

**INFORMATIONAL DOCUMENT**

Public Scoping Meeting for Proposed Revision to the  
Bacterial Standards for Water Contact Recreation in Fresh Waters of California

September 2008

**DIVISION OF WATER QUALITY  
STATE WATER RESOURCES CONTROL BOARD  
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY**

## **Introduction**

The State Water Resources Control Board (State Water Board) is proposing a statewide policy for bacterial standards for water contact recreation in fresh waters of California (proposed policy). Elements of the proposed policy may include a revised indicator organism [*Escherichia (E.) coli* or enterococci] and risk protection level, and expansion and standardization of bacteria control implementation related to the National Pollutant Discharge Elimination System (NPDES) permitting process and the Total Maximum Daily Load (TMDL) process. This document presents issues the proposed policy could address and lists the elements that may be included in the proposed policy.

## **Background**

The Clean Water Act (CWA) directs States, with oversight by the U.S. Environmental Protection Agency (U.S. EPA), to adopt water quality standards to protect the public health and welfare, enhance the quality of water, and serve the purposes of the CWA. States' standards must include: (1) designated uses for all water bodies within their jurisdictions, (2) water quality criteria (referred to as water quality objectives under California law) sufficient to protect the most sensitive of the uses, and (3) an antidegradation policy. States are also required to review their standards once every three years and, as appropriate, modify and adopt standards. The results of this triennial review must be submitted to U.S. EPA, and U.S. EPA must approve or disapprove any new or revised standards. Section 303(c) of the CWA directs U.S. EPA to promulgate standards: (1) to supersede provisions that it has disapproved, or (2) if it has determined that a new or revised standard is needed.

States may adopt water quality criteria based on U.S. EPA's water quality criteria guidance developed under CWA section 304(a) or criteria developed using other scientifically defensible methods. If the States adopt water quality standards based on U.S. EPA's criteria guidance, the standards will form the basis for water quality control actions. These include developing water quality-based effluent limitations in NPDES permits, listing impaired waters under CWA section 303(d), and, in some cases, water body postings.

In 1986, U.S. EPA revised its ambient water quality criteria guidance for bacteria, recommending that the indicators of health risks from bacteria in marine and fresh water be established as *E. coli* and enterococci instead of fecal coliform. These criteria guidance are issued by U.S. EPA for use by the States and tribes in adopting water quality standards. U.S. EPA based its revised criteria guidance on a review of epidemiological studies relating gastrointestinal illness to specific bacterial indicators.

The Beaches Environmental Assessment and Coastal Health Act (BEACH Act) of 2000 added section 303(i) to the CWA, which required States to adopt, for their coastal recreational waters, new or revised water quality standards for pathogens and pathogen indicators that are as protective as U.S. EPA's 1986 criteria guidance. The BEACH Act defined coastal recreation waters as the Great Lakes and marine coastal waters (including coastal estuaries) that are designated for swimming, bathing, surfing, or similar water contact activities.

The BEACH Act also required U.S. EPA to promulgate standards for States that failed to do so, which U.S. EPA did in 2004. U.S. EPA's 2004 rule included California marine waters and coastal estuaries designated for water contact recreation, with the exception of waters under the jurisdiction of the Los Angeles Regional Water Quality Control Board (Los Angeles Water Board), for which objectives consistent with U.S. EPA's 1986 bacteria criteria guidance already applied.

This proposed policy includes water quality objectives for bacterial indicators and implementation procedures for the objectives for fresh waters used for water contact recreation in California. The proposed policy may be applied statewide or may exclude waters under the jurisdiction of the Los Angeles Water Board and the Lahontan Regional Water Quality Control Board (Lahontan Water Board).

**Table 1** presents U.S. EPA's 1986 bacterial indicator criteria guidance for fresh water.

**Table 1. U.S. EPA Bacterial Indicator Criteria Recommendation**

Indicator	Risk Level	Geometric Mean Density (per 100 mL)	Single Sample Maximum Allowable Density (per 100 mL) <sup>a</sup>			
			Designated Beach Area (75 <sup>th</sup> percentile)	Moderate Full Body Contact Recreation (82 <sup>nd</sup> percentile)	Lightly Used Full Body Contact Recreation (90 <sup>th</sup> percentile)	Infrequently Used Full Body Contact Recreation (95 <sup>th</sup> percentile)
Enterococci	8	33 <sup>b</sup>	61	78	107	151
<i>E. coli</i>	8	126 <sup>c</sup>	235	298	409	575

Source: U.S. EPA (1986).

<sup>a</sup>. Calculated using the following: single sample maximum = geometric mean \* 10<sup>^(confidence level factor \* log standard deviation)</sup>, where the confidence level factor is: 75 percent: 0.675; 82 percent: 0.935; 90 percent: 1.28; 95 percent: 1.65. The log standard deviation from U.S. EPA's epidemiological studies is 0.4 for fresh waters.

<sup>b</sup>. Calculated to nearest whole number using equation: geometric mean = antilog<sub>10</sub> [(risk level + 6.28) / 9.40].

<sup>c</sup>. Calculated to nearest whole number using equation: geometric mean = antilog<sub>10</sub> [(risk level + 11.74) / 9.40].

As shown in the table, the criteria guidance includes both a geometric mean (long-term average) and single sample maximum (SSM) values for waters with different levels of recreational use.

In its rule promulgating bacteria criteria for coastal recreation waters, U.S. EPA (2004a) defined these categories as:

- Designated Beach Area: those recreation waters that, during the recreation season, are heavily used (based upon a comparison of use within the state) and may have a lifeguard, bathhouse facilities, or public parking for beach access. States may include any other waters in this category even if the waters do not meet these criteria.

- Moderate Full Body Contact Recreation: those recreation waters that are not designated bathing beach waters but typically, during the recreation season, are used by at least half of the number of people as at typical designated bathing beach waters within the state. States may also include light use or infrequent use coastal recreation waters in this category.
- Lightly Used Full Body Contact Recreation: those recreation waters that are not designated bathing beach waters but typically, during the recreation season, are used by less than half of the number of people as at typical designated bathing beach waters within the state, but are more than infrequently used. States may also include infrequent use coastal recreation waters in this category.
- Infrequently Used Full Body Contact: those recreation waters that are rarely or occasionally used.

### **Potential Elements Subject to Scoping Consideration**

This section lists elements that may be included in the proposed policy.

#### **Element 1: Bacterial Indicators**

This element would address the issue of setting a statewide bacterial indicator, using U.S. EPA's (1986) recommended criteria guidance or other possible alternatives. Additionally, as all Regional Water Quality Control Boards (Regional Water Boards) currently have bacteria objectives, the effect of rescission of these objectives would be considered.

Issues this element could include:

1. No action
2. Adopt U.S. EPA (1986) E. coli criteria for fresh water
3. Adopt U.S. EPA (1986) enterococci criteria
4. Rescind existing (fecal/total coliform) bacteria criteria for fresh water
5. Rescind existing bacteria objectives for fresh waters after one triennial review cycle
6. Establish objectives based on reference conditions
7. Combinations of the above alternatives

#### **Element 2: Level of Protection for Water Contact Recreation**

U.S. EPA's recommended bacteria criteria are based on a specific risk level. Consideration of changing this risk level will be discussed.

Issues this element could include:

1. No action
2. Adopt U.S. EPA (1986) recommended risk level of eight illnesses per 1,000 swimmers for fresh water
3. Adopt risk level between eight to ten illnesses per 1,000 swimmers
4. Adopt risk level more stringent than U.S. EPA recommendation

### **Element 3: Calculation of Effluent Limits**

This element will discuss the procedure for calculating effluent limits for bacterial indicators, with possible development of written guidance.

Issues this element could include:

1. No action
2. Calculate effluent limitation based on effluent variability
3. Apply criteria end-of-pipe

### **Element 4: Mixing Zones**

This element will discuss if mixing zones should be allowed and, if so, procedures for use.

Issues this element could include:

1. No action
2. Allow mixing zones in a small area near an outfall
3. Do not allow mixing zones

### **Element 5: Averaging Periods**

This element will discuss the specification of an averaging period for use in determining compliance with proposed bacterial objectives.

Issues this element could include:

1. No action
2. Specify the geometric mean as a rolling average
3. Specify the appropriate averaging period

### **Element 6: Effluent Monitoring and Reporting**

This element will discuss the need for guidance on effluent monitoring and reporting, including discussion of monitoring frequency.

Issues this element could include:

1. No action
2. Establish monitoring frequencies for all dischargers
3. Provide narrative guidance

### **Element 7: Analytical Methods**

This element will discuss the need for analytical methods for determining compliance with bacterial objectives.

Issues this element could include:

1. No action
2. Specify analytical methods for receiving waters and various effluents

### **Element 8: Compliance Schedules and Interim Requirements**

This element would discuss the use of compliance schedules with interim requirements for achieving compliance with bacterial objectives.

Issues this element could include:

1. No action
2. Allow up to two-year compliance schedules
3. Allow up to two-year compliance schedules with Regional Water Board discretion to establish compliance schedules up to five years

**Element 9: Site-Specific Objectives**

This element would discuss permitting SSM values to be calculated using the formula from U.S. EPA's recommended criteria guidance as shown in Table 1 of this document.

Issues this element could include:

1. No action
2. Do not allow calculation of site-specific SSMs
3. Allow calculation of site-specific SSMs
4. Allow calculation of more stringent site-specific SSMs only
5. Allow site-specific SSMs based on State policy that differs from U.S. EPA guidance

**Element 10: Implementation of Bacterial Objectives in Regards to TMDLs**

This element would discuss the use a natural sources exclusion implementation procedure. Under this procedure after all anthropogenic ("manmade") sources of bacteria have been controlled such that they do not cause or contribute to an exceedance of the single sample objectives, a certain frequency of exceedance of the single sample objective would be permitted based on the residual exceedance frequency in the specific water body.

Issues this element could include:

1. No action
2. Allow a reference system/antidegradation approach or natural sources exclusion approach
3. Do not allow a reference system/antidegradation approach or natural sources exclusion approach