State of California
California Regional Water Quality Control Board, Los Angeles Region

RESOLUTION NO. 03-009
July 10, 2003

Amendment to the Water Quality Control Plan for the Los Angeles Region to include a TMDL for Nitrogen Compounds and Related Effects in the Los Angeles River

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region, finds that:

1. The federal Clean Water Act (CWA) requires the California Regional Water Quality Control Board (Regional Board) to develop water quality standards which are sufficient to protect beneficial uses designated for each water body found within its region.

2. The Regional Board carries out its CWA responsibilities through California's Porter-Cologne Water Quality Control Act and establishes water quality objectives designed to protect beneficial uses contained in the Water Quality Control Plan for the Los Angeles Region (Basin Plan).

3. Section 303(d) of the CWA requires states to identify and to prepare a list of water bodies that do not meet water quality standards and then establish load and wasteload allocations, or a total maximum daily load (TMDL), for each water body that will ensure attainment of water quality standards and then to incorporate those allocations into their water quality control plans.

4. The Los Angeles River was listed on California's 1998 section 303(d) list, due to impairment for ammonia, nutrients, and their effects such as odor, scum, pH, and algae that do not protect the most sensitive beneficial uses of the water body.

5. A consent decree between the U.S. Environmental Protection Agency (USEPA), Heal the Bay, Inc. and BayKeeper, Inc. was approved on March 22, 1999. The court order directs the USEPA to complete TMDLs for all the Los Angeles Region's impaired waters within 13 years.

6. The elements of a TMDL are described in 40 CFR 130.2 and 130.7 and section 303(d) of the CWA, as well as in USEPA guidance documents (e.g., USEPA, 1991). A TMDL is defined as "the sum of the individual wasteload allocations for point sources and load allocations for nonpoint sources and natural background" (40 CFR 130.2). Regulations further stipulate that TMDLs must be set at "levels necessary to attain and maintain the applicable narrative and numeric water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality" (40 CFR 130.7(c)(1)). The regulations in 40 CFR 130.7 also state that

TMDLs shall take into account critical conditions for stream flow, loading and water quality parameters.

7. Upon establishment of TMDLs by the State or USEPA, the State is required to incorporate the TMDLs along with appropriate implementation measures into the State Water Quality Management Plan (40 CFR 130.6(c)(1), 130.7). The Water Quality Control Plan for the Los Angeles Region (Basin Plan), and applicable statewide plans, serve as the State Water Quality Management Plans governing the watersheds under the jurisdiction of the Regional Board.

8. The Los Angeles River is located in Los Angeles County, California. It reaches from Bell Canyon Creek in the western San Fernando Valley to the Los Angles Harbor in San Pedro. The proposed TMDL addresses documented water quality impairments by nitrogen compounds and nutrient effects such as algae, odors, and scum.

9. The Regional Board's goal in establishing the above-mentioned TMDL is to maintain the warm freshwater (WARM) and wildlife (WILD) habitats and attain the water quality objectives established in the Basin Plan for ammonia, nitrite and nitrate, and narrative objectives for biostimulatory substances, color, solid, suspended, or settleable materials, taste and odor, and floating material which applies to nutrients, algae, odor, scum, and foam. Scientific studies have shown the relationship between ammonia and toxicity and nutrients and eutrophication.

10. Regional Board staff have prepared a detailed technical document that analyzes and describes the specific necessity and rationale for the development of this TMDL. The technical document entitled "Total Maximum Daily Loads for Nitrogen Compounds and Related Effects Los Angeles River and Tributaries" is an integral part of this Regional Board action and was reviewed, considered, and accepted by the Regional Board before acting. Further, the technical document provides the detailed factual basis and analysis supporting the problem statement, numeric targets (interpretation of the numeric water quality objective, used to calculate the load allocations), source analysis, linkage analysis, wasteload allocations (for point sources), load allocation (for nonpoint sources), margin of safety, and seasonal variations and critical conditions of this TMDL.

11. At the Regional Board hearing on July 10, 2003, the Regional Board requested clarification on the TMDL cost analysis presented in the staff report. Regional Board staff noted that the Basin Plan contains a criterion specific objective for ammonia, and compliance with this objective is driving the facility upgrades at the major Publicly Owned Treatment Works (POTWs) that discharge to the Los Angeles River. Based on this information, the Regional Board requested that this resolution note that the costs associated with this TMDL are limited to the costs for additional monitoring and special studies. This TMDL will not cause dischargers any capital expenditures beyond those costs which are attributable to the Basin Plan ammonia objective.

12. Interested persons and the public have had reasonable opportunity to participate in review of the amendment to the Basin Plan. Efforts to solicit public review and comment include at least fifteen workshops held between January 1999 and February 2002; at least two presentations at the Los Angeles and San Gabriel Rivers Watershed Council, public notification 45 days preceding the Board hearing; and responses from the Regional Board staff to oral and written comments received from the public.

13. The amendment is consistent with the State Antidegradation Policy (State Board Resolution No. 89-16), in that the changes to water quality objectives (i) consider maximum benefits to the people of the state, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies. Likewise, the amendment is consistent with the federal Antidegradation Policy (40 CFR 131.12).

14. The basin planning process has been certified as functionally equivalent to the California Environmental Quality Act requirements for preparing environmental documents and is, therefore, exempt from those requirements (Public Resources Code, Section 21000 et seq.), and the required environmental documentation and CEQA environmental checklist have been prepared.

15. The proposed amendment results in no potential for adverse effect (de minimis finding), either individually or cumulatively, on wildlife.

16. The regulatory action meets the "Necessity" standard of the Administrative Procedures Act, Government Code, section 11353, subdivision (b).

17. The Basin Plan amendment incorporating a TMDL for nitrogen and related effects in the Los Angeles River must be submitted for review and approval by the State Water Resources Control Board (State Board), the State Office of Administrative Law (OAL), and the US Environmental Protection Agency (USEPA). The Basin Plan amendment will become effective upon approval by OAL and USEPA. A Notice of Decision will be filed.

THEREFORE, be it resolved that pursuant to Section 13240 and 13242 of the Water Code, the Regional Board hereby amends the Basin Plan as follows:

1. Pursuant to sections 13240 and 13242 of the California Water Code, the Regional Board, after considering the entire record, including oral testimony at the hearing, hereby adopts the amendment to Chapter 7 the Water Quality Control Plan for the Los Angeles Region to incorporate the elements of the Los Angeles River Nitrogen Compounds and Related Effects TMDL as set forth in Attachment A hereto.

2. The Executive Officer is directed to forward copies of the Basin Plan amendment to the SWRCB in accordance with the requirements of section 13245 of the California Water Code.

3. The Regional Board requests that the SWRCB approve the Basin Plan amendment in accordance with the requirements of sections 13245 and 13246 of the California Water Code and forward it to OAL and the U.S. EPA.

4. If during its approval process the SWRCB or OAL determines that minor, non-substantive corrections to the language of the amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the Board of any such changes.

5. The Executive Officer is authorized to sign a Certificate of Fee Exemption.

6. Amend the text in the Basin Plan, Plans and Policies (Chapter 5) to add:

   "Resolution No. 03-009. Adopted by the Regional Water Quality Control Board on July 10, 2003.
   'Amendment to include a TMDL for Nitrogen and Related Effects for the Los Angeles River'
   The resolution proposes a TMDL for Nitrogen and Related Effects in the Los Angeles River."

I, Dennis A. Dickerson, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on July 10, 2003.

Dennis A. Dickerson
Executive Officer

Attachment A to Resolution No. 03-009

Amendment to the Water Quality Control Plan – Los Angeles Region

to Incorporate the

Los Angeles River Nitrogen Compounds and Related Effects TMDL

Proposed for adoption by the California Regional Water Quality Control Board, Los Angeles Region on July 10, 2003.

Amendments

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Add:

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Chapter 7. Total Maximum Daily Loads (TMDLs)

Tables
7-8. Los Angeles River Nitrogen Compounds and Related Effects TMDL
7-8.1 Los Angeles River Nitrogen Compounds and Related Effects TMDL: Elements
7-8.2. Los Angeles River Nitrogen Compounds and Related Effects TMDL: Implementation Schedule

Chapter 7. Total Maximum Daily Loads (TMDLs)
Los Angeles River Nitrogen Compounds and Related Effects TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on July 10, 2003.

This TMDL was approved by:

The State Water Resources Control Board on [Insert Date].
The Office of Administrative Law on [Insert Date].
The U.S. Environmental Protection Agency on [Insert Date].

Table 7-8.1. LOS ANGELES RIVER NITROGEN COMPOUNDS AND RELATED EFFECTS TMDL: Elements

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
Problem Statement	Discharge of nutrients to the Los Angeles River, including ammonia, nitrite and nitrate, are causing exceedances of water quality objectives established in the *Basin Plan* for these compounds and impairments of recreation, and warm freshwater and wildlife habitats beneficial uses of the Los Angeles River. Additionally, the effects of excess nitrogen, such as algae, odors, and scums also impair the beneficial uses of the Los Angeles River. Ammonia, nutrients, and related effects are included on the 303(d) list of water quality limited segments of the Los Angeles River.
Numeric Target *(Interpretation of the numeric water quality objective, used to calculate the load allocations)*	Numeric targets for this TMDL are listed as follows: a) Total ammonia as nitrogen (NH_3-N) Numeric targets are dependent on temperature and pH of receiving water. Based on the last two years of temperature and pH data, the ammonia numeric targets for the major POTWs are provided below: ***POTWs*** ***One-hour average*** ***Thirty-day average*** Donald C. Tillman WRP 4.7 mg/L 1.6 mg/L Los Angeles-Glendale WRP 8.7 mg/L 2.4 mg/L Burbank WRP 10.1 mg/L 2.3 mg/L b) Nitrate-nitrogen and nitrite-nitrogen ***Constituent*** ***Thirty-day average*** Nitrate-nitrogen (NO_3-N) 8 mg/L Nitrite-nitrogen (NO_2-N) 1 mg/L Nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N) 8 mg/L

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
	Numeric targets to address narrative objectives required to protect warm freshwater and wildlife habitats are intended to implement the narrative objectives and may be revised based on the results of monitoring and studies conducted pursuant to the implementation plan.
Source Analysis	The principal source of ammonia and nitrogen compounds to the Los Angeles River is discharges from the Donald C. Tillman Water Reclamation Plant (WRP), the Los Angeles-Glendale WRP, and the Burbank WRP. During dry weather period, the major POTWs contribute 84.1% of the total dry weather nitrogen load. Dry weather urban runoff, stormwater, and groundwater discharge may also contribute nitrate loads. Further evaluation of these sources is set forth in the Implementation Plan.
Linkage Analysis	Linkage between nutrient sources and the instream water quality was established through hydrodynamic and water quality models. The Environmental Fluid Dynamics Code 1-D was used to model the hydrodynamic characteristics of the Los Angeles River and the Water Quality Analysis Simulation Program was used to model water quality. Additional studies were conducted to develop the residence time and determine the nutrient uptake rates by algae.
Wasteload Allocations (for point sources)	1. Major point sources: Concentration-based wasteloads are allocated to major point sources of ammonia and nitrogen compounds to the Los Angeles River, which include the Donald C. Tillman WRP, the Los Angeles-Glendale WRP, and the Burbank WRP. Based on the last two years of temperature and pH data, the ammonia WLAs for the major POTWs are provided below: a) Total ammonia as nitrogen (NH_3-N): ***POTW*** ***One-hour average WLA*** ***Thirty-day average WLA*** Donald C. Tillman WRP 4.2 mg/L 1.4 mg/L Los Angeles-Glendale WRP 7.8 mg/L 2.2 mg/L Burbank WRP 9.1 mg/L 2.1 mg/L

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
	b) Nitrate-nitrogen (NO_3-N), nitrite-nitrogen (NO_2-N), and Nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N): ***Constituent*** ***Thirty-day average WLA**** NO_3-N 7.2 mg/L NO_2-N 0.9 mg/L NO_3-N + NO_2-N 7.2 mg/L *Receiving water monitoring is required on a weekly basis to ensure compliance with the water quality objective. The implementation plan provides reconsideration of the WLAs by the Regional Board based on WER studies and updated data. The Regional Board will consider the WER report and a site specific objective for ammonia no later than 3.5 years from the effective date of the TMDL. 2. <u>Minor point sources</u>: Waste loads are allocated to minor discharges enrolled under NPDES or WDR permits including but not limited to Tapia WRP, Whittier Narrows WRP, Los Angeles Zoo WRP, industrial and construction stormwater, and municipal storm water and urban runoff from municipal separate storm sewer systems (MS4s): a) Ammonia wasteload allocations (WLAs) for minor point sources are listed below: ***Water Body*** ***One-hour average WLA*** ***Thirty-day average WLA*** Los Angeles River above LAG 4.7 mg/L 1.6 mg/L Los Angeles River below LAG 8.7 mg/L 2.4 mg/L Los AngelesTributaries 10.1 mg/L 2.3 mg/L b) WLAs for nitrate-nitrogen, nitrite-nitrogen, and nitrate-nitrogen plus nitrite-nitrogen for minor discharges are listed below:

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
	Constituent ***Thirty-day average WLA*** NO_3-N 8.0 mg/L NO_2-N 1.0 mg/L NO_3-N + NO_2-N 8.0 mg/L
Load Allocation *(for nonpoint sources)*	The Source Assessment indicates that nitrogen loads from nonpoint sources are insignificant. Consequently, load allocations will not be developed at this time. Load allocations may be developed if it is determined they are necessary after load reductions are effected through implementation of the waste load allocations. Additional monitoring is included in the implementation plan to verify the nitrogen nonpoint source contributions.
Implementation	1. Refer to Table 7-8.2 2. The Implementation Plan includes upgrades to the WRPs discharging to Los Angeles River for removal of ammonia, nitrate, and nitrite. To allow time for completion of the nitrification/denitrification facilities which are integral to this TMDL, the amendment to the Basin Plan made by this TMDL allows for higher interim loads which translate as interim effluent limits for a period not to exceed 3.5 years from the effective date of the TMDL (at the discretion of the Regional Board). The following interim limits will apply to NH_3-N, and NO_3-N + NO_2-N. Effluent limits for the individual compounds NO_3-N, and NO_2-N are not required during the interim period. ***Interim Limits for NH_3-N and NO_3-N + NO_2-N*** ***Total ammonia as Nitrogen*** ***POTW*** ***Daily Maximum**** ***Monthly Average**** Donald C. Tillman WRP 21.7 mg/L 21.0 mg/L Los Angeles-Glendale WRP 19.4 mg/L 16.5 mg/L Burbank WRP 24.1 mg/L 22.7 mg/L *The monthly average and daily maximum interim limits are based on the 95th and 99th percentiles of effluent performance data reported by dischargers.

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
	Nitrite-nitrogen + Nitrate-nitrogen ***Monthly Average*** 8.0 mg/L The Implementation Plan also includes additional studies to evaluate the effectiveness of nitrogen reductions on related effects such as algae growth, depressed oxygen, odors and scum. Ammonia and nitrate reductions will be regulated through effluent limits prescribed in NPDES permits.
Margin of Safety	An explicit margin of safety of 10% of the ammonia, nitrate, nitrite and nitrate + nitrite loads is allocated to address uncertainty in the sources and linkage analyses. In addition, an implicit margin of safety is incorporated through conservative model assumptions and statistical analysis. Impairment is typically based on exceeding the single sample objective in more than 10% of the samples. By incorporating an implicit margin of safety, the number of samples exceeding the water quality objective will be less than 10% of the samples measured in-stream.
Seasonal Variations and Critical Conditions	The critical condition identified for this TMDL is based on the low flow condition defined as the 7Q10.[1] The driest six months of the year are the first critical condition for nutrients because less surface flow is available to dilute effluent discharge.

[1] 7Q10 means the lowest consecutive seven-day flow in a ten-year period.

Table 7-8.2. IMPLEMENTATION SCHEDULE Implementation Tasks	Completion Date
1. Apply interim limits for NH_3-N and NO_3-N + NO_2-N to major Publicly Owned Treatment Works (POTWs). 2. Apply Waste Load Allocations (WLAs) to minor point source dischargers and MS4 permittees. 3. Include monitoring for nitrogen compounds in NPDES permits for minor NPDES dischargers above 0.1 mgd as permits are renewed.	Effective Date of TMDL
4. Submittal of a Monitoring Work Plan by MS4 permittees to estimate ammonia and nitrogen loadings associated with runoff loads from the storm drain system for approval by the Executive Officer of the Regional Board. The Work Plan will include monitoring for ammonia, nitrate, and nitrite. The Work Plan may include a phased approach wherein the first phase is based on monitoring from the existing mass emission station in the Los Angeles River. The results will be used to calibrate the linkage analysis. The Work Plan will also contain protocol and a schedule for implementing additional monitoring if necessary. The Work Plan will also propose triggers for conducting source identification and implementing BMPs, if necessary. Source identification and BMPs will be in accordance with the requirements of MS4 permits.	1 year after the Effective Date of TMDL
5. Submittal of a Workplan by major NPDES permittees to evaluate the effectiveness of nitrogen reductions on removing impairments from algae odors, scums, and pH for approval by the Executive Officer of the Regional Board. The monitoring program will include instream monitoring of algae, foam, scum, and odors in the Los Angeles River. A key objective of these studies will be to determine the effectiveness of nitrogen reductions on removing impairments related to algae, foam, odor, scum and pH. In addition, groundwater discharge to Los Angeles River will also be analyzed for nutrients to determine the magnitude of these loadings and the need for load allocations. The Workplan will include protocol and schedule for development of appropriate numeric targets for nutrients and algae in the Los Angeles River. The Workplan will also contain protocol and a schedule for identification of limiting nutrients.	1 year after the Effective Date of TMDL
6. Submission of a special studies Workplan by the City of Los Angeles to evaluate site-specific objectives for ammonia, nitrate, and nitrite, including the following issues: pH and temperature distribution downstream of the D.C. Tillman WRP to determine the point of compliance for ammonia, establishment of ammonia WLAs based on seasonality, and revision of the water quality objectives for nitrate and nitrite based on averaging of the numeric objective.	1 years after Effective Date of TMDL

Table 7-8.2. IMPLEMENTATION SCHEDULE Implementation Tasks	Completion Date
7. Submission of results from water effects ratio study for ammonia and special studies by the City of Los Angeles including pH and temperature distribution downstream of D.C. Tillman WRP.	No later than 2.5 years after Effective Date of TMDL.
8. Regional Board considers site-specific objective for ammonia, nitrate, nitrite and nitrite + nitrate and revision of wasteload allocations based on results from Tasks 6 and 7. The site specific objective will consider factors including but not limited to seasonality, averaging periods, and the WER for ammonia. If a site specific objective is adopted by the Regional Board, approved by State Board and Office of Administrative Law and established by US EPA, for ammonia then the WQO are revised and as such the numeric target and waste load allocations would need to be revised to reflect the revised WQO.	No later than 3.5 years after Effective Date of TMDL.
9. Interim limits for ammonia and nitrate + nitrite expire and WLAs for ammonia, nitrate, nitrite, and nitrate + nitrite apply to POTWs.	3.5 years after Effective Date of TMDL
10. Complete evaluation of monitoring for nutrient effects and determine need for revising wasteload allocations, including but not limited to establishing new WLAs for other nutrient and related effects such as algal growth	4 years after Effective Date of TMDL
11. Regional Board considers results of Tasks 5 and 10 and revises or establishes WLAs as appropriate.	5 years after Effective Date of TMDL