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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD
STATE OF ILLINOIS
Pollution Control Board

IN THE MATTER OF:)
)
PROPOSED AMENDMENTS TO) R02-19
AMMONIA NITROGEN STANDARDS) (Rulemaking – Water)
35 Ill. Adm. Code 302.212, 302.213,)
AND 304.122)

NOTICE OF FILING

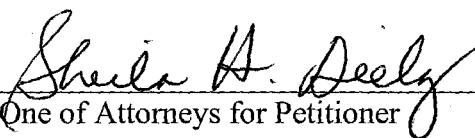
TO: Illinois Environmental Protection Agency Division of Legal Counsel
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Office of the Attorney General
Division Chief of Environmental Enforcement
188 West Randolph Street
Chicago, IL 60610

See Attached Service List

PLEASE TAKE NOTICE today that I have filed with the Clerk of the Illinois Pollution Control Board Revised **Proposed Rule**, a copy of which is herewith served upon you.

Respectfully submitted,



One of Attorneys for Petitioner

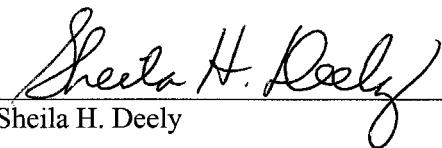
Dated: April 3, 2002

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THIS FILING IS SUBMITTED ON RECYCLED PAPER

CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the foregoing **Notice of Filing - Revised Proposed Rule** was filed by hand delivery with the Clerk of the Illinois Pollution Control Board and served upon the parties to whom said Notice is directed by first class mail, postage prepaid, by depositing in the U.S. Mail at 321 North Clark Street, Chicago, Illinois on Wednesday, April 3, 2002.



Sheila H. Deely

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

**PART 302
WATER QUALITY STANDARDS**

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

Section 302.100

"Early Life Stages" of fish means the pre-hatch embryonic period, the post hatch free embryo or yolk-sac fry, and the larval period, during which the organism feeds. Juvenile fish, which are anatomically rather similar to adults, are not considered an early life stage.

Section 302.212 Total Ammonia Nitrogen and Un-ionized Ammonia

- a) Total ammonia nitrogen (as N: STORET Number 00610) shall in no case exceed 15 mg/L.
- b) The total Un-ionized ammonia nitrogen (as N: STORET Number 00610) shall not exceed the acute, and chronic, and sub-chronic standards shall be determined by the equations given below subject to the provisions of Section 302.208(a) and (b), and Section 302.213 of this Part. Attainment of each standard shall be determined by subsections (c) and (d) of this Section in mg/L.

- 1) The acute standard (AS) shall be calculated using the following equation:

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

From April through October, the Acute Standard (AS) shall be 0.33 mg/L and the Chronic Standard (CS) shall be 0.057 mg/L

- 2) The chronic standard (CS) shall be 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:

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

ii) When water temperature is above 14.51°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 = 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:

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

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

Where T = Temperature, degrees Celsius

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

From November through March, the AS shall be 0.14 mg/L and the CS shall be 0.025 mg/L.

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

c) Attainment of the Total Ammonia Nitrogen Water Quality Standards

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

2) The 30-day average concentration of total ammonia nitrogen (in mg/L) shall not exceed the chronic standard (CS) except in those waters in which mixing is allowed pursuant to Section 302.102. Attainment of the chronic standard (CS) shall be evaluated pursuant to subsection (d) of this Section using at least four consecutive samples collected over a

period of at least 30 days. The samples must be collected in a manner that assures an average representative of the sampling period.

- 3) The four day average concentration of total ammonia nitrogen (in mg/L) shall 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 shall be evaluated pursuant to subsection (d) of this Section using daily samples collected over a period of four consecutive days. The samples must be collected in a manner that assures an average representative of the sampling period.

For purposes of this Section, the concentration of un-ionized ammonia nitrogen as N and total ammonia nitrogen as N shall be computed according to the following equations:

$$U = \frac{N}{[0.94412(1+10^*) + 0.0559]}$$

$$\text{and } N = U [0.94412(1+10^*) + 0.0559]$$

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

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

- d) The water quality standard for each water body shall 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 shall 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.

The following tables indicates the maximum total ammonia nitrogen concentrations (mg/L as N) allowable pursuant to subsections (a) and (b) of this Section for certain combinations of pH and temperature:

- 1) Summer (April through October) Acute un-ionized ammonia 0.33 mg/L

	PH °F	6.5	7.0	7.5	7.75	8.0	8.25	8.5	9.0
	°C								
55	12.8	15.0	15.0	15.0	15.0	13.8	7.9	4.6	1.7
60	15.6	15.0	15.0	15.0	15.0	11.2	6.5	3.8	1.4

65	18.3	15.0	15.0	15.0	15.0	9.8	5.3	3.1	1.2
70	21.1	15.0	15.0	15.0	13.2	7.6	4.4	2.6	1.1
75	23.9	15.0	15.0	15.0	10.9	6.3	3.7	2.2	0.9
80	26.7	15.0	15.0	15.0	9.0	5.2	3.1	1.9	0.8
85	29.4	15.0	15.0	13.1	7.5	4.4	2.6	1.6	0.7
90	32.2	15.0	15.0	10.9	6.3	3.7	2.2	1.4	0.7

2) Summer (April through October) Chronic un-ionized ammonia
0.057 mg/L

PH °F	6.5	7.0	7.5	7.75	8.0	8.25	8.5	9.0	
°C									
55	12.8	15.0	15.0	7.4	4.2	2.4	1.4	0.8	0.3
60	15.6	15.0	15.0	7.0	3.4	1.9	1.1	0.7	0.2
65	18.3	15.0	15.0	4.9	2.8	1.6	0.9	0.5	0.2
70	21.1	15.0	12.6	4.0	2.3	1.3	0.8	0.5	0.2
75	23.9	15.0	10.3	3.3	1.9	1.1	0.6	0.4	0.2
80	26.7	15.0	8.6	2.7	1.6	0.9	0.5	0.3	0.1
85	29.4	15.0	7.8	2.3	1.3	0.8	0.4	0.3	0.1
90	32.2	15.0	5.8	1.9	1.1	0.6	0.4	0.2	0.1

3) Winter (November through March) Acute un-ionized ammonia
0.14 mg/L

PH °F	6.5	7.0	7.5	7.75	8.0	8.25	8.5	9.0	
°C									
32	0.0	15.0	15.0	15.0	15.0	15.0	9.2	5.2	1.7
35	1.7	15.0	15.0	15.0	15.0	14.1	8.0	4.5	1.5
40	4.4	15.0	15.0	15.0	15.0	11.3	6.4	3.7	1.3
45	7.2	15.0	15.0	15.0	15.0	9.0	5.1	2.9	1.0
50	10.0	15.0	15.0	15.0	12.8	7.3	4.1	2.4	0.9
55	12.8	15.0	15.0	15.0	10.3	5.9	3.4	2.0	0.7
60	15.6	15.0	15.0	14.8	8.4	4.8	2.7	1.6	0.6

4) Winter (November through March) Chronic un-ionized ammonia
0.025 mg/L

PH °F	6.5	7.0	7.5	7.75	8.0	8.25	8.5	9.0	
°C									
32	0.0	15.0	15.0	9.1	5.1	2.9	1.6	0.9	0.3
35	1.7	15.0	15.0	7.9	4.4	2.5	1.4	0.8	0.3
40	4.4	15.0	15.0	6.3	3.6	2.0	1.1	0.7	0.2
45	7.2	15.0	15.0	5.0	2.8	1.6	0.9	0.5	0.2
50	10.0	15.0	12.7	4.0	2.3	1.3	0.7	0.4	0.2
55	12.8	15.0	10.2	3.3	1.8	1.0	0.6	0.3	0.1
60	15.6	15.0	8.3	2.6	1.5	0.9	0.5	0.3	0.1

- e) The Early Life Stage Present period shall occur from March through October. 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 shall meet the Early Life Stage Present water quality standard. All other periods shall be subject to the Early Life Stage Absent period.

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

Section 302.213 Effluent Modified Waters (Ammonia) (Repealed)

- a) Effluent modified waters are those waters or portions of waters that the Agency has determined, pursuant to 35 Ill. Adm. Code 309; Subpart A, to have the potential to exceed, and are therefore not subject to, the chronic ammonia standards of Section 302.212(b) downstream of an effluent outfall and outside of any allowable mixing zone. The Agency shall not identify a waterbody as an effluent modified water if it:
- 1) has uses known to be adversely impacted by ammonia as designated under 35 Ill. Adm. Code 303.201 outside of any allowable mixing zone; or
 - 2) exceeds the acute standard of Section 302.212(b) of this Part.
- b) All effluent discharges to an effluent modified water must meet the requirements of 35 Ill. Adm. Code 304.122(d) prior to dilution with the receiving water.

(Source: Added at 21 Ill. Reg. 370, effective December 23, 1996)

Section 302.APPENDIX A REFERENCES TO PREVIOUS RULES

Section 302.APPENDIX B Sources of Codified Sections

Section 302.APPENDIX C Maximum total ammonia nitrogen concentrations allowable for certain combinations of pH and temperature

PART 304
EFFLUENT STANDARDS

SUBPART A: GENERAL EFFLUENT STANDARDS

Section 304.122 Total Ammonia Nitrogen (as N: STORET number 00610)

- a) No effluent from any source which discharges to the Illinois River, the Des Plaines River downstream of its confluence with the Chicago River System or the Calumet River System, and whose untreated waste load is 50,000 or more population equivalents shall contain more than 2.5 mg/L of total ammonia nitrogen as N during the months of April through October, or 4 mg/L at other times.
- b) Sources discharging to any of the above waters and whose untreated waste load cannot be computed on a population equivalent basis comparable to that used for municipal waste treatment plants and whose total ammonia nitrogen as N discharge exceeds 45.4 kg/day (100 pounds per day) shall not discharge an effluent of more than 3.0 mg/L of total ammonia nitrogen as N.
- c) In addition to the effluent standards set forth in subsections (a) and (b) of this Section, all sources are subject to Section 304.105 unless the Agency determines as part of the NPDES Permit Program under 35 Ill. Adm. Code 309: Subpart A that alternate effluent standards are applicable pursuant to subsection (d) of this Section.
- d) All dischargers to effluent modified waters as defined at 35 Ill. Adm. Code 302.213, except for treatment works qualifying under Section 304.120(c), shall have an effective NPDES permit with monthly average effluent limits of 1.5 mg/L total ammonia as N during the months of April through October, and 4.0 mg/L total ammonia as N at other times, as well as the following restrictions:
 - 1) Dischargers achieving lower ammonia concentrations than given above, yet not meeting the chronic water quality standards of 35 Ill. Adm. Code 302.212(b), shall maintain their existing level of performance consistent with the facility's expected organic and hydraulic loadings for the duration of their NPDES permit.
 - 2) New or expanded discharges that increase ammonia loading to general use waters and/or create effluent modified waters or portions of waters must demonstrate compliance to the Agency with the nondegradation requirements at 35 Ill. Adm. Code 302.105.

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

CH02/22180286.1

Appendix C

Table C1: pH-Dependent Values of the CMC (Acute Criterion)

pH	Acute Criterion (mg/L)
6.0	55.0
6.1	54.2
6.2	53.2
6.3	52.0
6.4	50.5
6.5	48.8
6.6	46.8
6.7	44.6
6.8	42.0
6.9	39.1
7.0	36.1
7.1	32.8
7.2	29.5
7.3	26.2
7.4	23.0
7.5	19.9
7.6	17.0
7.7	14.4
7.8	12.1
7.9	10.1
8.0	8.4
8.1	6.95
8.2	5.72
8.3	4.71
8.4	3.88
8.5	3.20
8.6	2.65
8.7	2.20
8.8	1.84
8.9	1.56
9.0	1.32

Table C-2
Temperature and pH-Dependent Values of the CCC (Chronic Criterion)
for Fish Early Life Stages Absent

pH	Temperature, C									
	0-7	8	9	10	11	12	13	14	15	16
6.0	11.3	10.6	9.92	9.30	8.72	8.20	7.70	7.20	6.70	6.30
6.1	11.2	10.5	9.87	9.25	8.67	8.13	7.62	7.15	6.70	6.28
6.2	11.2	10.5	9.81	9.19	8.62	8.08	7.58	7.10	6.66	6.24
6.3	11.1	10.4	9.73	9.12	8.55	8.02	7.52	7.05	6.61	6.19
6.4	11.0	10.3	9.63	9.03	8.47	7.94	7.44	6.98	6.54	6.13
6.5	0.8	10.1	9.51	8.92	8.36	7.84	7.35	6.89	6.46	6.06
6.6	0.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36	5.97
6.7	0.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25	5.86
6.8	0.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10	5.72
6.9	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93	5.56
7.0	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73	5.37
7.1	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49	5.15
7.2	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22	4.90
7.3	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92	4.61
7.4	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59	4.30
7.5	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23	3.97
7.6	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85	3.61
7.7	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47	3.25
7.8	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89
7.9	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71	2.54
8.0	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36	2.21
8.1	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03	1.91
8.2	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74	1.63
8.3	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48	1.39
8.4	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
8.5	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06	0.990
8.6	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.951	0.892	0.836
8.7	1.26	1.18	1.11	1.04	0.976	0.915	0.858	0.805	0.754	0.707
8.8	1.07	1.01	0.944	0.885	0.829	0.778	0.729	0.684	0.641	0.601
8.9	0.917	0.860	0.806	0.756	0.709	0.664	0.623	0.584	0.548	0.513
9.0	0.790	0.740	0.694	0.651	0.610	0.572	0.536	0.503	0.471	0.442

* At 15 C and above, the criterion for fish ELS absent is the same as the criterion for fish ELS present.

Table C-3
Temperature and pH-Dependent Values of the CCC (Chronic Criterion)
for Fish Early Life Stages Present

pH	Temperature, Celsius									
	0	14	16	18	20	22	24	26	28	30
6.0	6.95	6.95	6.32	5.55	4.88	4.29	3.77	3.31	2.91	2.56
6.1	6.91	6.91	6.28	5.52	4.86	4.27	3.75	3.30	2.90	2.55
6.2	6.87	6.87	6.24	5.49	4.82	4.24	3.73	3.28	2.88	2.53
6.3	6.82	6.82	6.19	5.45	4.79	4.21	3.70	3.25	2.86	2.51
6.4	6.75	6.75	6.13	5.39	4.74	4.17	3.66	3.22	2.83	2.49
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	1.09	0.990		0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

CH01/12217587.1

R02-19 Service List
Ammonia Nitrogen Standards

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