Santa Ana Regional Water Quality Control Board

Summary
Proposed Amendments related to Recreational Standards for Inland Fresh Waters for the Santa Ana Region
February 2010

Staff of the California Regional Water Quality Control Board, Santa Ana Region (Regional Board) and the other members of the Stormwater Quality Standards Task Force (SWQSTF) have been engaged since 2003 in the implementation of a workplan designed to assist the Regional Board in reviewing water quality standards related to recreational use of the Region's inland fresh waters. This effort has included consideration of revisions to the bacteria quality objectives currently specified in the Basin Plan (Water Quality Control Plan, Santa Ana River Basin 1995, updated February 2008) to protect the REC-1 (Water Contact Recreation) beneficial use of these waters based on bacteria criteria developed by the U.S. Environmental Protection Agency (USEPA) and published in 1986.

The following provides a succinct summary of the proposed amendments. A detailed staff report that describes the changes and the scientific and technical rationale for them is being prepared. The Basin Plan amendment package will include an evaluation of the potential environmental effects of implementation of the proposed amendments, as required pursuant to the California Environmental Quality (CEQA). The staff report, draft Basin Plan amendment and CEQA analysis will be distributed for public review and comment at least 45 days prior to the public hearing at which the Regional Board will be asked to consider approval of the amendments. It is anticipated that this hearing will be scheduled during the Regional Board's meeting on June 10, 2010.

Comments are solicited on the proposed amendments, as well as on the scope and content of the environmental document that will be prepared for the proposed amendments. Please direct comments to Dave Woelfel of Regional Board staff at (951) 782-7960 or dwoelfel@waterboards.ca.gov. For the sake of the accuracy of the record, we ask that you provide your comments in writing via e-mail or hard copy sent to Dave at the Regional Board's office at 3737 Main Street, Suite 500, Riverside, CA 92501-3348.

Current Water Quality Standards and Proposed Amendments

A. Revisions related to Bacteria Water Quality Objectives

Current water quality objectives (listed in the Water Quality Control Plan (Basin Plan), Santa Ana River Basin, 1995, updated February 2008, page 4-9):

"Bacteria, Coliform

Fecal bacteria are part of the intestinal flora of warm-blooded animals. Their presence in surface waters is an indicator of pollution. Total coliform is measured in terms of the number of coliform organisms per unit volume. Total coliform is measured in terms of the number of coliform organisms per unit volume. Total coliform numbers can include non-fecal bacteria, so additional testing is often done to confirm the presence and numbers of fecal coliform bacteria. Water quality objectives for numbers of total and fecal coliform bacteria. Water quality objectives for numbers of total and fecal coliform vary with the uses of the water, as shown below.

Lakes and Streams

MUN	*Total coliform: less than 100 organisms/100mL*
REC-1	*Fecal coliform: log mean less than 200 organisms/100mL based on five or more samples/30 day period, and not more than 10% of the samples/30 day period, and not more than 10% of the samples exceed 400 organism/100mL for any 30-day period*
REC-2	*Fecal coliform: average less than 2000 organisms/100 mL and not more than 10% of samples exceed 4000 organisms/100 mL for any 30-day period* "

Recommended Amendments:

1. **Delete the current fecal coliform objectives for REC 1 (water contact recreation) and REC 2 (non-contact water recreation).**

2. **Add Table x. "Pathogen Indicator Bacteria Objectives for Fresh Waters":**

a. Adopt the geomean *E. coli* objective shown in Table x[1] for waters designated REC1 or REC1 and REC2. The objective is based on U.S.

EPA's 1986 Ambient Water Quality Criteria for Bacteria.

b. For waters designated only REC2 (after the completion of a Use Attainability Analyses and public participation process), establish an antidegradation bacteria quality objective as part of those processes.

c. Establish criteria for temporary suspension of recreational objectives (see table note 1 and "B. 1.", below)

Table x: Pathogen Indicator Bacteria Objectives for Fresh Waters

Recreational Use Classification[1]	Pathogen Indicator Objective (geometric mean of at least 5 samples in a 30-day period)[2]
REC1-only or REC1 and REC2	<126 E. coli organisms per 100 mL[3]
REC2-only[4]	Determined in accordance with state antidegradation policy[5]

[1] The water quality objectives specified in Table x and Table y do not apply if the recreational uses are temporarily suspended due to unsafe flow conditions in a river or stream (see section xx.xx of the Basin Plan for discussion of suspension criteria and implementation).

[2] The Regional Board may adopt other alternative averaging periods, such as annual or seasonal averages, through the basin planning process.

[3] In the absence of sufficient data to calculate a representative geometric mean for *E. coli*, no single sample shall exceed the values calculated by using the formula shown in Table y. Where there are sufficient data to calculate a representative geometric mean for *E. coli*, the single sample maximum specified in Table y shall not be used to assess compliance with the *E. coli* objective. However, the single sample maximum values may continue to be used to implement public notification programs and/or trigger additional monitoring requirements.

[4] Waterbodies classified REC2 but not classified as REC1. Where a waterbody is classified as both REC1 and REC2 only the more stringent REC1 objectives shall apply.

[5] State Board Resolution No. 68-16; See section rr.rr of the Basin Plan for detailed procedures

[1] Note: letters are used arbitrarily in this summary document on an interim basis to denote table numbers and references to sections of the Basin Plan. The correct references will be added when the draft Basin Plan amendment package is prepared.

3. Add Table y. "Alternative Method for Assessing Probable Compliance with the *E. coli* Objective in Freshwaters Designated REC1 When Insufficient Data are Available to Calculate a Geometric Mean"

Table y: Alternative Method for Assessing Probable Compliance with the *E. coli* Objective for REC1 in Freshwater When Insufficient Data are Available to Calculate a Geometric Mean.

Data Variability[2] *(Log Std. Dev.)*	Maximum Expected Single Sample Value for *E. coli*[1] (assuming true geometric mean is ≤126 organisms/mL)	
	Lower Tolerance[3] *(SCF=0.68)*	Higher Tolerance[4] *(SCF=1.65)*
0.1	147 organisms/mL	184 organisms/mL
0.2	172 organisms/mL	269 organisms/mL
0.3	202 organisms/mL	394 organisms/mL
0.4[5]	236 organisms/mL	576 organisms/mL
0.5	276 organisms/mL	842 organisms/mL
0.6	322 organisms/mL	1,231 organisms/mL
0.7	377 organisms/mL	1,800 organisms/mL
0.8	441 organisms/mL	2,633 organisms/mL
0.9	516 organisms/mL	3,849 organisms/mL
1.0	603 organisms/mL	5,628 organisms/mL
1.1	705 organisms/mL	8,229 organisms/mL
1.2	825 organisms/mL	12,033 organisms/mL
1.3	965 organisms/mL	17,594 organisms/mL
1.4	1,128 organisms/mL	25,726 organisms/mL
1.5	1,319 organisms/mL	37,616 organisms/mL
1.6	1,543 organisms/mL	55,001 organisms/mL
1.7	1,805 organisms/mL	80,421 organisms/mL
1.8	2,110 organisms/mL	117,590 organisms/mL
1.9	2,468 organisms/mL	171,937 organisms/mL

[1] EPA's recommended formula for calculating the maximum expected single sample value (SSM) is:

$$SSM = ECO * 10^{(SCF * LSD)}, \text{ where…}$$

ECO = *E. coli* Objective expressed as geometric mean of a minimum number of samples, and…
SCF = the appropriate Statistical Confidence Factor for the given waterbody, and…

LSD = the Log Standard Deviation of measured *E. coli* concentrations.

[2] Variability is calculated as the standard deviation of the log-transformed *E. coli* data and must be approved by the Regional Board through the normal public notice and comment process. In the absence of adequate representative data to estimate *E. coli* variability, the maximum expected single sample value will be calculated based on the assumption that the LSD = 0.4 as recommended by EPA [40 CFR 131.41 (c) (1) (69 Fed. Reg. 220, p. 67242; Nov. 16, 2004)]. Data acceptability shall generally be determined using the guidelines described in the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List [Sept., 2004].

[3] Generally, lower statistical tolerance is more appropriate for waterbodies where frequent primary contact recreation occurs, or the waterbody serves as a drinking water supply reservoir, or the waterbody is located in a relatively undeveloped area where *E. coli* concentrations are expected to meet the relevant water quality objective.

[4] Generally, higher statistical tolerance is more appropriate for waterbodies where primary contact recreation rarely occurs, or for waterbodies with only intermittent and ephemeral low flows, or for stream channels that have been significantly modified to support flood control requirements, or for waterbodies heavily influenced by wildlife.

[5] Default recommended by U.S. EPA

The single sample maximum values shown in Table y are calculated using U.S. EPA's equation (1986 Ambient Water Quality Criteria for Bacteria). REC-1 designated waters are proposed to be classified as Class A or Class B based on the expected intensity of recreational use and other factors (see "B. 2.", below). Different single sample maximum values are calculated for Class A and Class B waters.

Single sample maximum values are statistical constructs designed to assess probable compliance with the geomean objective for REC1 waters. EPA expects states to use the SSMs to make short-term decisions about beach notification and closure, and as a trigger for further monitoring and investigation. The States have flexibility to determine how to use the SSM in Clean Water Programs, such as impairment assessments and TMDLs. Expected use of the SSM values in Table y is identified in Table x, note #3.

4. Add narrative pathogen objective:

"*Waste discharges shall not cause or contribute to excessive risk of illness from microorganisms pathogenic to human beings."*

In the Basin Plan, water quality objectives are expressed as narratives and/or as numeric objectives. The current Basin Plan does not have a narrative objective for pathogens.

Both the existing and proposed numeric objectives to protect recreational uses of the Region's waters are based on bacterial indicators (fecal coliform, *E. coli*) that indicate the likelihood of the presence of disease-causing organisms (pathogens). USEPA recognizes the limitations of the existing bacteria criteria and is currently engaged in studies that may lead to revision of these criteria. Given progress with analytical techniques, it may be possible to detect the actual pathogenic organisms (e.g., viruses) directly in a timely and practicable manner, such that it no longer is necessary to rely on these bacterial indicators. The proposed narrative pathogen objective anticipates this and would provide the Regional Board an additional tool to assure that water quality and beneficial uses will be protected.

5. Delete MUN bacteria objective

The MUN bacteria objective in the current Basin Plan was developed to protect drinking water sources. Pursuant to US EPA's Enhanced Surface Water Treatment Rule, adequate disinfection and regular monitoring of MUN waters are now required, making the existing MUN objective obsolete and unnecessary.

B. Revisions related to Beneficial Uses

1. Temporary Suspension of Recreational Uses during High Flow Conditions in Fresh Water Streams:

The following language is proposed to be added as a footnote to Table 3-1. BENEFICIAL USES in the Basin Plan:

"*Recreational use designation (REC 1 and REC 2) are temporarily suspended when high flows preclude safe recreation in or near the stream channels. Flow conditions in the Santa Ana watershed are presumptively unsafe if one or more of the following conditions occurs: 1) Stream velocity is greater than 8 feet-per-second regardless of depth, or 2) The product of stream depth (feet) and stream velocity (feet-per-second) is greater than10 ft²/sec*."

Temporary suspension of recreational uses (and applicable bacteria objectives; see Table x, note 1, above) is proposed in recognition of the fact that under certain high flow conditions, induced by storms, dam releases and the like, a severe hazard to public safety is created that temporarily precludes attainment of recreational uses. The Basin Plan amendment will include implementation language applicable to the temporary suspension, including termination of the suspension.

2. Subcategorization of REC1 designated waters to Class A and Class B:

For the purposes of determining appropriate single sample maximum values for REC1 waters (see Table y), inland freshwaters are proposed to be identified as either Class A or Class B. These are proposed to be defined as follows:

> Class A: Waters where frequent primary contact recreation occurs, or the waterbody serves as a drinking water supply reservoir, or the waterbody is located in a relatively undeveloped area where *E. coli* concentrations are expected to meet the relevant water quality objective.
>
> Class B: Waters where primary contact recreation rarely occurs, or waterbodies with only intermittent and ephemeral low flows, or stream channels that have been significantly modified to support flood control requirements, or waterbodies heavily influenced by wildlife.

3. Re-definition of REC1 (Water Contact Recreation)

Current REC-1 definition:" Water Contact Recreation (REC 1*) waters are used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, and use of natural hot springs*."*

Proposed re-definition (changes shown in italics)*: "Primary Contact Recreation (REC* 1)* waters are used for recreational activities involving *deliberate water contact, especially by children,* where ingestion *is likely to occur. Examples of REC 1* may include, but are not limited to: swimming, water-skiing, surfing, whitewater *rafting, float tubing, bathing in natural hot springs,* skin diving, scuba diving *and some forms of wading and fishing. Brief incidental or accidental water contact that is limited primarily to the body extremities (e.g. hands and feet), is not generally deemed Primary Contact Recreation because ingestion is not likely to occur."*

Proposed changes to the definition are based, in part, on consideration of the nature of the recreational use for which the U.S. EPA published bacteria quality criteria in 1986. Specifically, the 1986 criteria are intended to address water contact recreation where the ingestion of water is likely or expected. U. S. EPA defines this type of recreational activity as "primary contact recreation". As noted in the proposed re-definition, incidental or accidental contact limited primarily to the body extremities is not likely to result in such exposure. Further, some forms of wading and fishing are not likely to result in such exposure. Special recognition of the potential for ingestion by children is explicitly provided in the proposed revised definition. The phrase "reasonably possible" in the current definition is subject to wide variation in interpretation, which has the potential to result in inappropriate designation of the surface waters. This phrase would be replaced with "likely".

4. Revision of existing footnote re REC1 and REC2 designations:

Current footnote: “The REC 1 and REC 2 beneficial use designations assigned to surface waterbodies in this Region should not be construed as encouraging recreational activities. In some cases, such as Lake Matthews and certain reaches of the Santa Ana River, access to the waterbodies is prohibited because of potentially hazardous conditions and/or because of the need to protect other uses, such as municipal supply or sensitive wildlife habitat. Where REC 1 or REC 2 is indicated as a beneficial use in Table 3-1, the designations are intended to indicate that the uses exist or that the water quality of the waterbody could support uses.”

Proposed revised footnote (changes from the existing definition are shown in italics): “The REC 1 and REC 2 beneficial use designations assigned to surface waterbodies in this Region should not be construed as encouraging *or authorizing* recreational activities. In some case, such as Lake Mathews and certain reaches of the Santa Ana River and its tributaries, access to the water bodies is prohibited by other agencies because of potentially hazardous conditions and/or because of the need to protect other uses such as municipal water supply or sensitive wildlife habitat. Where REC 1 or REC 2 is identified as a beneficial use in Table 3-1*,* the designations are only intended to *indicate that such* uses *may occur or* that the water quality of the waterbody *may be capable of supporting recreational uses unless a Use Attainability Analysis demonstrates otherwise and the Regional Board amends the Basin Plan accordingly.”*

The proposed revisions are intended to document the Regional Board’s understanding of the existing Basin Plan more accurately. The term “existing use” has special regulatory meaning under federal law and regulation; uses explicitly determined to be “existing” cannot be removed. Recreational uses in the Basin Plan are designated as “present or potential” (or, in some cases, as “intermittent”). Use of the word “exist” in the current footnote suggests incorrectly that the Regional Board has made an affirmative determination that these uses designated are “existing”. Revising the terminology in the footnote merely corrects the currently understood status of recreational beneficial use designations.

5. Re-designation of specific waters based on Use Attainability Analyses

All surface waters in the Santa Ana Region are presumed to have present or potential REC-1 use. This presumption is rebuttable through a Use Attainability Analysis (UAA). UAAs are being completed for specific waters and recommendations will be made to revise the designations for these waters from REC-1 to REC-2 only, or, where neither REC-1 nor REC-2 use is attainable, to RECX. (“RECX” is intended to denote that the Regional Board has made an affirmative determination that neither REC1 nor REC2 is attainable. These re-designations would be reviewed at least once every three years to determine whether changes have occurred such that REC-1 use is attainable and the

designation should be added. Waters considered for re-designation include sections of the following waters:

- Santa Ana-Delhi Channel
- Greenville/Banning Channel
- Temescal Creek
- Cucamonga Channel