

Appendix A Ammonia Criteria Tables

Table 1. Temperature and pH-Dependent Values of the CCC (Chronic Criterion) for Fish Early Life Stages Present, Total Ammonia (mg/L as N).

pH	Temperature, °C									
	0-14	15	16	17	18	19	20	21	22	23
6.5	6.67	6.46	6.06	5.68	5.33	4.99	4.68	4.39	4.12	3.86
6.6	6.57	6.36	5.97	5.59	5.25	4.92	4.61	4.32	4.05	3.80
6.7	6.44	6.25	5.86	5.49	5.15	4.83	4.52	4.24	3.98	3.73
6.8	6.29	6.10	5.72	5.36	5.03	4.72	4.42	4.14	3.89	3.64
6.9	6.12	5.93	5.56	5.21	4.89	4.58	4.30	4.03	3.78	3.54
7.0	5.91	5.73	5.37	5.04	4.72	4.43	4.15	3.89	3.65	3.42
7.1	5.67	5.49	5.15	4.83	4.53	4.25	3.98	3.73	3.50	3.28
7.2	5.39	5.22	4.90	4.59	4.31	4.04	3.78	3.55	3.33	3.12
7.3	5.08	4.92	4.61	4.33	4.06	3.80	3.57	3.34	3.13	2.94
7.4	4.73	4.59	4.30	4.03	3.78	3.55	3.32	3.12	2.92	2.74
7.5	4.36	4.23	3.97	3.72	3.49	3.27	3.06	2.87	2.69	2.53
7.6	3.98	3.85	3.61	3.39	3.18	2.98	2.79	2.62	2.45	2.30
7.7	3.58	3.47	3.25	3.05	2.86	2.68	2.51	2.36	2.21	2.07
7.8	3.18	3.09	2.89	2.71	2.54	2.38	2.23	2.10	1.96	1.84
7.9	2.80	2.71	2.54	2.38	2.24	2.10	1.96	1.84	1.73	1.62
8.0	2.43	2.36	2.21	2.07	1.94	1.82	1.71	1.60	1.50	1.41
8.1	2.10	2.03	1.91	1.79	1.68	1.57	1.47	1.38	1.29	1.21
8.2	1.79	1.74	1.63	1.53	1.43	1.34	1.26	1.18	1.11	1.04
8.3	1.52	1.48	1.39	1.30	1.22	1.14	1.07	1.00	0.941	0.882
8.4	1.29	1.25	1.17	1.10	1.03	0.97	0.906	0.849	0.796	0.747
8.5	1.09	1.06	0.990	0.928	0.870	0.816	0.765	0.717	0.672	0.630
8.6	0.920	0.892	0.836	0.784	0.735	0.689	0.646	0.606	0.568	0.532
8.7	0.778	0.754	0.707	0.663	0.622	0.583	0.547	0.512	0.480	0.450
8.8	0.661	0.641	0.601	0.563	0.528	0.495	0.464	0.435	0.408	0.383
8.9	0.565	0.548	0.513	0.481	0.451	0.423	0.397	0.372	0.349	0.327
9.0	0.486	0.471	0.442	0.414	0.389	0.364	0.342	0.320	0.300	0.281

Table 1. Temperature and pH-Dependent Values of the CCC (Chronic Criterion) for Fish Early Life Stages Present, Total Ammonia (mg/L as N) Continued.

pH	Temperature, °C						
	24	25	26	27	28	29	30
6.5	3.62	3.39	3.18	2.98	2.80	2.62	2.46
6.6	3.56	3.34	3.13	2.94	2.75	2.58	2.42
6.7	3.50	3.28	3.07	2.88	2.70	2.53	2.37
6.8	3.42	3.20	3.00	2.82	2.64	2.47	2.32
6.9	3.32	3.11	2.92	2.74	2.57	2.41	2.25
7.0	3.21	3.01	2.82	2.64	2.48	2.32	2.18
7.1	3.08	2.88	2.70	2.53	2.38	2.23	2.09
7.2	2.92	2.74	2.57	2.41	2.26	2.12	1.99
7.3	2.76	2.58	2.42	2.27	2.13	2.00	1.87
7.4	2.57	2.41	2.26	2.12	1.98	1.86	1.74
7.5	2.37	2.22	2.08	1.95	1.83	1.72	1.61
7.6	2.16	2.02	1.90	1.78	1.67	1.56	1.47
7.7	1.94	1.82	1.71	1.60	1.50	1.41	1.32
7.8	1.73	1.62	1.52	1.42	1.33	1.25	1.17
7.9	1.52	1.42	1.33	1.25	1.17	1.10	1.03
8.0	1.32	1.24	1.16	1.09	1.02	0.96	0.897
8.1	1.14	1.07	1.00	0.94	0.879	0.824	0.773
8.2	0.973	0.912	0.855	0.802	0.752	0.705	0.661
8.3	0.827	0.775	0.727	0.682	0.639	0.599	0.562
8.4	0.700	0.656	0.615	0.577	0.541	0.507	0.475
8.5	0.591	0.554	0.520	0.487	0.457	0.428	0.401
8.6	0.499	0.468	0.439	0.411	0.386	0.362	0.339
8.7	0.422	0.396	0.371	0.348	0.326	0.306	0.287
8.8	0.359	0.336	0.315	0.296	0.277	0.260	0.244
8.9	0.306	0.287	0.269	0.253	0.237	0.222	0.208
9.0	0.264	0.247	0.232	0.217	0.204	0.191	0.179

Appendix A Ammonia Criteria Tables

Table 2. Temperature and pH-Dependent Values of the CCC (Chronic Criterion) for Fish Early Life Stages Absent Total Ammonia (mg/L as N).

pH	Temperature, °C										
	0-7	8	9	10	11	12	13	14	15*	16*	17*
6.5	10.8	10.1	9.51	8.92	8.36	7.84	7.35	6.89	6.46	6.06	5.68
6.6	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36	5.97	5.59
6.7	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25	5.86	5.49
6.8	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10	5.72	5.36
6.9	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93	5.56	5.21
7.0	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73	5.37	5.04
7.1	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49	5.15	4.83
7.2	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22	4.90	4.59
7.3	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92	4.61	4.33
7.4	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59	4.30	4.03
7.5	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23	3.97	3.72
7.6	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85	3.61	3.39
7.7	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47	3.25	3.05
7.8	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71
7.9	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71	2.54	2.38
8.0	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36	2.21	2.07
8.1	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03	1.91	1.79
8.2	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74	1.63	1.53
8.3	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48	1.39	1.30
8.4	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17	1.10
8.5	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06	0.990	0.928
8.6	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.951	0.892	0.836	0.784
8.7	1.26	1.18	1.11	1.04	0.976	0.915	0.858	0.805	0.754	0.707	0.663
8.8	1.07	1.01	0.944	0.885	0.829	0.778	0.729	0.684	0.641	0.601	0.563
8.9	0.917	0.860	0.806	0.756	0.709	0.664	0.623	0.584	0.548	0.513	0.481
9.0	0.790	0.740	0.694	0.651	0.610	0.572	0.536	0.503	0.471	0.442	0.414

*At 15 C and above, the criterion for Fish Early Life Stages Absent is the same as the criterion for fish Early Life Stages Present.

Appendix A Ammonia Criteria Tables

Table 3. pH-Dependent Value of the CMC (Acute Criterion) Total Ammonia (mg/L as N).

CMC, mg/L as N		
pH	Salmonids Present	Salmonids Absent
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32