c) of this Section ~~4.0 mg/l at any time except that the Calumet Sag Channel shall not be less than 3.0 mg/l at any time.~~

a) For the Upper Dresden Island Pool Aquatic Life Use waters listed in Section 303.237,

1) During the period of March through July:

A) 5.0 mg/l at any time; and

B) 6.0 mg/l as a daily mean averaged over 7 days.

2) During the period of August through February:

A) 3.5 mg/l at any time;

B) 4.0 mg/l as a daily minimum averaged over 7 days, and

C) 5.5 mg/l as a daily mean averaged over 30 days.

b) For the Chicago Area Waterway System Aquatic Life Use A waters listed in Section 303.230,

1) During the period of March through July, 5.0 mg/l at any time; and

2) during the period of August through February:

A) 3.5 mg/l at any time, and

B) 4.0 mg/l as a daily minimum averaged over 7 days.

c) For the Chicago Area Waterway System and Brandon Pool Aquatic Life Use B waters listed in Section 303.235,

1) 3.5 mg/l at any time and

2) 4.0 mg/l as a daily minimum averaged over 7 days.

d) Assessing attainment of dissolved oxygen **mean and minimum values.**

1) Daily mean is the arithmetic mean of dissolved oxygen **concentrations in 24 consecutive hours values measured in a single 24-hour calendar day.**

2) Daily minimum is the minimum dissolved oxygen **concentration in 24 consecutive hours value measured in a single 24-hour calendar day.**

3) The measurements of dissolved oxygen used to determine attainment or lack of attainment with any of the dissolved oxygen standards in this Section must assure daily minima and daily means that represent the true daily minima and daily means.

4) The dissolved oxygen **concentrations-values** used **to determine in calculating or determining any a** daily mean or daily minimum should not exceed the air-equilibrated **concentration value.**

- 5) “Daily minimum averaged over 7 days” means the arithmetic mean of daily minimum dissolved oxygen concentrations in 7 consecutive 24-hour periods.
- 6) “Daily mean averaged over 7 days” means the arithmetic mean of daily mean dissolved oxygen concentrations in 7 consecutive 24-hour periods.
- 7) “Daily mean averaged over 30 days” means the arithmetic mean of daily mean dissolved oxygen concentrations in 30 consecutive 24-hour periods.

(Source: Amended at _____ Ill. Reg. _____, effective _____)

Section 302.407 Chemical Constituents

- a) The acute standard (AS) for the chemical constituents listed in subsection (e) shall not be exceeded at any time except as provided in subsection (d).
- b) The chronic standard (CS) for the chemical constituents listed in subsection (e) shall not be exceeded by the arithmetic average of at least four consecutive samples collected over any period of at least four days, except as provided in subsection (d). The samples used to demonstrate attainment or lack of attainment with a CS must be collected in a manner that assures an average representative of the sampling period. For the **chemical constituents metals** that have water quality based standards dependent upon hardness, the chronic water quality standard will be calculated according to subsection (e) using the hardness of the water body at the time the ~~metals~~ sample was collected. To calculate attainment status of chronic ~~metals~~ standards, the concentration of the **chemical constituent metal** in each sample is divided by the calculated water quality standard for the sample to determine a quotient. The water quality standard is attained if the mean of the sample quotients is less than or equal to one for the duration of the averaging period.
- c) The human health standard (HHS) for the chemical constituents listed in subsection (f) shall not be exceeded ~~when the stream flow is at or above the harmonic mean flow pursuant to Section 302.658 nor shall an annual average, on a 12-month rolling average,~~ based on at least eight samples, collected in a manner representative of the sampling period, ~~exceed the HHS~~ except as provided in subsection (d).
- d) In waters where mixing is allowed pursuant to Section 302.102 of this Part, the following apply:

- 1) The AS shall not be exceeded in any waters except for those waters for which a zone of initial dilution (ZID) applies pursuant to Section 302.102 of this Part.
- 2) The CS shall not be exceeded outside of waters in which mixing is allowed pursuant to Section 302.102 of this Part.
- 3) The HHS shall not be exceeded outside of waters in which mixing is allowed pursuant to Section 302.102 of this Part.

e) Numeric Water Quality Standards for the Protection of Aquatic Organisms

<u>Constituent</u>	<u>AS</u> <u>(µg/L)</u>	<u>CS</u> <u>(µg/L)</u>
<u>Arsenic</u> <u>(trivalent, dissolved)</u>	<u>340 X 1.0*=340</u>	<u>150 X 1.0*=150</u>
<u>Benzene</u>	<u>4200</u>	<u>860</u>
<u>Cadmium</u> <u>(dissolved)</u>	<u>exp[A+Bln(H)] X</u> <u>{1.138672-</u> <u>[(lnH)(0.041838)]}* , where</u> <u>A=-2.918 and B=1.128</u>	<u>exp[A+Bln(H)] X {1.101672-</u> <u>[(lnH)(0.041838)]}* , where</u> <u>A= -3.490 and B=0.7852</u>
<u>Chromium</u> <u>(hexavalent, total)</u>	<u>16</u>	<u>11</u>
<u>Chromium (trivalent,</u> <u>dissolved)</u>	<u>exp[A+Bln(H)] X 0.316* ,</u> <u>where A=3.7256 and</u> <u>B=0.8190</u>	<u>exp[A+Bln(H)] X 0.860* ,</u> <u>where A=0.6848 and</u> <u>B=0.8190</u>
<u>Copper</u> <u>(dissolved)</u>	<u>exp[A+Bln(H)] X 0.960* ,</u> <u>where A=-1.645 and</u> <u>B=0.9422</u>	<u>exp[A+Bln(H)] X 0.960* ,</u> <u>where A=-1.646 and</u> <u>B=0.8545</u>
<u>Cyanide**</u>	<u>22</u>	<u>105.2</u>
<u>Ethylbenzene</u>	<u>150</u>	<u>14</u>
<u>Flouride (total)</u>	<u>$e^{A+Bln(H)}$</u> <u>where A = 6.7319</u> <u>and B = 0.5394</u>	<u>$e^{A+Bln(H)}$, but shall not exceed</u> <u>4.0 mg/L</u> <u>where A = 6.0445 and B =</u> <u>0.5394</u>
<u>Lead</u> <u>(dissolved)</u>	<u>exp[A+Bln(H)] X {1.46203-</u> <u>[(lnH)(0.145712)]}* ,</u> <u>where A=-1.301 and</u> <u>B=1.273</u>	<u>exp[A+Bln(H)] X {1.46203-</u> <u>[(lnH)(0.145712)]}* ,</u> <u>where A=-2.863 and</u> <u>B=1.273</u>
<u>Manganese</u> <u>(dissolved)</u>	<u>$e^{A+Bln(H)}$ X 0.9812*</u> <u>where A = 4.9187</u> <u>and B = 0.7467</u>	<u>$e^{A+Bln(H)}$ X 0.9812*</u> <u>where A = 4.0635</u> <u>and B = 0.7467</u>
<u>Mercury (dissolved)</u>	<u>1.4 X 0.85*=1.2</u>	<u>0.77 X 0.85*=0.65</u>
<u>Nickel (dissolved)</u>	<u>exp[A+Bln(H)] X 0.998* ,</u>	<u>exp[A+Bln(H)] X 0.997* ,</u>

	where A=0.5173 and B=0.8460	where A=-2.286 and B=0.8460
<u>Toluene</u>	<u>2000</u>	<u>600</u>
<u>TRC</u>	<u>19</u>	<u>11</u>
<u>Xylene(s)</u>	<u>920</u>	<u>360</u>
<u>Zinc (dissolved)</u>	<u>exp[A+Bln(H)] X 0.978*</u> , where A=0.9035 and B=0.8473	<u>exp[A+Bln(H)] X 0.986*</u> , where A= -0.4456 -0.8165 and B=0.8473

where: $\mu\text{g/L}$ = microgram per liter,

$\exp[x]$ = base of natural logarithms raised to the x- power,

$\ln(H)$ = natural logarithm of Hardness in milligrams per liter,

* = conversion factor multiplier for dissolved metals, and

** = standard to be evaluated using either of the following USEPA approved methods, incorporated by reference at 35 Ill. Adm. Code 301.106: Method OIA-1677, DW: Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry, January 2004, Document Number EPA-821-R-04-001 or Cyanide Amenable to Chlorination, Standard Methods 4500-CN-G (40 CFR 136.3), sample may be in the available or weak acid dissociable (WAD) forms

f) Numeric Water Quality Standard for the Protection of Human Health

<u>Constituent</u>	<u>HHS in micrograms per liter ($\mu\text{g/L}$)</u>
<u>Benzene</u>	<u>310</u>
<u>Mercury (total)</u>	<u>0.012</u>
<u>Phenols</u>	<u>860,000</u>

g) Numeric Water Quality Standards for other chemical constituents

Concentrations of the following chemical constituents shall not be exceeded except in waters for which mixing is allowed pursuant to Section 302.102 of this Part.

<u>Constituent</u>	<u>Unit</u>	<u>Standard</u>
<u>Chloride (May 1-November 30)</u>	<u>mg/L</u>	<u>500</u>
<u>Iron (dissolved)</u>	<u>mg/L</u>	<u>1.0</u>
<u>Selenium (total)</u>	<u>mg/L</u>	<u>1.0</u>
<u>Silver (dissolved)</u>	<u>$\mu\text{g/L}$</u>	<u>exp[A+Bln(H)] X 0.85*, where A=-6.52 and B=1.72</u>

Sulfate (where H is ≥ 100 but ≤ 500 and C is ≥ 25 but ≤ 500)	mg/L	$[1276.7 + 5.508(H) - 1.457(C)] \times 0.65$
Sulfate (where H is ≥ 100 but ≤ 500 and C is ≥ 5 but < 25)	mg/L	$[-57.478 + 5.79(H) + 54.163(C)] \times 0.65$
Sulfate (where H > 500 and C ≥ 5)	mg/L	2,000

where: mg/L = milligram per liter,

ug/L = microgram per liter,

H = Hardness concentration of receiving water in mg/L as CaCO₃,

C = Chloride concentration of receiving water in mg/L,

exp[x] = base of natural logarithms raised to the x-power,

ln(H) = natural logarithm of Hardness in milligrams per liter, and

* = conversion factor multiplier for dissolved metals

Concentrations of other chemical constituents shall not exceed the following standards:

CONSTITUENTS	STORET NUMBER	CONCENTRATION (mg/L)
Ammonia Un-ionized (as N*)	00612	0.1
Arsenic (total)	01002	1.0
Barium (total)	01007	5.0
Cadmium (total)	01027	0.15
Chromium (total hexavalent)	01032	0.3
Chromium (total trivalent)	01033	1.0
Copper (total)	01042	1.0
Cyanide (total)	00720	0.10
Fluoride (total)	00951	15.0
Iron (total)	01045	2.0
Iron (dissolved)	01046	0.5
Lead (total)	01051	0.1
Manganese (total)	01055	1.0
Mercury (total)	71900	0.0005

Nickel (total)	01067	1.0
Oil, fats and grease	00550, 00556 or 00560	15.0**
Phenols	32730	0.3
Selenium (total)	01147	1.0
Silver	01077	1.1
Zinc (total)	01092	1.0
Total Dissolved Solids	70300	1500

*For purposes of this section the concentration of un-ionized ammonia shall be computed according to the following equation:

$$U = \frac{N}{[0.94412(1 + 10^X) + 0.0559]} \text{ where:}$$

$$X = 0.09018 + \frac{2729.92}{(T + 273.16)} - \text{pH}$$

U = Concentration of un-ionized ammonia as N in mg/L

N = Concentration of ammonia nitrogen as N in mg/L

T = Temperature in degrees Celsius

**Oil shall be analytically separated into polar and non-polar components if the total concentration exceeds 15 mg/L. In no case shall either of the components exceed 15 mg/L (i.e., 15 mg/L polar materials and 15 mg/L non-polar materials).

(Source: Amended at _____ Ill. Reg. _____, effective _____)

Section 302.408 Temperature

- a) Water temperature shall not exceed the maximum limits in the applicable table that follows during more than two percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the applicable table that follows by more than 2° C (3.6° F).
- b) Water temperature in the Chicago Area Waterway System Aquatic Life Use A waters listed in 35 Ill. Adm. Code 303.230 shall not exceed the period average limits in the following table during any period ~~on an average basis.~~

<u>Months – dates</u>	<u>Period Average</u> (°F)	<u>Daily Maximum</u> (°F)
<u>January 1-31</u>	<u>54.3</u>	<u>88.7</u>
<u>February 1-28</u>	<u>53.6</u>	<u>88.7</u>
<u>March 1-31</u>	<u>54.4</u> 57.2	<u>88.7</u>
<u>April 1-15</u>	<u>58.9</u> 60.8	<u>88.7</u>
<u>April 16-30</u>	<u>62.9</u> 62.1	<u>88.7</u>
<u>May 1-15</u>	<u>68.1</u> 69.2	<u>88.7</u>
<u>May 16-31</u>	<u>70.4</u> 71.4	<u>88.7</u>
<u>June 1-15</u>	<u>75.5</u> 74.2	<u>88.7</u>
<u>June 16-30</u>	<u>85.1</u>	<u>88.7</u>
<u>July 1-31</u>	<u>85.1</u>	<u>88.7</u>
<u>August 1-31</u>	<u>85.1</u>	<u>88.7</u>
<u>September 1-15</u>	<u>85.1</u>	<u>88.7</u>
<u>September 16-30</u>	<u>76.5</u> 77.0	<u>88.7</u>
<u>October 1-15</u>	<u>73.2</u>	<u>88.7</u>
<u>October 16-31</u>	<u>69.4</u> 69.6	<u>88.7</u>
<u>November 1-30</u>	<u>66.2</u>	<u>88.7</u>
<u>December 1-31</u>	<u>59.9</u>	<u>88.7</u>

- c) Water temperature in the Chicago Area Waterway System and Brandon Pool Aquatic Life Use B waters listed in 303.325, shall not exceed the period average limits in the following table during any period.

<u>Months – dates</u>	<u>Period Average</u> (°F)	<u>Daily Maximum</u> (°F)
<u>January 1-31</u>	<u>54.3</u>	<u>90.3</u>
<u>February 1-28</u>	<u>53.6</u>	<u>90.3</u>
<u>March 1-31</u>	<u>54.4</u> 57.2	<u>90.3</u>
<u>April 1-15</u>	<u>58.9</u> 60.8	<u>90.3</u>
<u>April 16-30</u>	<u>62.9</u> 62.1	<u>90.3</u>
<u>May 1-15</u>	<u>68.1</u> 69.2	<u>90.3</u>
<u>May 16-31</u>	<u>70.4</u> 71.4	<u>90.3</u>
<u>June 1-15</u>	<u>75.5</u> 74.2	<u>90.3</u>
<u>June 16-30</u>	<u>86.7</u>	<u>90.3</u>
<u>July 1-31</u>	<u>86.7</u>	<u>90.3</u>
<u>August 1-31</u>	<u>86.7</u>	<u>90.3</u>
<u>September 1-15</u>	<u>86.7</u>	<u>90.3</u>
<u>September 16-30</u>	<u>76.5</u> 77.0	<u>90.3</u>
<u>October 1-15</u>	<u>73.2</u>	<u>90.3</u>
<u>October 16-31</u>	<u>69.4</u> 69.6	<u>90.3</u>
<u>November 1-30</u>	<u>66.2</u>	<u>90.3</u>
<u>December 1-31</u>	<u>59.9</u>	<u>90.3</u>

d) Water temperature for the Upper Dresden Island Pool, as defined in 35 Ill. Adm. Code 303.237, shall not exceed the period average limits in the following table during any period ~~on an average basis.~~

<u>Months – dates</u>	<u>Period Average</u> <u>(°F)</u>	<u>Daily Maximum</u> <u>(°F)</u>
<u>January 1-31</u>	<u>54.3</u>	<u>88.7</u>
<u>February 1-28</u>	<u>53.6</u>	<u>88.7</u>
<u>March 1-31</u>	<u>54.4</u> 57.2	<u>88.7</u>
<u>April 1-15</u>	<u>58.9</u> 60.8	<u>88.7</u>
<u>April 16-30</u>	<u>62.9</u> 62.1	<u>88.7</u>
<u>May 1-15</u>	<u>68.1</u> 69.2	<u>88.7</u>
<u>May 16-31</u>	<u>70.4</u> 71.4	<u>88.7</u>
<u>June 1-15</u>	<u>75.5</u> 74.2	<u>88.7</u>
<u>June 16-30</u>	<u>85.1</u>	<u>88.7</u>
<u>July 1-31</u>	<u>85.1</u>	<u>88.7</u>
<u>August 1-31</u>	<u>85.1</u>	<u>88.7</u>
<u>September 1-15</u>	<u>85.1</u>	<u>88.7</u>
<u>September 16-30</u>	<u>76.5</u> 77.0	<u>88.7</u>
<u>October 1-15</u>	<u>73.2</u>	<u>88.7</u>
<u>October 16-31</u>	<u>69.4</u> 69.6	<u>88.7</u>
<u>November 1-30</u>	<u>66.2</u>	<u>88.7</u>
<u>December 1-31</u>	<u>59.9</u>	<u>88.7</u>

d) Cold Shock

Water temperatures of discharges to the CAWS Aquatic Life Use A Waters and CAWS and Brandon Pool Aquatic Life Use B Waters shall be controlled in a manner to protect fish and aquatic life from the deleterious effects of cold shock.

Temperature (STORET number (° F) 00011 and (° C) 00010) shall not exceed 34° C (93° F) more than 5% of the time, or 37.8° C (100° F) at any time.

(Source: Amended at _____ Ill. Reg. _____, effective _____)

Section 302.409 Cyanide (Repealed)

Cyanide (total) shall not exceed 0.10 mg/l

(Source: Repealed at _____ Ill. Reg. _____, effective _____)

Section 302.410 Substances Toxic to Aquatic Life Other Toxic Substances

Any substance ~~or combination of substances~~ ~~toxic to aquatic life~~ not listed in Section 302.407 shall not be present in amounts toxic or harmful to human health, aquatic life or wildlife exceed ~~one half of the 96-hour median tolerance limit (96-hour TL_m)~~ for native fish or essential fish food organisms.

- a) Any substance or combination of substances shall be deemed to be toxic or harmful to aquatic life if present in concentrations that exceed the following:
- 1) An Acute Aquatic Toxicity Criterion (AATC) validly derived and correctly applied pursuant to procedures set forth in Sections 302.612 through 302.618 or in Section 302.621; or
 - 2) A Chronic Aquatic Toxicity Criterion (CATC) validly derived and correctly applied pursuant to procedures set forth in Sections 302.627 or 302.630.
- b) Any substance or combination of substances shall be deemed to be toxic or harmful to wild or domestic animal life if present in concentrations that exceed any Wild and Domestic Animal Protection Criterion (WDAPC) validly derived and correctly applied pursuant to Section 302.633.
- c) Any substance or combination of substances shall be deemed to be toxic or harmful to human health if present in concentrations that exceed criteria, validly derived and correctly applied, based on either of the following:**
- 1) **Disease or functional impairment due to a physiological mechanism for which there is a threshold dose below which no damage occurs calculated pursuant to Sections 302.642 through 302.648 (Human Threshold Criterion); or**
 - 2) **Disease or functional impairment due to a physiological mechanism for which any dose may cause some risk of damage calculated pursuant to Sections 302.651 through 302.658 (Human Nonthreshold Criterion).**
- de)** The most stringent criterion of subsections (a), (b) and (c)(b) shall apply at all points outside of any waters within which, mixing is allowed pursuant to Section 302.102. In addition, the AATC derived pursuant to subsection (a)(1) shall apply in all waters except that it shall not apply within a ZID that is prescribed in accordance with Section 302.102.
- ed)** The procedures of Subpart F set forth minimum data requirements, appropriate test protocols and data assessment methods for establishing criteria pursuant to subsections (a), (b) and (c)(b). No other procedures may be used to establish such criteria unless approved by the Board in a rulemaking or adjusted standard proceeding pursuant to Title VII of the Act. The validity and applicability of

the Subpart F procedures may not be challenged in any proceeding brought pursuant to Titles VIII or X of the Act, although the validity and correctness of application of the numeric criteria derived pursuant to Subpart F may be challenged in such proceedings pursuant to subsection (f)(e).

(e) Agency derived criteria may be challenged as follows:

1) A permittee may challenge the validity and correctness of application of a criterion derived by the Agency pursuant to this Section only at the time such criterion is first applied in an NPDES permit pursuant to 35 Ill. Adm. Code 309.152 or in an action pursuant to Title VIII of the Act for violation of the toxicity water quality standard. Failure of a person to challenge the validity of a criterion at the time of its first application shall constitute a waiver of such challenge in any subsequent proceeding involving application of the criterion to that person.

2) Consistent with subsection (f)(1)(e)(1), if a criterion is included as, or is used to derive, a condition of an NPDES discharge permit, a permittee may challenge the criterion in a permit appeal pursuant to Section 40 of the Act and 35 Ill. Adm. Code 309.181. In any such action, the Agency shall include in the record all information upon which it has relied in developing and applying the criterion, whether such information was developed by the Agency or submitted by the Petitioner. THE BURDEN OF PROOF SHALL BE ON THE PETITIONER TO DEMONSTRATE THAT THE CRITERION-BASED CONDITION IS NOT NECESSARY TO ACCOMPLISH THE PURPOSES OF SUBSECTION (a) (Section 40(a)(1) of the Act), but there is no presumption in favor of the general validity and correctness of the application of the criterion as reflected in the challenged condition.

3) Consistent with subsection (f)(1)(e)(1), in an action where alleged violation of the toxicity water quality standard is based on alleged excursion of a criterion, the person bringing such action shall have the burdens of going forward with proof and of persuasion regarding the general validity and correctness of application of the criterion.

(f) Subsections (a) through (e)(e) do not apply to USEPA registered pesticides approved for aquatic application and applied pursuant to the following conditions:

1) Application shall be made in strict accordance with label directions;

2) Applicator shall be properly certified under the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 135 et seq. (1972)); and

- 3) Applications of aquatic pesticides must be in accordance with the laws, regulations and guidelines of all state and federal agencies authorized by law to regulate, use or supervise pesticide applications.

(Source: Amended at _____ Ill. Reg. _____, effective _____)

Section 302.412 Total Ammonia Nitrogen

- a) Total ammonia nitrogen must in no case exceed 15 mg/L.
- b) The total ammonia nitrogen acute, chronic, and sub-chronic standards are determined by the equations given in subsections (b)(1) and (b)(2) of this Section. Attainment of each standard must be determined by subsections (c) and (d) of this Section in mg/L.
- 1) The acute standard (AS) is calculated using the following equation:

$$AS = \frac{0.411}{1 + 10^{7.204-pH}} + \frac{58.4}{1 + 10^{pH-7.204}}$$

- 2) *The chronic standard (CS) is calculated using the following equations:*

- A) During the Early Life Stage Present period, as defined in subsection (e) of this Section:

- i) When water temperature is less than or equal to 14.51°C:

$$CS = \left\{ \frac{0.0577}{1 + 10^{7.688-pH}} + \frac{2.487}{1 + 10^{pH-7.688}} \right\} (2.85)$$

- ii) When water temperature is above 14.51°C:

$$CS = \left\{ \frac{0.0577}{1 + 10^{7.688-pH}} + \frac{2.487}{1 + 10^{pH-7.688}} \right\} (1.45 * 10^{0.028*(25-T)})$$

Where T = Water Temperature, degrees Celsius

- B) During the Early Life Stage Absent period, as defined in subsection (e) of this Section:

- i) When water temperature is less than or equal to 7°C:

$$CS = \left\{ \frac{0.0577}{1 + 10^{7.688-pH}} + \frac{2.487}{1 + 10^{pH-7.688}} \right\} (1.45 * 10^{0.504})$$

ii) When water temperature is greater than 7°C:

$$CS = \left\{ \frac{0.0577}{1 + 10^{7.688 - \text{pH}}} + \frac{2.487}{1 + 10^{\text{pH} - 7.688}} \right\} (1.45 * 10^{0.028(25 - T)})$$

Where T = Water Temperature, degrees Celsius

3) The sub-chronic standard is equal to 2.5 times the chronic standard.

c) Attainment of the Total Ammonia Nitrogen Water Quality Standards

1) The acute standard for total ammonia nitrogen (in mg/L) must not be exceeded at any time except in those waters for which the Agency has approved a ZID pursuant to Section 302.102 of this Part.

2) The 30-day average concentration of total ammonia nitrogen (in mg/L) must not exceed the chronic standard (CS) except in those waters in which mixing is allowed pursuant to Section 302.102 of this Part. Attainment of the chronic standard (CS) is evaluated pursuant to subsection (d) of this Section by averaging at least four samples collected at weekly intervals or at other sampling intervals that statistically represent a 30-day sampling period. The samples must be collected in a manner that assures a representative sampling period.

3) The 4-day average concentration of total ammonia nitrogen (in mg/L) must not exceed the sub-chronic standard except in those waters in which mixing is allowed pursuant to Section 302.102. Attainment of the sub-chronic standard is evaluated pursuant to subsection (d) of this Section by averaging daily sample results collected over a period of four consecutive days within the 30-day averaging period. The samples must be collected in a manner that assures a representative sampling period.

d) The water quality standard for each water body must be calculated based on the temperature and pH of the water body measured at the time of each ammonia sample. The concentration of total ammonia in each sample must be divided by the calculated water quality standard for the sample to determine a quotient. The water quality standard is attained if the mean of the sample quotients is less than or equal to one for the duration of the averaging period.

e) The Early Life Stage Present period occurs from March through October. All other periods are subject to the Early Life Stage Absent period, except that waters listed in Section 303.235 are not subject to Early Life Stage Present ammonia limits at any time.

BOARD NOTE: Acute and chronic standard concentrations for total ammonia nitrogen (in mg/L) for different combinations of pH and temperature are shown in Appendix C.

(Source: Added at _____ Ill. Reg. _____, effective _____)

SUBPART F: PROCEDURES FOR DETERMINING WATER QUALITY CRITERIA

Section 302.601 Scope and Applicability

This Subpart contains the procedures for determining the water quality criteria set forth in Section 302.210(a), (b) and (c) **and 302.410(a), (b) and (c).**

(Source: Amended at _____ Ill. Reg. _____, effective _____)

Section 302.648 Determining the Human Threshold Criterion

The HTC is calculated according to the equation:

$$HTC = ADI/[W + (F \times BCF)]$$

where:

- HTC = Human health protection criterion in milligrams per liter (mg/L);
- ADI = Acceptable daily intake of substance in milligrams per day (mg/d) as specified in Section 302.645;
- W = Per capita daily water consumption equal to 2 liters per day (L/d) for surface waters at the point of intake of a public or food processing water supply, or equal to 0.01 liters per day (L/d) which represents incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities for areas which are determined to be public access areas pursuant to Section 302.102 (b)(3), or 0.001 liters per day (L/d) for other ~~General Use~~ waters;

- F = Assumed daily fish consumption in the United States equal to 0.020 kilograms per day (kg/d); and
- BCF = Aquatic organism Bioconcentration Factor with units of liter per kilogram (L/kg) as derived in Sections 302.660 through 302.666.

(Source: Amended at _____ Ill. Reg. _____, effective _____)

Section 302.657 Determining the Human Nonthreshold Criterion

The HNC is calculated according to the equation:

$$\text{HNC} = \text{RAI} / [\text{W} + (\text{F} \times \text{BCF})]$$

where:

- HNC = Human Nonthreshold Protection Criterion in milligrams per liter (mg/L);
- RAI = Risk Associated Intake of a substance in milligrams per day (mg/d) which is associated with a lifetime cancer risk level equal to a ratio of one to 1,000,000 as derived in Section 302.654;
- W = Per capita daily water consumption equal to 2 liters per day (L/d) for surface waters at the point of intake of a public or food processing water supply, or equal to 0.01 liters per day (L/d) which represents incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities for areas which are determined to be public access areas pursuant to Section 302.102(b)(3), or 0.001 liters per day (L/d) for other ~~General Use~~ waters;
- F = Assumed daily fish consumption in the United States equal to 0.020 kilograms per day (kg/d); and
- BCF = Aquatic Life Bioconcentration Factor with units of liter per kilogram (L/kg) as derived in Section 302.663.

(Source: Amended at _____ Ill. Reg. _____, effective _____)

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PROOF OF SERVICE

I, the undersigned, on oath state that I have served the attached ILLINOIS EPA'S PRE-FIRST NOTICE COMMENTS upon the person to whom it is directed by electronic filing and placing it in an envelope addressed to:

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and by mailing the document to those listed above and on the attached Service List by First

Class Mail from Springfield, Illinois on April 30, 2014, with sufficient postage.

/s/Stefanie N. Diers
Stefanie N. Diers
Assistant Counsel

THIS FILING IS SUBMITTED ON RECYCLED PAPER