

STAFF REPORT – REVISED DRAFT

**PROPOSED AMENDMENT TO THE *WATER QUALITY CONTROL PLAN – LOS ANGELES REGION* TO UPDATE THE BACTERIA OBJECTIVES FOR FRESHWATERS DESIGNATED FOR WATER CONTACT RECREATION BY REMOVING THE FECAL COLIFORM OBJECTIVES**

~~APRIL-JUNE~~ JUNE 22, 2010

## I Summary

Staff proposes an amendment to the *Water Quality Control Plan for the Los Angeles Region* (hereafter Basin Plan) to update the water quality objectives for bacteria that are applied to fresh waters designated for water contact recreation (REC-1 and LREC-1) by removing the fecal coliform objectives. The goal in updating the Region's fresh water bacteria objectives is to maintain consistency with EPA's recommendation pursuant to Federal Clean Water Act §304(a) that *Escherichia coli* (*E. coli*) replace fecal coliform as an indicator of the presence of pathogens in fresh water, and to remove unnecessary regulatory and monitoring requirements that arise from having water quality objectives for both indicators. This amendment will neither increase nor reduce the risk of illnesses associated with exposure to water containing fecal bacteria. It simply removes redundant objectives in keeping with EPA's recommendations, which were based on local and national epidemiological studies and research on the most appropriate bacterial indicators for protecting the health of individuals engaged in water contact recreation.

Specifically, staff proposes *E. coli* as the sole bacterial indicator to assess the quality of fresh waters used for water contact recreation (REC-1)<sup>1</sup> and limited contact recreation (LREC-1)<sup>2</sup>. The proposal to remove the fecal coliform objectives is limited to freshwaters used for water contact recreation, since the use of the fecal coliform indicator for marine waters designated for water contact recreation is required by the California Code of Regulations Title 17, §7958 "Bacteriological Standards" (Assembly Bill 411, Statutes of 1997).

The sections below present (i) the rationale for the proposed Basin Plan amendment, (ii) the current and proposed fresh water bacteria objectives and their historical bases, along with the Regional Board's past actions in adopting bacteria objectives, (iii) alternative actions for consideration by the Regional Board, and (iv) other considerations related to CEQA and the factors set forth in Cal. Water Code §13241.

## II Rationale for Basin Plan Amendment

The proposed action to update the Region's bacteria objectives is prudent, since these objectives are used to determine which waterbodies are impaired and, thus, to identify waterbodies for which total maximum daily loads (TMDLs) must be developed pursuant to Federal Clean Water Act §303(d). These objectives are translated into numeric targets in a TMDL. The numeric targets then form the basis for determining the allowable pollutant load to a waterbody and allocating this load among the various point and nonpoint source dischargers. These allocations are then incorporated, as appropriate, into discharge permits and/or other orders issued by the Regional Board. The Los

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<sup>1</sup> REC-1 (water contact recreation) is a beneficial use, defined in the Basin Plan, and designated as either "Existing," "Potential," or "Intermittent" for all waterbodies in the Region. REC-1 is defined in the Basin Plan as "[U]ses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs" (p. 2-2).

<sup>2</sup> LREC-1 (limited contact recreation) is a beneficial use defined as "Uses of water for recreational activities involving body contact with water, where full REC-1 use is limited by physical conditions such as very shallow water depth and restricted access and, as a result, ingestion of water is incidental and infrequent" (State Board Resolution No. 2005-0015).

Angeles Region has adopted seven bacteria TMDLs and more are planned or underway. It is necessary to remove the redundancy that exists by having water quality objectives for both fecal coliform and *E. coli*, particularly as the removal of the redundant fecal coliform objectives will prevent unnecessary regulatory and monitoring requirements for dischargers.

The rationale for this proposed amendment involves a number of considerations.

- (i) Since 1986, U.S. EPA has required states to replace the previously recommended fecal coliform objectives with the currently recommended *E. coli* objectives, since studies have shown the latter to be a more accurate predictor of public health risk related to water contact recreation.
- (ii) In its 1986 guidance, U.S. EPA recommended that states employ a transition period during which both the historical fecal coliform objectives and the new *E. coli* objectives could be used. U.S. EPA recommended a transition period of one triennial review cycle. It has now been three triennial review cycles since the Regional Board updated its bacteria objectives in 2001 to incorporate *E. coli* as an objective for freshwaters designated for water contact recreation.
- (iii) State Board intends to update the freshwater bacteria objectives statewide in the near future. This update will include a requirement that *E. coli* replace fecal coliform as the water quality objective in freshwaters designated for water contact recreation in those regions that have not already incorporated U.S. EPA's recommended criteria into their Basin Plans.
- (iv) Removing the fecal coliform objectives will relieve affected parties of redundant regulatory and monitoring requirements, including permittees and responsible jurisdictions identified in bacteria TMDLs.

### **III Proposed Changes for Freshwaters Designated for Water Contact Recreation**

#### **A. Current Objectives**

The current fresh water objectives for water contact recreation include fecal coliform and *E. coli* indicators as follows:

#### **In Fresh Waters Designated for Water Contact Recreation (REC-1)**

1. Geometric Mean Limits
  - a. *E. coli* density shall not exceed 126/100 ml.
  - b. Fecal coliform density shall not exceed 200/100 ml.
2. Single Sample Limits
  - a. *E. coli* density shall not exceed 235/100 ml.
  - b. Fecal coliform density shall not exceed 400/100 ml.

(Regional Board Resolution No. R01-018)

## **In Fresh Waters Designated for Limited Contact Recreation (LREC-1)**

### 1 Geometric Mean Limits

- a. *E. coli* density shall not exceed 126/100 ml.
- b. Fecal coliform density shall not exceed 200/100 ml.

### 2 Single Sample Limits

- a. *E. coli* density shall not exceed 576/100ml.
- b. Fecal coliform limits shall not apply.

(State Board Resolution No. 2005-0015)

## **B. History of Current Bacteria Objectives**

***U.S. EPA Recommended Criteria.*** U.S. EPA's original recommended criteria for waters designated for water contact recreation were based on the results of a series of epidemiological studies conducted in the late 1940s and early 1950s, which are summarized by Stevenson (1953). These studies showed that there was a significantly greater illness rate in individuals who swam in water with an average total coliform density of 2,300 organisms per 100 ml compared to those who swam in water with an average total coliform density of 43 organisms per 100 ml. Fecal coliform thresholds were developed in the 1960s based on the fraction of total coliforms that were fecal coliforms at the original study sites. The change from total coliform to fecal coliform was made, since fecal coliform was considered a better indicator of fecal contamination.

Based on the ratio of fecal coliforms to total coliforms, it was assumed that statistically significant swimming-associated gastrointestinal illness would be observed at 400 organisms/100 ml for fecal coliform. The National Technical Advisory Committee (NTAC) of the Department of the Interior, which oversaw these initial epidemiological studies, suggested that a detectable risk was unacceptable, and so proposed a density of 200 fecal coliforms per 100 ml as the criterion. The NTAC further proposed that not more than 10 percent of samples should exceed 400 fecal coliforms per 100 ml. This multi-part criterion was recommended by U.S. EPA in 1976.

In the early 1980s, U.S. EPA conducted another series of epidemiological studies in both fresh water and marine water to: (1) confirm that swimming in sewage-contaminated water carries a health risk for bathers and (2) determine which indicator(s) best correlated with swimming-associated health effects and, specifically, gastroenteritis. These studies found that there was a health risk associated with swimming in sewage-contaminated water. Enterococcus and *E. coli* (a subset of the fecal coliform group) were the indicators most strongly correlated with the incidence of gastroenteritis. These studies found that total coliform and fecal coliform densities were only weakly correlated with gastroenteritis. As a result of the national epidemiological studies, in 1986 the U.S. EPA published revised criteria guidelines for bacteria, pursuant to the Federal Clean Water Act §304(a), recommending that states use enterococcus in marine water and *E. coli* or enterococcus in fresh water (U.S. EPA, 1986). The enterococcus and *E. coli* criteria recommended by U.S. EPA were calculated based on what was determined to be "acceptable" illness rates of 8 illnesses per 1,000 swimmers at fresh water beaches,

and 19 illnesses per 1,000 swimmers at marine beaches, which are the illness rates that were associated with the previous fecal coliform criterion.

**Regional Board Bacteria Objectives.** The original Basin Plan objectives for waters designated for water contact recreation in the Los Angeles Region were based on the recommendations of the NTAC and, subsequently, the U.S. EPA regarding the use of fecal coliforms as the best indicator of the health risks of swimming in sewage-contaminated water.

In 2001, the Los Angeles Regional Board updated its bacteria objectives for both fresh and marine waters designated for water contact recreation to reflect the current recommendations of the U.S. EPA in “Ambient Water Quality Criteria for Bacteria – 1986” (U.S. EPA, 1986) and the minimum bacteriological standards contained in the California Code of Regulations, title 17, section 7958 “Bacteriological Standards” (Assembly Bill 411, Statutes of 1997). During this update, the Regional Board added *E. coli* as a water quality objective for freshwater, but did not remove the fecal coliform objective. Rather, the Board allowed a transition period for incorporation of *E. coli* objectives into permits and water quality monitoring programs, and for collection of data on the new objective to establish an adequate monitoring database.

### C. Proposed Objectives

The revised freshwater bacteria objectives for water contact recreation will still include objectives for *E. coli* but will remove the historical fecal coliform objectives, as recommended by the U.S. EPA. The implementation provisions for the bacteria objectives that are contained in the Basin Plan will remain unchanged at this time.<sup>3</sup> Specifically, staff recommends the following:

#### In Fresh Waters Designated for Water Contact Recreation (REC-1)

1. Geometric Mean Limit  
*E. coli* density shall not exceed 126/100 ml.
2. Single Sample Limit  
*E. coli* density shall not exceed 235/100 ml.

#### In Fresh Waters Designated for Limited Contact Recreation (LREC-1)

1. Geometric Mean Limits  
*E. coli* density shall not exceed 126/100 ml.
2. Single Sample Limits  
*E. coli* density shall not exceed 576/100ml.

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<sup>3</sup> Additionally, staff is not proposing any changes to the water quality objectives for ~~the Limited Water Contact Recreation Use (LREC-1), or for~~ the Non-contact Water Recreation Use (REC-2), at this time.

## **D. Justification for Revised Objectives**

*E. coli* is a subset of fecal coliform bacteria and a more suitable indicator of fecal contamination based on national epidemiological studies. In determining the *E. coli* objective, EPA used the same “acceptable illness rate” used to develop the fecal coliform objective, therefore there is no increased risk of illness associated with the proposed revision to the freshwater bacteria objectives.

As discussed earlier, while EPA’s 1986 “Ambient Water Quality Criteria for Bacteria” recommended the use of *E. coli* rather than fecal coliform, staff did not immediately remove the fecal coliform objectives during the 2001 update. The rationale behind this decision was to allow a transition period to revise permit limitations and monitoring requirements, and to collect monitoring data on the new *E. coli* indicator. While EPA supports such transition periods (EPA, 2002) it encourages states to remove the fecal coliform criteria during the triennial review period following the one in which the *E. coli* criteria was adopted. In the Los Angeles Region, the transition period has effectively lasted eight years since the *E. coli* objectives became effective in 2002. Therefore, the proposed removal of the fecal coliform objectives is justified at this time.

## **IV Consideration of Alternatives**

### **1. No action**

If the Regional Board does not remove the fecal coliform objectives consistent with U.S. EPA’s recommendations, the Basin Plan will contain objectives, necessitating redundant regulatory and monitoring requirements in TMDLs, Regional Board orders, and monitoring programs. While the State Board plans to adopt revised freshwater bacteria objectives based on EPA’s 1986 guidance statewide, the State Board may exclude the Los Angeles Region, since the Los Angeles Region already has objectives based on EPA’s guidance in place. If the State Board excludes the Los Angeles Region from its action, the Region’s Basin Plan will retain the fecal coliform objectives, resulting in redundant requirements as discussed above. Even if the State Board includes the Los Angeles Region in its action, it may either immediately rescind the fecal coliform objectives contained in Regional Basin Plans, or choose to retain them during a transition period, as the Regional Board did. If the State Board includes the Los Angeles Region in its action, but elects to have a transition period, then the transition period for the Los Angeles Region will be even further lengthened beyond what is necessary.

### **2. Remove fecal coliform objectives for freshwaters, but retain *E. coli* objectives**

By adopting the proposed revisions to bacteria objectives for freshwaters designated for water contact recreation, the Regional Board will remove the redundancy in regulatory and monitoring requirements of Board programs, including TMDL and NPDES programs, while continuing to maintain consistency with U.S. EPA’s recommended ambient water quality criteria for bacteria that are based on a well-established relationship between levels of *E. coli* and observed public health impacts.

## V. Other Considerations

### A. Considerations Regarding CEQA and Costs of Compliance

The Secretary of Resources has certified the State and Regional Boards' basin planning process as exempt from certain requirements of the California Environmental Quality Act (CEQA), including preparation of an initial study, negative declaration, and environmental impact report (California Code of Regulations, Title 14, Section 15251(g)). As the proposed amendment to the Basin Plan is part of the basin planning process, the environmental information developed for and included with the amendment is considered a substitute to an initial study, negative declaration, and/or environmental impact report.

The "certified regulatory program" of the Regional Board, however, must satisfy the substantive requirements of California Code of Regulations, Title 23, Section 3777(a), which requires a written report that includes a description of the proposed activity, an alternatives analysis, and an identification of mitigation measures to minimize any significant adverse impacts. Section 3777(a) also requires the Regional Board to complete an environmental checklist as part of its substitute environmental documents.

Based on the Environmental Checklist (provided in addition to this report), staff concludes that there would be no potentially significant adverse impacts on the environment caused by adoption of this Basin Plan amendment, since the proposed activity is the removal of a water quality objective that is now redundant and the removal of this objective will not result in any increased risk of illness as discussed earlier.

As for the costs of compliance with the proposal, there are no implementation actions associated with the removal of the fecal coliform objectives for freshwater contact recreation. The removal of the existing objective may result in a reduction in regulatory and associated monitoring requirements for affected parties. As such there may be a reduction in monitoring costs associated with compliance determination for freshwater bacteria objectives as a result of the amendment. There will be no adverse economic impact related to the proposed action.

### B. Considerations Regarding California Water Code Sections 13241 and 13242

**Cal. Water Code §13241 Considerations:** The Regional Board has considered the factors set forth in Cal. Water Code §13241. These factors include:

- (a) *Past, present, and probable future beneficial uses of water.*
- (b) *Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.*
- (c) *Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.*
- (d) *Economic considerations.*
- (e) *The need for developing housing within the region.*
- (f) *The need to develop and use recycled water.*

Section 13241 at a minimum requires that water quality objectives ensure the reasonable protection of beneficial uses and the prevention of nuisance.

(a) *Past, present, and probable future beneficial uses of water*

Beneficial uses of the fresh, inland surface waters of the Los Angeles Region are contained in Table 2-1 of the *Water Quality Control Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan). These uses include the designated water contact recreation beneficial uses (REC-1 and LREC-1 uses) of inland surface waters that are protected by the freshwater bacteria objectives that are being updated.

(b) *Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto*

The environmental characteristics of the inland surface waters in the region are spelled out at length in the Basin Plan and have been considered in developing this amendment. The Los Angeles Region, over which the Regional Board has jurisdiction, includes the coastal drainages between Rincon Point (on the coast of western Ventura County) and the eastern Los Angeles County line, as well as the drainages of five coastal islands (Anacapa, San Nicolas, Santa Barbara, Santa Catalina, and San Clemente). There are ten designated watershed management areas (WMAs) in the Los Angeles Region. These generally encompass a single large watershed within which exist smaller subwatersheds. However, in some cases, the WMA may be a collection of several small, discrete coastal watersheds. These are listed below:

- Calleguas Creek Watershed
- Channel Islands Watershed Management Area (WMA)
- Dominguez Channel Watershed
- Los Angeles River Watershed
- Los Cerritos Channel Watershed
- Ventura Coastal Streams (WMA)
- San Gabriel River Watershed
- Santa Clara River Watershed
- Santa Monica Bay (WMA)
- Ventura River Watershed

The region covers 4,497 square miles of land overall and roughly 6,084 miles of streams, 17,488 acres of lakes, and 65,304 acres of wetlands. Land use varies considerably. In Ventura County, agriculture and open space exist alongside mixed urban, residential and commercial areas. In northern Los Angeles County, open space is steadily being transformed into residential communities. In southern Los Angeles County, land uses include mixed urban, residential, commercial and industrial.

Currently, 124 water bodies are listed as impaired by high levels of indicator bacteria. Each watershed management area of the Los Angeles Region contains some of these impaired water bodies.



*(c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area*

Water quality conditions that reasonably could be achieved through the coordinated control of all factors which affect water quality in the area have been considered. Implementation of the TMDLs for bacteria that are currently in effect and of those under development will ensure that the Los Angeles Region's inland surface waters attain the REC-1 and LREC-1 water quality standards for indicator bacteria. Attainment of the REC-1 and LREC-1 water quality standards through the compliance options identified in the bacteria TMDLs is a reasonably achievable water quality condition for the region. These TMDLs will be implemented through regulatory mechanisms available to the Regional Board, including but not limited to, NPDES permits, including those for urban runoff and stormwater discharges, waste discharge requirements (WDRs), prohibitions, conditional waivers, enforcement actions and/or other Regional Board orders. The proposed action of removing the fecal coliform objectives will not impose any further requirements in these Regional Board actions, and will likely remove some regulatory and monitoring requirements.

However, to the extent that there would be any conflict between the consideration of the factor in Cal. Water Code section 13241, subdivision (c), and the Federal Clean Water Act, the Clean Water Act would prevail.

*(d) Economic considerations*

Economic considerations were made. The removal of the fecal coliform objectives for freshwater from the Basin Plan will ultimately result in removal of the associated regulatory, monitoring, and reporting requirements from TMDLs and Regional Board orders, and should therefore result in reduced bacteria water quality monitoring costs to the regulated community.

*(e) The need for developing housing within the region*

The need for developing housing within the region has been considered, but the update to the freshwater bacteria objectives will have no impact on this. There are no implementation or compliance requirements associated with this action, and therefore no avenue through which any restrictions to housing development or supply may be imposed.

*(f) The need to develop and use recycled water*

The update to the freshwater bacteria objectives will have no impact on the need to develop and use recycled water in the Los Angeles Region. Removal of the fecal coliform objective will not impose any requirements for or restrictions on the development and use of recycled water. The development and use of recycled water is separately regulated by the California Department of Public Health under 22 Cal. Code Regs. (Recycled Water Criteria, §60301; Sources of Recycled Water, §60302; and Uses of Recycled Water, §60303 et seq.), which imposes limits on the density of total

coliforms that are much more stringent than the water quality objectives set to protect the water contact recreation beneficial use.

**Cal. Water Code §13242 Considerations:** The Regional Board has considered Cal. Water Code §13242. Under the Cal. Water Code section 13242, when adopting water quality objectives in the Basin Plan, a program of implementation for achieving the objectives must be included. This specific action involves the removal of a redundant water quality objective; therefore, a new program of implementation pursuant to section 13242 is not required.

## **VI Recommended Alternative (#2)**

Staff recommends that the Regional Board approve the proposed Basin Plan amendment, which would update the bacteria objectives for freshwaters used for water contact recreation by removing the fecal coliform objectives. In doing so, the Regional Board would maintain consistency with federally recommended ambient water quality criteria for bacteria specified in “Ambient Water Quality Criteria for Bacteria – 1986” (U.S. EPA, 1986) by retaining *E. coli* as the sole water quality objective to protect water contact recreation in fresh waters.

Revise Chapter 3, “Water Quality Objectives” by replacing the section (pertaining to freshwaters designated for water contact recreation) in the second paragraph under ***Bacteria, Coliform*** with the following:

### **In Fresh Waters Designated for Water Contact Recreation (REC-1)**

- 1 *Geometric Mean Limit*  
*E. coli* density shall not exceed 126/100 ml.
- 2 *Single Sample Limit*  
*E. coli* density shall not exceed 235/100 ml.

### **In Fresh Waters Designated for Limited Contact Recreation (LREC-1)**

- 1 *Geometric Mean Limits*  
*E. coli* density shall not exceed 126/100 ml.
- 2 *Single Sample Limits*  
*E. coli* density shall not exceed 576/100ml

## REFERENCES

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