

**Proposed Amendment To The Water Quality Control Plan – Los Angeles
Region With Respect To The Early Life Stage Implementation Provision Of
The Inland Surface Water Ammonia Objectives For Freshwaters**

Amendment:

Chapter 3. Water Quality Objectives

Ammonia

[Amendments begin with third paragraph under "Ammonia" in Chapter 3 of the Basin Plan and are shown in underline/strikeout text below.]

The one-hour average objective is dependent on pH and fish species (salmonids present or absent), but not temperature. It is assumed that salmonids may be present in waters designated in the Basin Plan as "COLD" or "MIGR" and that salmonids are absent in waters not designated in the Basin Plan as "COLD" or "MIGR," in the absence of additional information to the contrary. The 30-day average objective is dependent on pH, and temperature and. ~~At lower temperatures, the 30-day average objective also is dependent on the presence or absence of early life stages of fish (ELS). Implementation of the ELS Provision is described under "Implementation", subparagraph 3. Water bodies with a Basin Plan designation of "SPWN" support high quality aquatic habitats suitable for reproduction and early development of fish and, therefore, these water bodies are designated as ELS present waters.~~ The four-day average objective is 2.5 times the 30-day average objective.

Table 3-2. 30-day Average Objective for Ammonia-N for Freshwaters where Early Life Stages of Fish that Reproduce below 15 degrees Celsius are Present Designated SPWN (mg N/L)

pH	Temperature, °C																
	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
6.5	6.67	6.46	6.06	5.68	5.33	4.99	4.68	4.39	4.12	3.86	3.62	3.39	3.18	2.98	2.80	2.62	2.46
6.6	6.57	6.36	5.97	5.59	5.25	4.92	4.61	4.32	4.05	3.80	3.56	3.34	3.13	2.94	2.75	2.58	2.42
6.7	6.44	6.25	5.86	5.49	5.15	4.83	4.52	4.24	3.98	3.73	3.50	3.28	3.07	2.88	2.70	2.53	2.37
6.8	6.29	6.10	5.72	5.36	5.03	4.72	4.42	4.14	3.89	3.64	3.42	3.20	3.00	2.82	2.64	2.47	2.32
6.9	6.12	5.93	5.56	5.21	4.89	4.58	4.30	4.03	3.78	3.54	3.32	3.11	2.92	2.74	2.57	2.41	2.25
7.0	5.91	5.73	5.37	5.04	4.72	4.43	4.15	3.89	3.65	3.42	3.21	3.01	2.82	2.64	2.48	2.32	2.18
7.1	5.67	5.49	5.15	4.83	4.53	4.25	3.98	3.73	3.50	3.28	3.08	2.88	2.70	2.53	2.38	2.23	2.09
7.2	5.39	5.22	4.90	4.59	4.31	4.04	3.78	3.55	3.33	3.12	2.92	2.74	2.57	2.41	2.26	2.12	1.99
7.3	5.08	4.92	4.61	4.33	4.06	3.80	3.57	3.34	3.13	2.94	2.76	2.58	2.42	2.27	2.13	2.00	1.87
7.4	4.73	4.59	4.30	4.03	3.78	3.55	3.32	3.12	2.92	2.74	2.57	2.41	2.26	2.12	1.98	1.86	1.74
7.5	4.36	4.23	3.97	3.72	3.49	3.27	3.06	2.87	2.69	2.53	2.37	2.22	2.08	1.95	1.83	1.72	1.61
7.6	3.98	3.85	3.61	3.39	3.18	2.98	2.79	2.62	2.45	2.30	2.16	2.02	1.90	1.78	1.67	1.56	1.47
7.7	3.58	3.47	3.25	3.05	2.86	2.68	2.51	2.36	2.21	2.07	1.94	1.82	1.71	1.60	1.50	1.41	1.32
7.8	3.18	3.09	2.89	2.71	2.54	2.38	2.23	2.10	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
7.9	2.80	2.71	2.54	2.38	2.24	2.10	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17	1.10	1.03
8.0	2.43	2.36	2.21	2.07	1.94	1.82	1.71	1.60	1.50	1.41	1.32	1.24	1.16	1.09	1.02	0.957	0.897
8.1	2.10	2.03	1.91	1.79	1.68	1.57	1.47	1.38	1.29	1.21	1.14	1.07	1.00	0.938	0.879	0.824	0.773
8.2	1.79	1.74	1.63	1.53	1.43	1.34	1.26	1.18	1.11	1.04	0.973	0.912	0.855	0.802	0.752	0.705	0.661
8.3	1.52	1.48	1.39	1.30	1.22	1.14	1.07	1.00	0.941	0.882	0.827	0.775	0.727	0.682	0.639	0.599	0.562
8.4	1.29	1.25	1.17	1.10	1.03	0.966	0.906	0.849	0.796	0.747	0.700	0.656	0.615	0.577	0.541	0.507	0.475
8.5	1.09	1.06	0.990	0.928	0.870	0.816	0.765	0.717	0.672	0.630	0.591	0.554	0.520	0.487	0.457	0.428	0.401
8.6	0.920	0.892	0.836	0.784	0.735	0.689	0.646	0.606	0.568	0.532	0.499	0.468	0.439	0.411	0.386	0.362	0.339
8.7	0.778	0.754	0.707	0.663	0.622	0.583	0.547	0.512	0.480	0.450	0.422	0.396	0.371	0.348	0.326	0.306	0.287
8.8	0.661	0.641	0.601	0.563	0.528	0.495	0.464	0.435	0.408	0.383	0.359	0.336	0.315	0.296	0.277	0.260	0.244
8.9	0.565	0.548	0.513	0.481	0.451	0.423	0.397	0.372	0.349	0.327	0.306	0.287	0.269	0.253	0.237	0.222	0.208
9.0	0.486	0.471	0.442	0.414	0.389	0.364	0.342	0.320	0.300	0.281	0.264	0.247	0.232	0.217	0.204	0.191	0.179

* At temperatures below 14 °C, the objective is the same as that shown for 14 °C.

Reference: U.S. EPA 1999 Update of Ambient Water Quality Criteria for Ammonia¹

¹ For freshwaters ~~where early life stages of fish (ELS) are present~~ ~~designated SPWN~~, the thirty-day average concentration of total ammonia as nitrogen (in mg N/L) shall not exceed the values described by the following equation.

$$\text{30-day Average Concentration} = \left(\frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right) * \text{MIN} \left(2.85, 1.45 * 10^{0.028 * (25 - T)} \right)$$

Where T = temperature expressed in °C.

In addition, for freshwaters, the highest four-day average within the 30-day period shall not exceed 2.5 times the 30-day average objective as calculated above.

Table 3-3. 30-day Average Objective for Ammonia-N for Freshwaters where Early Life Stages of Fish that Reproduce below 15 degrees Celsius are Absent ~~Not Designated SPWN~~ (mg N/L)

pH	Temperature, °C								
	0-7	8	9	10	11	12	13	14	15*
6.5	10.8	10.1	9.51	8.92	8.36	7.84	7.35	6.89	6.46
6.6	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36
6.7	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25
6.8	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10
6.9	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93
7.0	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73
7.1	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49
7.2	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22
7.3	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92
7.4	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59
7.5	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23
7.6	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85
7.7	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47
7.8	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09
7.9	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71
8.0	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36
8.1	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03
8.2	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74
8.3	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48
8.4	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25
8.5	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06
8.6	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.951	0.892
8.7	1.26	1.18	1.11	1.04	0.976	0.915	0.858	0.805	0.754
8.8	1.07	1.01	0.944	0.885	0.829	0.778	0.729	0.684	0.641
8.9	0.917	0.86	0.806	0.756	0.709	0.664	0.623	0.584	0.548
9.0	0.790	0.740	0.694	0.651	0.610	0.572	0.536	0.503	0.471

* At 15 °C and above, the regional 30-day average objective for waters where ELS are absent ~~not designated SPWN~~ is the same as that for waters where ELS are present ~~designated SPWN~~.

Reference: U.S. EPA 1999 Update of Ambient Water Quality Criteria for Ammonia²

² For freshwaters where ELS are absent not designated SPWN, the thirty-day average concentration of total ammonia as nitrogen (in mg N/L) shall not exceed the values described by the following equation.

$$\text{30-day Average Concentration} = \left(\frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right) * 1.45 * 10^{0.028 * (25 - \text{MAX}(T, 7))}$$

Where T = temperature expressed in °C.

In addition, for freshwaters, the highest four-day average within the 30-day period shall not exceed 2.5 times the 30-day average objective as calculated above.

IMPLEMENTATION

Implementation Provisions for the Application of Ammonia Objectives to Inland Surface Waters in the Los Angeles Region

3. Selection of 30-day Average Objective – Early Life Stage (ELS) Provision

Early Life Stages of fish are assumed present year-round unless the applicable water body is listed in Table 3-X or unless a site-specific study is conducted, which justifies applying the ELS absent condition or a seasonal ELS present condition. If recent data and information are submitted to the Regional Board that provide clear and convincing evidence that the physical conditions of a water body listed in Table 3-X have changed due to restoration efforts such that there is habitat suitable for Early Life Stages of fish and one or more fish species that reproduce below 15 degrees Celsius is known to be present, the Regional Board shall reconsider this implementation provision to ensure protection of Early Life Stages of fish in the water body.

To conduct a site-specific study as to when the ELS absent provision should be applied, all readily available information regarding the fish species distributions, spawning periods, nursery periods and the duration of sensitive life stages should be considered for that water body. Information on water body temperature, including spatial, seasonal and inter-annual variability may also be useful. Expert opinions from fisheries biologists and other scientists should be relied upon.

~~Water bodies with a Basin Plan designation of “SPWN” support high quality aquatic habitats suitable for reproduction and early development of fish and, therefore, these water bodies are designated as ELS present waters. Early Life Stages are assumed present year-round unless a site-specific study is conducted which justifies a seasonal provision. The Basin Plan Amendment process must be followed to develop a seasonal beneficial use designation.~~

Where there is a site-specific ammonia objective for the water body, and the water body is not identified as ELS absent due to physical characteristics of the water body, separate implementation provisions to protect Early Life Stages of fish may apply, since the temperature threshold at which ELS are more sensitive than invertebrates may change based on these site-specific conditions. The potential for seasonality for all ELS present water bodies will be considered before the ELS provision is applied to water bodies with a site-specific objective.

Table 3-4. Water Bodies to which “ELS Absent” Objectives Apply*

Hydro Unit No.	Waterbody
VENTURA RIVER WATERSHED	
<u>402.10</u>	<u>Canada Larga</u>
CALLEGUAS-CONEJO CREEK WATERSHED	
<u>403.11</u>	<u>Calleguas Creek</u>
<u>403.11</u>	<u>Revolon Slough</u>
<u>403.61</u>	<u>Beardsley Wash</u>
<u>403.12</u>	<u>Conejo Creek</u>
<u>403.63</u>	<u>Conejo Creek</u>
<u>403.64</u>	<u>Arroyo Conejo</u>
<u>406.68</u>	<u>Arroyo Conejo</u>
<u>403.12</u>	<u>Arroyo Las Posas</u>
<u>403.62</u>	<u>Arroyo Las Posas</u>
<u>403.62</u>	<u>Arroyo Simi</u>
<u>403.67</u>	<u>Arroyo Simi</u>
MALIBU CREEK WATERSHED	
<u>404.23</u>	<u>Medea Creek</u>
<u>404.24</u>	<u>Medea Creek</u>
<u>404.24</u>	<u>Triunfo Creek</u>
<u>404.25</u>	<u>Triunfo Creek</u>
BALLONA CREEK WATERSHED	
<u>405.13</u>	<u>Ballona Creek to Estuary</u>
<u>405.15</u>	<u>Ballona Creek</u>
DOMINGUEZ CHANNEL WATERSHED	
<u>405.12</u>	<u>Dominguez Channel to Estuary</u>
LOS ANGELES RIVER WATERSHED	
<u>405.12</u>	<u>Los Angeles River to Estuary</u>
<u>405.15</u>	<u>Los Angeles River</u>
<u>405.21</u>	<u>Los Angeles River</u>
<u>405.15</u>	<u>Rio Hondo below Spreading Grounds</u>
<u>405.15</u>	<u>Rio Hondo to Spreading Grounds</u>
<u>405.41</u>	<u>Rio Hondo (except from Whittier Narrows to 4 miles north)</u>
<u>405.32</u>	<u>Arroyo Seco</u>
<u>405.21</u>	<u>Tujunga Wash</u>
<u>405.15</u>	<u>Compton Creek</u>
<u>405.15</u>	<u>Arroyo Seco S. Of Devil's Gates (L)</u>

<u>Hydro Unit No.</u>	<u>Waterbody</u>
<u>405.31</u>	<u>Arroyo Seco S. Of Devil's Gates (U)</u>
<u>405.21</u>	<u>Burbank Western Channel</u>
<u>405.21</u>	<u>Pacoima Wash</u>
SAN GABRIEL RIVER WATERSHED	
<u>405.15</u>	<u>San Gabriel River: Firestone Blvd-Estuary</u>
<u>405.15</u>	<u>San Gabriel River: Whittier N-Firestone (2)</u>
<u>405.41</u>	<u>San Gabriel River</u>
<u>405.42</u>	<u>San Gabriel River</u>
<u>405.15</u>	<u>Coyote Creek to Estuary</u>
<u>405.41</u>	<u>San Jose Creek</u>
<u>405.51</u>	<u>San Jose Creek</u>

*Notes:

- 1) All wetlands/estuaries and lagoons should be assumed to have ELS.
- 2) Whittier Narrows flood control basin is listed separately in the Basin Plan
- 3) Based on published literature and expert opinion, fish species known to reproduce in significant numbers below 15 degrees Celsius are absent in these water bodies, or the water bodies are known to have physical conditions that preclude reproduction and early development of these species in significant numbers. These species include :
 - ♣ Steelhead/Rainbow trout
 - ♣ Three-spine Stickleback
 - ♣ Brown trout
 - ♣ Prickly sculpin
 - ♣ Staghorn sculpin
 - ♣ Striped mullet
 - ♣ Starry flounder
 - ♣ Arrow goby
 - ♣ Pacific herring
- 4) A water body may have some reaches with ELS present conditions and others with ELS absent conditions. Implementation actions to achieve applicable ammonia objectives must consider downstream objectives.