

Staff Report

Los Angeles Region Integrated Report

**Clean Water Act Section 305(b) Report
and Section 303(d) List of Impaired Waters**

2008 Update

**Prepared by
California Regional Water Quality Control Board, Los Angeles Region**



July 2009

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY	1
2	INTRODUCTION	2
2.1	REGULATORY PROCESS	2
3	DEVELOPMENT OF THE INTEGRATED REPORT	3
3.1	DATA SOLICITATION	3
3.2	LISTING POLICY AND EVALUATION CRITERIA	4
3.3	STANDARDS USED IN THE ANALYSIS	4
3.3.1	<i>Indicator bacteria</i>	6
3.3.2	<i>Invasive species</i>	8
3.3.3	<i>Biostimulatory Substances- possible future impairment determinations</i>	10
3.4	DATA ANALYSIS	15
3.5	INTEGRATED REPORT CATEGORIES	16
3.6	INFORMATION MANAGEMENT	17
4	SUMMARY OF ASSESSMENT RESULTS	17
5	TMDL SCHEDULING	20

LIST OF TABLES

Table 3-1 Listings for exotic species in the State 2006 303(d)	8
Table 3-2 Lakes: Nutrient Concentration and Biological Response Indicators Criteria Limits	13
Table 3-3 Rivers and Streams: Nutrient Concentration and Biological Response Indicators Criteria Limits	14
Table 4-1 Integrated Report Summary	18
Table 4-2 Integrated Report Summary for NEW decisions in 2008 including <i>delist, do not delist, do not list and list</i>	19

LIST OF APPENDICES

APPENDIX A	PUBLIC SOLICITATION LETTERS
APPENDIX B	INTEGRATED REPORT CATEGORY 2: WATERS SUPPORTING SOME BENEFICIAL USES
APPENDIX C	INTEGRATED REPORT CATEGORY 3: WATERS WITH INCOMPLETE INFORMATION
APPENDIX D	INTEGRATED REPORT CATEGORY 4: WATER QUALITY LIMITED SEGMENTS FULLY ADDRESSED
APPENDIX E	INTEGRATED REPORT CATEGORY 5: WATER QUALITY LIMITED SEGMENTS NOT FULLY ADDRESSED
APPENDIX F	LIST OF ALL WATERBODY IMPAIRMENTS (CATEGORIES 4 AND 5) (THE UPDATED, 303 (D) LIST)
APPENDIX G	FACT SHEETS FOR EACH 2008 REVISED LISTING DECISION
APPENDIX H	FACT SHEETS FOR MISCELLANEOUS CHANGES TO THE INTEGRATED REPORT
APPENDIX I	REFERENCES USED IN DEVELOPING THE INTEGRATED REPORT.

Integrated Report prepared by:

Man Voong , Environmental Scientist
Thomas Siebels, Sanitary Engineering Associate
LB Nye, PhD, Senior Environmental Scientist

Ginachi Amah, D. Env, Water Resources Control Engineer
Shirley Birosik, Staff Environmental Scientist
Rebecca Christmann, Water Resources Control Engineer
Yanjie Chu, PhD, Environmental Scientist
Stephanie Hada, Environmental Scientist
Ching-piau Lai, PE, PhD, Water Resource Control Engineer
Michael Lyons, Staff Environmental Scientist
Jenny Newman, Senior Environmental Scientist
Thanhloan Nguyen, Water Resources Control Engineer
Renee Purdy, Staff Environmental Scientist
Rebecca Veiga-Nascimento, Environmental Scientist
Elisha Wakefield, Environmental Scientist
Kangshi Wang, Water Resources Control Engineer
Eric Wu, PE, PhD, Senior Water Resources Control Engineer

Regional Board staff appreciate the assistance given by Peter Kozelka of the United States Environmental Protection Agency and the State Water Resources Control Board Integrated Report Staff.

1 Executive Summary

This Integrated Report provides the recommendations of the staff of the California Regional Water Quality Control Board, Los Angeles Region (Los Angeles Water Board) for changes to the Clean Water Act (CWA) Section 303(d) list of impaired waterbodies and provides a draft Clean Water Act Section 305(b) report (Integrated Report). The Integrated Report includes both the list of impaired waterbodies and identified waters which are known to be meeting beneficial uses within the Los Angeles Region.

The Introduction to this Integrated Report provides the context and purpose and an overview of the approach and describes the public process that will be used for adoption of the changes to the 303(d) list and finalization of the Integrated Report. The remainder of the report describes data sources used, the objectives and criteria against which data were compared, the methodology for comparing the available data to the criteria to assess attainment of water quality standards and determine potential 303(d) listings and the methodology used to categorize waterbody segments according to beneficial use support for the 305(b) report. Results are briefly summarized and discussed following descriptions of the methodology.

Recommendations are shown in detail in the appendices. Appendix A shows the public solicitation letters requesting that the public submit any and all available data to support the assessment of water quality in the Region. Appendices B through E provide lists of waterbodies in Integrated Report categories of beneficial use support. Appendix F presents a list of all impairments by waterbody including those waterbodies in Integrated Report categories 4 and 5 (appendices D and E) which is the list referred to as the 303(d) list. Appendix G presents “fact sheets” for each waterbody-pollutant combination that was analyzed for the proposed 303(d) listing decisions. These fact sheets include at least one “Line of Evidence” describing the data and information used as a basis for each proposed decision. Appendix H presents fact sheets for other miscellaneous changes to the 303(d) list. Appendix I provides citations for all of the references used in developing the Integrated Report.

There are 68 proposed new 303(d) listings in 41 waterbodies and 30 proposed de-listings in 19 waterbodies on the Los Angeles Region 303(d) list.

Additions of new impaired waterbodies to the list (‘listings’) or deletions of no longer impaired waterbodies from the list (‘delistings’) were constrained by availability of water quality data. Many waterbodies in the Region are not sampled on a regular basis. In addition, identification of waterbodies which are not impaired by pollutants and meet all beneficial uses has also been driven by availability of data.

Regional Board staff reviewed all data available to determine impairment or the absence of impairment but staff focused on developing listing or delisting decisions and factsheets for the update and did not usually develop do-not-list or do-not-delist decisions and factsheets as these decisions would not alter the final 303(d) list.

The Los Angeles Region Integrated Report and updated 303(d) list included in this staff report is being circulated for public comments. Written comments received before June 17, 2009 will be responded to in writing. The reports and the response to comments will then be brought before the Los Angeles Water Board at a public hearing for potential approval. Public testimony will also be heard at the public hearing. After approval by the Los Angeles Water Board, the Integrated Report, including the updated 303(d) list, will be submitted to the State Water Resources Control Board (State Board) for approval along with the other Region's reports. The full State Integrated Report will then be submitted to the USEPA for approval and will then be final.

2 Introduction

The purpose of this report is to identify those surface waters in the Los Angeles Region which are impaired by pollutants or conditions which prevent them from meeting beneficial uses and to identify those waterbodies which data show are meeting beneficial uses.

An important requirement of the Clean Water Act is to identify those waters which are polluted, not meeting established standards and not supporting the uses expected of those waterbodies. With identification is the recognition of the need for action. Appropriate action after identifying a polluted waterbody is generally the development of a Total Maximum Daily Load (TMDL) but, in some cases, may also include permitting actions or prohibiting discharges to the waterbody, taking cleanup actions, or restoration projects.

2.1 Regulatory Process

The Clean Water Act (CWA) requires each State to assess the status of water quality in the State (Section 305(b)), and provide a list of impaired water bodies (Section 303(d)) to the U.S. Environmental Protection Agency (U.S. EPA) every two years. For water quality limited segments included on the 303(d) list, the state is required to develop a Total Maximum Daily Load (TMDL) or take other action to address the impairment.

The last review and update of the State's 303(d) list occurred in 2006. That review was conducted by the State Water Resources Control Board using the State Board's *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy)* (SWRCB 2004) developed in 2004. The 2006 update was the first review and update to use that policy.

For the 2008 update, each Regional Water Board is conducting their own reviews of new and previous water quality data and updating the assessment and list of impaired waterbodies according to the Listing Policy.

This staff report presents this Regional Board's assessment of the current status of water quality in the Los Angeles Region for water bodies with readily available data, and identifies

the methods and data used to evaluate the water quality. This report proposes additions, deletions, and changes to the 2006 303(d) list. The water quality assessments also result in the identification of water bodies where water quality standards are met or where not enough information is available to accurately assess water quality.

Certain sections of the Integrated Report require public review and approval by the Regional Board and then approval by the State Board. These sections, or categories, are the lists of water quality limited segments whether being addressed by a TMDL or action other than a TMDL or not yet being addressed (Category lists 4 and 5, the 303(d) list). The other sections of the Integrated Report, which are waters supporting beneficial uses and waters with insufficient data (Categories lists 1, 2, and 3), are provided as information and do not require Board action.

After approval by the Los Angeles Water Board, the Integrated Report will be submitted to the State Water Resources Control Board for approval along with the other Region's reports. The results of the water quality assessments will be compiled with other Regional Board reports into a statewide integrated report referred to as the 303(d)/305(b) Integrated Report by the State Board. The statewide list of all the water quality limited segments will require final approval by the USEPA. The US EPA then compiles these assessments into their biennial "National Water Quality Inventory Report" to Congress.

3 Development of the Integrated Report

3.1 Data solicitation

Federal regulation [(40 CFR § 130.7(b)(5)] states that "Each State shall assemble and evaluate all existing and readily available water quality-related data and information" when developing the 303(d) list. On December 4, 2006, Water Board staff solicited the public to submit any and all water quality data to be considered in preparation of the 2008 303(d) list and 305(b) report. This solicitation established a data submittal deadline of February 28, 2007. On January 30, 2007, staff transmitted a notice clarifying that there were no limits on the type or format of data and information that the public could provide to the Water Boards for their assessment. The notices provided to the public can be found in Appendix A of this report.

The Regional Board received 17 submissions in response to the data solicitation. In addition, staff assembled all other available data. Larger databases considered included:

- National Pollutant Discharge Elimination System (NPDES) permitting data from major NPDES discharges. These data included data collected under the Municipal Separate Storm Sewer System (MS4) NPDES permits.
- Surface Water Ambient Monitoring Program (SWAMP) data. SWAMP is a statewide monitoring effort, administered by the State Water Board, designed to assess the conditions of surface waters throughout the state of California. Monitoring is

conducted in SWAMP through the Department of Fish and Game and Regional Boards monitoring contracts.

- Southern California Bight Regional Monitoring (Bight) data. The Southern California Water Research Project (SCCWRP) coordinates the efforts of many participating organization to conduct the Coastal Ecology component of the Bight regional monitoring effort. These surveys seek to determine the spatial extent of contaminant accumulation in marine sediments and assess the effects of this contamination on living marine resources. Coastal Ecology regional monitoring is conducted every five years. More than 60 organizations have participated as partners in the Coastal Ecology portion of SCCWRP's Bight regional monitoring efforts.

3.2 Listing Policy and Evaluation Criteria

The proposed 2008 303(d) list of impaired water bodies in the Los Angeles Region was developed in accordance with the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (State Board Listing Policy) and the Functional Equivalent Document, both adopted by the State Water Resources Control Board in September 2004. The Listing Policy establishes a standardized approach for developing California's section 303(d) list. It outlines an approach that provides the rules for making listing decisions based upon different types of data and establishes a systematic framework for statistical analysis of water quality data.

The Listing Policy also establishes requirements for data quality, data quantity, and administration of the listing process. Decision rules for listing and delisting are provided for: chemical-specific water quality standards; bacterial water quality standards; health advisories; bioaccumulation of chemicals in aquatic life tissues; nuisances such as trash, odor, and foam; nutrients; water and sediment toxicity; adverse biological response; and degradation of aquatic life populations and communities. The listing policy specifies the frequency of exceedance of applicable water quality objectives that is necessary to make a determination that the water is impaired.

Listing and delisting decisions were made in accordance with the listing policy, using all applicable narrative and numeric water quality criteria contained in the Los Angeles Region Basin Plan and in the California and National Toxic Rules.

3.3 Standards Used in the Analysis

Beneficial Uses:

The beneficial uses for waters in the Los Angeles Region are identified in the Los Angeles Regional Water Quality Control Plan (Basin Plan). For consistency with other Regions in California and other States, six "core" beneficial uses were assessed. The designated beneficial uses in the Basin Plans fit within these six "core" beneficial uses categories, which are:

1. Aquatic Life Support
2. Drinking Water Supply
3. Fish Consumption
4. Secondary Contact
5. Shell fishing, and
6. Swimming.

Water Quality Objectives, Criteria and Guidelines:

The water quality objectives and criteria used in the assessments were from existing and available State Policy and Plans and included the following:

- Water Quality Control Plan, Los Angeles Region (Basin Plan)
- Statewide Water Quality Control Plans (e.g., the California Ocean Plan)
- California Toxics Rule (40 CFR 131.38)
- Maximum Contaminant Levels in California Code of Regulations, Title 22.

Narrative water quality objectives were evaluated using evaluation guidelines as allowed by the Listing Policy. When evaluating narrative water quality objectives, staff identified evaluation guidelines that represented standards attainment or beneficial use protection. Depending on the beneficial use and narrative standard, the following were used in the selection of evaluation guidelines:

1. Sediment Quality Guidelines for Marine, Estuarine, and Freshwater Sediments: When applying narrative water or sediment quality criteria, staff used guidelines developed by the U.S. EPA and other government agencies together with findings published in the scientific peer-reviewed literature to interpret data and evaluate the water quality conditions. Sediment quality guidelines published in the peer-reviewed literature or developed by state or federal agencies were used. Acceptable guidelines included selected values (e.g., effects range-median, probable effects level, probable effects concentration), and other sediment quality guidelines. Only those sediment guidelines that were predictive of sediment toxicity were used (i.e., those guidelines that have been shown in published studies to be predictive of sediment toxicity in 50 percent or more of the samples analyzed).
2. Evaluation Guidelines for Protection from the Consumption of Fish and Shellfish: Evaluation guidelines published by USEPA or OEHHA were used.
3. Evaluation Guidelines for Protection of Aquatic Life from Bioaccumulation of Toxic Substances: Evaluation values for the protection of aquatic life published by the National Academy of Science were used.

The State Listing Policy and the use of the same water quality objectives criteria and guidelines ensure that all Regions develop listing or delisting decisions in a consistent manner. Below are three pollutant categories which require some Los Angeles Region-specific elaboration

3.3.1 Indicator bacteria

For indicator bacteria listing decisions, the Los Angeles Region followed the State Listing Policy but used a Los Angeles Region-specific exceedance day approach as outlined below.

Previous iterations of the Los Angeles Region's 303(d) list included impairments for "total coliform," "enterococcus," "viruses (enteric)," "coliform," "beach closures," "swimming restrictions," "high coliform count," "bacteria indicators," and "fecal coliform." In this update, Regional Board staff have begun to categorize these impairments all as "indicator bacteria."

"Indicator bacteria" impairments can include impairments due to any sewage or fecal matter bacterial indicator including total coliform, fecal coliform, *E. coli*, and *enterococcus*.

In this update, Regional Board staff have calculated the frequency of exceedances of standards for indicator bacteria using a exceedance day approach.

Basin Plan

The Los Angeles Region Basin Plan lists bacteria water quality objectives to protect the water contact recreation and non-contact water recreation beneficial uses in marine and fresh water. The marine water objectives for bacteria are also mirrored in the State Water Resources Control Board's Water Quality Control Plan for Ocean Waters of California (Ocean Plan).

Regional Board Resolution **2002-022**, effective on July 15, 2003, to the Basin Plan included Implementation Provisions for Water Contact Recreation Bacteria Objectives which allow a reference system approach. In part, below

...In the context of a TMDL, the Regional Board may implement the single sample objectives in fresh and marine waters by using a 'reference system/antidegradation approach' or 'natural sources exclusion approach' as discussed below. ...

Under the reference system/antidegradation implementation procedure, a certain frequency of exceedance of the single sample objectives above shall be permitted on the basis of the observed exceedance frequency in the selected reference system or the targeted water body, whichever is less. The reference system/anti-degradation approach ensures that bacteriological water quality is at least as good as that of a reference system and that no degradation of existing bacteriological water quality is permitted where existing bacteriological water quality is better than that of the selected reference system.

Bacterial TMDLs and exceedance days in the Los Angeles Region

All bacterial TMDLs developed in the Los Angeles Region have used the reference system approach and have calculated the number of exceedance days at the reference system to define the reference condition. These TMDLs include the Santa Monica Bay Beaches Dry Weather Bacteria TMDL (effective 2003), the Santa Monica Bay Beaches Wet Weather

Bacteria TMDL (effective 2003), Marina Del Rey Back Basins Bacteria TMDL (effective 2004), Los Angeles Harbor Inner Cabrillo Beach and Main Ship Channel Bacteria TMDL (effective 2005), the Malibu Creek and Lagoon Bacteria TMDL (effective 2006), the Ballona Creek Bacteria TMDL (effective 2007), and the Harbor Beaches of Ventura County (Channel Islands Harbor Beaches) Bacteria TMDL (effective 2008).

With an exceedance day method, all appropriate bacterial indicators (i.e. marine or fresh water indicators) are evaluated in one analysis to determine if the waterbody is impaired as opposed to evaluating each bacterial indicator separately and then considering those two or three evaluations to determine if the waterbody is impaired.

To calculate the number of exceedance days, the number of days during a defined period during which one or more indicator bacteria exceeds the standard is an exceedance day. For example, at a freshwater, REC-1 site, a day in which *E. coli* exceeds the standard is one exceedance day, a day in which Fecal Coliform exceeds the standard is one exceedance day and a day in which *both E. coli* and Fecal Coliform exceeds the standard is also one exceedance day.

Calculating exceedance days for all applicable indicators may be in some instances a more conservative approach (i.e. more likely to find a waterbody to be impaired) than a straight indicator by indicator approach and therefore is more protective of human health.

The Listing Policy has specific listing factors for bacterial data from coastal beaches. Section 3.3 and of the Listing Policy discuss methodology for listing water bodies. For *listing* coastal beaches, “if water quality monitoring was conducted April 1 through October 31 only, a four percent exceedance percentage shall be used” (SWRCB, 2004). The 4% exceedance percentage applies to the null hypothesis for the binomial distribution formula at the bottom of Table 3.2. Section 4.3 of the Listing Policy discuss methodology for *delisting* water bodies and does not specifically describe the use of more stringent exceedance percentage for coastal beach water quality monitoring conducted April 1 through October 31 only, though one is inferred. A 19% exceedance percentage was used for water quality monitoring conducted April 1 through October 31 only when assessing delisting status. The 19% exceedance percentage applies to the null hypothesis for the binomial distribution formula at the bottom of Table 4.2. Therefore, for coastal beach datasets in which both year-round monitoring was conducted following by subsequent monitoring from April 1 to October 31 (e.g., year-round from 2000 to 2002 and April 1 to October 31 from 2003 to 2005), the datasets were evaluated in two parts due to differing exceedance percentages for assessing listing and delisting status.

Regional Board staff followed the Listing Policy methodology and exceedance percentages and calculated exceedance days by both single sample exceedances and geometric mean exceedances.

- a. Single Sample

The Basin Plan lists four single sample limits for marine waters and two for fresh water. If samples tested for indicator bacteria exceed any of the indicator bacteria limits, a “single sample exceedance day” for indicator bacteria was designated.

b. Geometric Means

The Basin Plan lists three geometric mean bacteria limits for marine waters and two for fresh water. Receiving water data was evaluated based on these numeric limits and the exceedance day approach in a similar manner to single samples. As such, a calendar month approach as opposed to a rolling 30 day sample approach was used to assess geometric mean to maintain sample independence. Two or more samples were used per calendar month for calculating geometric means.

3.3.2 Invasive species

In this update, Regional Board staff propose new listings for invasive species.

Several other Region’s 303 (d) lists include listings for “exotic species,” which were made in recent listing updates. In the Los Angeles Region there is one listing for “exotic vegetation,” a listing made prior to 1998.

Table 3-1 Listings for exotic species in the State 2006 303(d)

	Region	Number of listings	listing	notes
1	North Coast	1	exotic species	european green crab
2	San Francisco Bay	12	exotic species	ballast water
5	Central Valley	10	exotic species	source unknown
4	Los Angeles	1	exotic vegetation	Ballona Creek

For this listing update, Regional Board staff are proposing listings for “invasive species” as opposed to exotic species” Staff prefer not listing for “exotics” or “non-native” because not all exotic or non-native species are invasive or cause loss of beneficial uses and may even support beneficial uses. For example, the Department of Fish and Game has regulations to protect certain non-native species (e.g. striped bass) and mosquito fish are “non-native” but are used as a biological control by most mosquito abatement districts. In fact, in this listing update, The State Board is re-naming the “exotic species” listings as “invasive species” listings to reflect this.

Invasive species is defined as: an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. This definition is taken from United States Executive Order 13112 of February 3, 1999 on Invasive Species (USA, 1999).

However, there are still several issues inherent in listing for such a non-traditional pollutant.

1) While certain “biological materials” have been considered pollutants, populations of animals have not been traditionally considered “pollutants.” Section 502(6) of the Clean Water Act defines “pollutants” to include “biological materials...*discharged into water*”. The courts have interpreted the term “biological materials” to include “invasive” species that might be found in ballast water which is discharged. It is not clear that these Clean Water Act definitions and court interpretations would apply equally to invasive or non-native species that are already established (i.e. non-native species whose populations are not sustained or increased by ongoing discharges) as they would to invasive species that are continuing to be discharged.

2) Standards have not been written explicitly for invasives.

3) A 303(d) listing would trigger an obligation by the Regional Board to develop a program to address the “invasive” species impairment. It would be a significant challenge to develop the regulatory program to regulate a population of an established invasive species.

In this 2008 update, Regional Board staff have recommended the new listing of Malibu Creek, Medea Creek, Lindero Creek and Las Virgenes Creek in the Malibu Creek watershed and Solstice Canyon Creek in the Santa Monica Bay watershed as impaired for invasive species, specifically the New Zealand mudsnail. Factsheets for these decisions are included in Appendix G.

Cold Creek, and Triunfo Creek also have mudsnails but are not recommended for listing at this time. Factsheets for these decisions are included in Appendix G.

New Zealand mudsnails, *Potamopyrgus antipodarum*, are tiny (3-5 mm), highly invasive aquatic snails. From the Santa Monica Bay Restoration Commission/Santa Monica Baykeeper (2009):

In large numbers, these small snails can completely cover a stream bed and wreak havoc on local stream ecosystems. Several studies have documented NZMS [New Zealand Mud Snail] densities in streams at more than 500,000 organisms per square meter. These massive colonies simply outcompete native aquatic invertebrates that the watershed's fish and amphibians rely on for food, disrupting the entire food web. NZMS are easily transported from stream-to-stream by hitchhiking, they attach themselves to shoes (especially waders), equipment (fishing gear, bicycle tires), animals (native and non-native), and even boats. Anything that contacts a stream infested by NZMS will likely become contaminated. New Zealand mudsnails were discovered in Idaho in the mid-1980s, and have since spread to every western state except New Mexico. NZMS were first identified in benthic macroinvertebrate (BMI) samples

collected in the Malibu Creek watershed in May 2005. Unfortunately, the Malibu Creek watershed samples containing NZMS were not identified until May 2006. NZMS pose a significant danger to streams throughout the Santa Monica Mountains and threaten the many efforts at habitat restoration and protection, particularly those to restore populations of the endangered steelhead trout in this region.

The data available for mudsnails was evaluated by the State Listing Policy, Section 3.10, Trends in Water Quality, using the narrative toxicity standard in the Basin Plan as the criteria. This approach is similar to the approach taken by State Board for listing “exotic species” during the 2006 listing update and is in accordance with the Listing Policy.

For mudsnails in the Los Angeles Region specifically, a waterbody is proposed to be included on the 303(d) list as impaired for invasive species if a negative trend in water quality has been demonstrated and the Aquatic Life Support core beneficial use was not supported. Staff considered a reach to be demonstrating a negative trend in water quality if at least one site in the waterbody exhibited an increase in density of mudsnails (with at least a three years sampled). Staff considered the core beneficial use of Aquatic Life Support not to be supported if at least one site exhibited a medium or high density of mudsnails.

3.3.3 Biostimulatory Substances- possible future impairment determinations

In this Integrated Report and 303(d) list update, Regional Board staff have continued to determine impairments and list and de-list decisions for nitrogen compounds as in the past based on Basin Plan nitrogen compound objectives. The Basin Plan contains a specific nitrogen (nitrate nitrite) water quality objective, which is established at 10 mg/L nitrogen as nitrate-nitrogen plus nitrite-nitrogen. This objective is specifically set to protect drinking water beneficial uses and is consistent with the California Department Public Health nitrate drinking water standard.

This nitrogen water quality objective does not protect waterbodies from impairments related to biostimulatory substances and eutrophication. However, Basin Plan also contains a narrative standard for biostimulatory substances and the Regional Board recognizes the need for a clear approach for determinations of impairment under the biostimulatory substances standard in the Basin Plan.

Previous iterations of the Los Angeles Region’s 303(d) list have recognized the need to determine impairment based on biostimulatory substances and eutrophication and have included impairments for ‘low DO/org. enrichment,’ ‘algae,’ ‘nutrient/(algae),’ ‘odors, scum,’ ‘Eutroph,’ and ‘unnatural scum/foam.’ In future updates, Regional Board staff is considering categorizing these impairments all as ‘biostimulatory substances’ using a Los Angeles Region specific, nutrient concentration/biological response method as described below. In this 2008 list update, however, no “biostimulatory substances” impairments have been included.

The biostimulatory substances water quality objective in the Basin Plan addresses water quality impairments related to nutrient enrichment (eutrophication). The Basin Plan identifies biostimulatory substances as ‘nitrogen, phosphorus and other compounds that stimulate growth’. The water quality objective states:

Waters shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses.

Eutrophication and nutrient enrichment problems rank as the most widespread water quality problems nationwide; for example, more lake acres are affected by nutrients than any other pollutant or stressor (EPA 2000). Eutrophication is defined by increased nutrient loading to a waterbody and the resulting increased growth of phytoplankton and other aquatic plants. Additionally, other parameters such as decreased dissolved oxygen and water clarity can also indicate eutrophic conditions. Phosphorus and nitrogen are recognized as key nutrients for the growth of phytoplankton, algae, and aquatic plants and are responsible for the eutrophication of surface waters.

A waterbody’s biological response to nutrient loading is often what actually impairs beneficial uses. For example, increased nitrogen and phosphorus loading can lead to harmful algal blooms, which impair the beneficial uses of the waterbody. Therefore, it is useful to evaluate potential biostimulatory substance impairments in terms of both nutrient concentrations and biological response indicators. Key biological response indicators include the following:

- Low Dissolved Oxygen (DO)
- Dramatic Diurnal Variations in DO
- Increased pH
- Decreased Water Clarity
- Increased Chlorophyll a Concentration
- Increase Macro and/or Benthic Algal Biomass
- Unpleasant Odors, Taste and/or Aesthetics

By evaluating both nutrient concentrations and biological response indicators together, a more direct linkage is made between water quality conditions and beneficial use impairments. This approach provides a more robust water quality assessment.

The Los Angeles Regional Water Board is considering including waterbodies on the State’s 303(d) list of impaired waterbodies for biostimulatory substances when both nutrient concentrations and one or more biological response indicators are at levels which characterize eutrophic conditions and/or beneficial uses of the waterbody are impaired.

However, there are many nutrient and biological response indicator criteria that may be reviewed and applied for the purposes of placing a waterbody on the State’s 303(d) list. Table 3.1 and 3.2 below present various nutrient concentrations and associated biological

response indicator criteria limits. These criteria are being considered by the Regional Board to assess the biostimulatory substances water quality objective. The sources of these criteria include EPA Nutrient Criteria Technical Guidance Manual, EPA Ambient Water Quality Criteria Recommendations Nutrient Ecoregion III, and California Nutrient Numeric Endpoints. The Regional Board intends to solicit stakeholder comments regarding the criteria presented below for development of the guidelines to be used for listing in future updates of the 303(d) list.

Table 3-2 Rivers and Streams: Nutrient Concentration and Biological Response Indicators Criteria Limits

Potential Criteria to assess Biostimulatory Substances Water Quality Objective						
Rivers and Streams						
Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Benthic Algal Biomass (mg/m ²)	Percent Cover	pH	Dissolved Oxygen (mg/L)	Source
0.65	0.09	150	none	Shall not be < 6.5 or > 8.5 or change 0.5 units from ambient condition due to waste discharge	WARM ≥5 COLD ≥ 6 COLD & SPWN ≥ 7	EPA National Nutrient Criteria Technical Guidance
0.37	0.022	43.9	none	Shall not be < 6.5 or > 8.5 or change 0.5 units from ambient condition due to waste discharge	WARM ≥5 COLD ≥ 6 COLD & SPWN ≥ 7	EPA Nutrient Criteria Recommendations Ecoregion III
0.5	0.03	none	none	Shall not be < 6.5 or > 8.5 or change 0.5 units from ambient condition due to waste discharge	WARM ≥5 COLD ≥ 6 COLD & SPWN ≥ 7	EPA Nutrient Criteria Recommendations Ecoregion III: Sub -Ecoregion 6 - Southern and Central CA
0.06	0.002	150	none	Shall not be < 6.5 or > 8.5 or change 0.5 units from ambient condition due to waste discharge	WARM ≥5 COLD ≥ 6 COLD & SPWN ≥ 7	Nutrient Numeric Endpoints - Malibu Creek Case Study
0.23	0.02	WARM 150 COLD 100	none	Shall not be < 6.5 or > 8.5 or change 0.5 units from ambient condition due to waste discharge	WARM ≥5 COLD ≥ 6 COLD & SPWN ≥ 7	Nutrient Numeric Endpoints - SWRCB Nutrient Screening tools for 303(d) Listing
< 0.295 as SIN*	< 0.026 as SRP**	120	Floating 30% Benthic 60%	Shall not be < 6.5 or > 8.5 or change 0.5 units from ambient condition due to waste discharge	WARM ≥5 COLD ≥ 6 COLD & SPWN ≥ 7	New Zealand Periphyton Guideline. Barry Biggs, June 2000
*Soluble Inorganic Nitrogen (SIN). **Soluble Reactive Phosphorus (SRP) Basin Plan Water Quality Objectives are applied for pH and dissolved oxygen						

Table 3-3 Lakes: Nutrient Concentration and Biological Response Indicators Criteria Limits

Potential Criteria to assess Biostimulatory Substances Water Quality Objective							
Lakes							
Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Chlorophyll a (ug/L)	Secchi Depth (m)	pH	Dissolved Oxygen (mg/L)	Source	
1	0.1	14	none	Shall not be < 6.5 or > 8.5 or change 0.5 units from ambient condition due to waste discharge	WARM ≥5 COLD ≥6 COLD & SPWN ≥ 7	EPA National Nutrient Criteria Technical Guidance	
0.4	0.017	3.5	2.8	Shall not be < 6.5 or > 8.5 or change 0.5 units from ambient condition due to waste discharge	WARM ≥5 COLD ≥6 COLD & SPWN ≥ 7	EPA Nutrient Criteria Recommendations Ecoregion III	
0.51	0.172	24.6	1.9	Shall not be < 6.5 or > 8.5 or change 0.5 units from ambient condition due to waste discharge	WARM ≥5 COLD ≥6 COLD & SPWN ≥ 7	EPA Nutrient Criteria Recommendations Ecoregion II: Sub - Ecoregion 6 - Southern and Central CA	
0.84	0.05	20	none	Shall not be < 6.5 or > 8.5 or change 0.5 units from ambient condition due to waste discharge	WARM ≥5 COLD ≥6 COLD & SPWN ≥ 7	Nutrient Numeric Endpoints - Malibu Creek Case Study	
1.2 (summer mean)	0.1 (summer mean)	WARM 10 COLD 5	none	Shall not be < 6.5 or > 8.5 or change 0.5 units from ambient condition due to waste discharge	WARM ≥5 COLD ≥6 COLD & SPWN ≥ 7	Nutrient Numeric Endpoints - SWRCB Nutrient Screening tools for 303(d) Listing	
Basin Plan Water Quality Objectives are applied for pH and dissolved oxygen							

3.4 Data Analysis

Water Board staff evaluated the submitted data and additional data in accordance with the Listing Policy, taking into account data quality and spatial and temporal representativeness.

LOEs. A determination that a waterbody is impaired by a particular pollutant was dependent on one or more Lines of Evidence (LOE). A Line of Evidence is the specific information for a single pollutant from a single data source in a waterbody. The LOE includes the beneficial use(s) impacted; the pollutant name(s) pertaining to that water segment and data; the water quality objective (WQO), criterion (WQC) or guideline used to assess the data; detailed information specific to that data; how the data was assessed including the type of data, the total number of samples assessed and those samples that exceeded the WQO, WQC or guideline; where and when the data was collected.

Factsheets. The factsheet includes all LOEs developed for a certain pollutant waterbody combination and the resulting listing or delisting decision.

All available data was reviewed by staff. Analyses were documented in Lines of Evidence, factsheets and listing or delisting decisions according to established priorities. All high priority factsheets were completed.

Los Angeles Region Factsheet Development Priorities

1. High Priority

a. factsheets (decision: *list*) for waterbody/pollutant combinations not on the 2006 303(d) list where an examination of the data indicate standards were not met. This factsheet may refer to more than one core beneficial use.

b. factsheets (decision: *de-list*) for waterbody/pollutant combinations on the 2006 303(d) list where an examination of the data indicate standards were met.

c. factsheets (decision: *a core use is being supported*) for waterbody/core use combination where an examination of the data indicate that all standards (for which there are data) are being met for that core use (305(b)). This factsheet may refer to more than one pollutant.

d. factsheets for waterbody/pollutant combinations on the 303(d) list where a TMDL has been completed and approved by EPA (new approved TMDLs since 2006 303(d) list).

2. Medium Priority

a. factsheets (decision *a core use is being supported*) for waterbody/core use combination where a preliminary examination of the data indicate that standards are being met for that core use (305(b)). This factsheet may refer to more than one pollutant. However, there may be a waterbody/pollutant combinations on the list impairing other core uses.

b. factsheets (decision: *clarification*) for waterbody/pollutant combinations where the name of the pollutant has changed (e.g. PAHs to become individual PAHs (e.g. aldrin, fluoranthene)) or it is advisable to make a change in the extent of the waterbody (e.g. one waterbody is broken into two or a the dividing line between two reaches is modified).

c. factsheets (decision: *do not list or do not de-list*) for waterbody/pollutant combinations where there is significant new data (new line of evidence) but a preliminary examination of the data indicate that the list status (listed or not listed) would not change.

3. Low Priority

a. factsheets for waterbody/pollutant combinations where a preliminary examination of the data indicate standards were met (the creation of a “do not list” factsheet where the waterbody is listed for some other waterbody/pollutant combination or a 305(b) supporting factsheet has been completed).

b. factsheets for waterbody/pollutant combinations where the waterbody/pollutant combination is on the 303(d) list for that waterbody/pollutant combination and a preliminary examination of the data indicate standards were not met (the creation of a “do not de-list” factsheet).

c. factsheets for waterbody/pollutant combinations where available data is of insufficient quantity or quality to make assessments.

3.5 Integrated Report Categories

In this report, each assessed waterbody segment was assigned to one of five non-overlapping categories.

First, for each core beneficial use associated with each waterbody segment, a rating of fully supporting, not supporting, or insufficient information was assigned based on the readily available data and the analyses and criteria described, above. Then each assessed water segment was placed into one of five non-overlapping categories of water bodies. These Integrated Report categories are based on the USEPA guidance for states’ Integrated Reports, but contain some modifications based on the State Listing Policy. The distribution of waterbodies into these categories may not be representative of the true state of waterbodies in the Los Angeles Region due to the availability of water quality data and Regional Board decision development priorities.

Category 1: A water segment that 1) supports a minimum of one Beneficial Use for each Core Beneficial Use that is applicable to the water; and 2) has no other uses impaired. (No appendix to this report has been included for this category since, at this time, the Los Angeles Region has no waterbodies for which data supports that all beneficial uses are being supported.)

Category 2 (Appendix B): A water segment that 1) supports some, but not all, of its beneficial uses; 2) can have other uses that are not assessed or lack sufficient

information to be assessed; 3) cannot have uses are which not supported; and 4) in agreement with the USEPA, may be included in this category with a minimum of one pollutant assessed for one use.

Category 3: (Appendix C): A water segment with water quality information that could not be used for an assessment, for reasons such as: monitoring data have poor quality assurance, not enough samples in a dataset, no existing numerical objective or evaluation guideline, the information alone cannot support an assessment, etc. Waters completely lacking water quality information are considered “not assessed”.

Category 4A (Appendix D): A water segment where ALL its 303(d) listings are being addressed; and 2) at least one of those listings is being addressed by a USEPA approved TMDL.

Category 4B: A water segment where ALL its 303(d) listings are being addressed by action(s) other than TMDL(s). (No appendix to this report has been included for this category since, at this time, the Los Angeles Region does not have waterbodies in this category.)

Category 4C: A water segment that is impacted by non-pollutant related cause(s). (No appendix to this report has been included for this category since, at this time, the Los Angeles Region does not have waterbodies in this category.)

Category 5 (Appendix E): A water segment where standards are not met and a TMDL is required, but not yet completed, for at least one of the pollutants being listed for this segment.

3.6 Information Management

All LOEs, factsheets and listing or delisting decisions were entered into the statewide *California Water Quality Assessment (CalWQA) Database*. The CalWQA database stores all LOEs, listing decisions, and beneficial use support ratings for assessed water bodies in California. This database was developed in 2007 for the purpose of storing detailed water quality assessment information. The database is designed so that this information can be easily reevaluated in future assessment updates and can be exported to the USEPA’s Assessment Database at the end of each assessment update.

4 Summary of Assessment Results

A full summary of the Los Angeles Region Integrated Report is included as Table 4-1.

Table 4-1 Integrated Report Summary

Integrated Report Category Number	Integrated Report Category definition	Number of waterbodies
1	Waters Supporting All Beneficial Uses	0
2 (Appendix B)	Waters Supporting Some Beneficial Uses	26
3 (Appendix C)	Waters With Insufficient Information	23
4 (Appendix D)	Water Quality Limited Segments Addressed	31
5 (Appendix E)	Water Quality Limited Segments not Fully Addressed	158
<i>Total</i>		<i>238 assessed waterbodies</i>
<i>(4 and 5) (Appendix F) 303(d) list</i>	<i>List of All Waterbody Impairments (the updated 303 (d) list)</i>	<i>189 waterbodies on the 303(d) list</i>

Of the waterbodies included in the Integrated Report, a total of 68 new listings are proposed and 30 de-listings are proposed. In addition, in this update, 113 previous listings are now included in the list as ‘being addressed by a TMDL’ because a USEPA approved TMDL has been completed. A summary of new additions to the Integrated Report is found in Table 4-2. In this Table, decisions to List are shown in three categories. “List” is the decision to include a waterbody/pollutant combination on the 303(d) list for the first time; “List (being addressed by TMDL)” is the decision to move a waterbody/pollutant combination from the ‘requires a TMDL’ portion of the list to the “being addressed by a TMDL” portion of the list because a USEPA approved TMDL has been completed since the last update to the 303(d) list in 2006; “List (being addressed by action other than TMDL)” is the decision to move a waterbody/pollutant combination from the ‘requires a TMDL’ portion of the list to the “being addressed by action other than TMDL” portion of the list because another regulatory action (such as a permitted restoration action) is sufficient to address the impairment. Factsheets for all these decisions are found in Appendix G.

Table 4-2 Integrated Report Summary for NEW decisions in 2008 including *delist, do not delist, do not list and list*

New Decision in 2008	Number of waterbodies	Number of waterbody/pollutant combinations
Delist	19	30
Do Not Delist	23	29
Do Not List	50	86
List	41	68
List (being addressed by TMDL)	55	113
List (being addressed by action other than TMDL)	2	3
Total		329

The total number of waterbody/pollutant combinations in the proposed 2008 303(d) list is 829. 448 of these waterbody/pollutant combinations, or 54%, require the completion of a TMDL or other regulatory action to address the impairment. 381 of these waterbody/pollutant combinations, or 46%, are currently being addressed by an EPA approved TMDL or other regulatory action.

This was the first time that the Water Boards have prepared an Integrated 303(d)/305(b) Report under the current Listing Policy and USEPA Integrated Report Guidance and the first time that the Regional Boards have used the CalWQA database. Combining the 303(d) list update with the 305(b) report and using the same database as all other Regions added efficiency and ensured consistency, but provided challenges in terms of workload and project management. While individual assessments for potential 303(d) listings or de-listings provided valuable information for the 305(b) report, creating the overall 305(b) report using 303(d) listing decisions as the primary input also had limitations. Preparing assessment fact sheets at the level of detail required for 303(d) list changes under the Listing Policy limited the amount of data which could be developed in the manner necessary for inclusion in the CalWQA database. In addition, the readily available data are also often biased towards areas with more potential discharges, since these areas are where the bulk of the monitoring activity takes place. For these reasons, the number of waterbody segments in each Integrated Report category is not necessarily a representative sampling of all the waterbodies within the Los Angeles Region. Despite these limitations, this Integrated Report provides the most complete 305(b) report for the Los Angeles Region to date.

5 TMDL Scheduling

As part of its 1996 and 1998 regional water quality assessments, the Regional Board identified over 700 waterbody-pollutant combinations in the Los Angeles Region where TMDLs would be required (LARWQCB, 1996, 1998). A 13-year schedule for development of TMDLs in the Los Angeles Region was established in a consent decree (Heal the Bay Inc., et al. v. Browner, et al. C 98-4825 SBA) (United States District Court, Northern District of California, 1999) approved on March 22, 1999 (USEPA/Heal the Bay Consent Decree).

For the purpose of scheduling TMDL development, the decree combined the over 700 waterbody-pollutant combinations into 92 TMDL analytical units. Proposed de-listings in this report would discharge or partially discharge 12 TMDL analytical units as specified in the USEPA/Heal the Bay Consent Decree between the U.S. EPA and Heal the Bay, Inc. et al. filed on March 22, 1999.

Staff identified the new listings as a low priority, to be started after the USEPA/Heal the Bay Consent Decree commitments are met. A possible exception to this would be if a new listing could be folded into an existing analytical unit without the need for additional resources to develop the resulting TMDL. The assignment of a low priority to these new TMDL analytical units is not a reflection on their importance, but is given because the Regional Board has first prioritized existing USEPA/Heal the Bay Consent Decree commitments before beginning new TMDLs. The maximum time that can elapse between 303(d) listing and TMDL completion is 13 years. Accordingly, staff have assigned all new listings a TMDL completion date of 2021. This does not suggest that all new listings have the same priority, but rather that the factors determining TMDL priorities have not yet been evaluated as part of this listing process.