



## California Sportfishing Protection Alliance

*"An Advocate for Fisheries, Habitat and Water Quality"*

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2 January 2011

Mr. Ken Landau, Assistant Executive Officer  
Ms. Diana Messina, Supervising WRCE  
Mr. Jim Marshall, Sr. WRCE  
Ms. Gayleen Perreira, WRCE  
Regional Water Quality Control Board  
Central Valley Region  
11020 Sun Center Drive, Suite 200  
Rancho Cordova, CA 95670-6144

VIA: Electronic Submission  
Hardcopy if Requested

RE: Tentative Order Amending Waste Discharge Requirements Order R5-2010-0090 (NPDES Permit No. CA0078590) and Cease and Desist order R5-2010-0091 for City of Auburn Wastewater Treatment Plant, Placer County

Dear Messrs. Landau, Marshall and Mesdames Messina and Perreira:

The California Sportfishing Protection Alliance (CSPA) has reviewed the Tentative Order Amending Waste Discharge Requirements Order R5-2010-0090 (NPDES Permit No. CA0078590) for City of Auburn Wastewater Treatment Plant (Permit) and submits the following comments.

CSPA requests status as a designated party for this proceeding. CSPA is a 501(c)(3) public benefit conservation and research organization established in 1983 for the purpose of conserving, restoring, and enhancing the state's water quality and fishery resources and their aquatic ecosystems and associated riparian habitats. CSPA has actively promoted the protection of water quality and fisheries throughout California before state and federal agencies, the State Legislature and Congress and regularly participates in administrative and judicial proceedings on behalf of its members to protect, enhance, and restore California's degraded water quality and fisheries. CSPA members reside, boat, fish and recreate in and along waterways throughout the Central Valley, including Placer County.

On 22 September 2010, the Central Valley Water Board adopted Waste Discharge Requirements Order R5-2010-0090 and Cease and Desist Order R5-2010-0091 for the City of Auburn Wastewater Treatment Plant. The Regional now proposes to modify the NPDES permit

based on an Aluminum Water Effects Ratio (WER) for the establishment of a site specific criterion.

US EPA's Interim Guidance on Determination and Use of Water-Effect Ratios for Metals (EPA-823-8-94-001, February 1994) states in part that:

“There are two purposes for this memorandum.

The first is to transmit the Interim Guidance on the Determination and Use of Water-Effect Ratios for Metals. EPA committed to developing this guidance to support implementation of federal standards for those States included in the National Toxics Rule.

The second is to provide policy guidance on whether a State's application of a water-effect ratio is a site-specific criterion adjustment subject to EPA review and approval/disapproval.

A central question concerning WERs is whether their use by a State results in a site-specific criterion subject to EPA review and approval under Section 303(c) of the Clean Water Act?

Derivation of a water-effect ratio by a State is a site-specific criterion adjustment subject to EPA review and approval/disapproval under Section 303(c). There are two options by which this review can be accomplished.

Option 1: A State may derive and submit each individual water-effect ratio determination to EPA for review and approval. This would be accomplished through the normal review and revision process used by a State.

Option 2: A State can amend its water quality standards to provide a formal procedure which includes derivation of water-effect ratios, appropriate definition of sites, and enforceable monitoring provisions to assure that designated uses are protected. Both this procedure and the resulting criteria would be subject to full public participation requirements. Public review of a site-specific criterion could be accomplished in conjunction with the public review required for permit issuance. EPA would review and approve/disapprove this protocol as a revised standard once. For public information, we recommend that once a year the State publish a list of site-specific criteria.

An exception to this policy applies to the waters of the jurisdictions included in the National Toxics Rule. The EPA review is not required for the jurisdictions included in

the National Toxics Rule where EPA established the procedure for the State for application to the criteria promulgated. The National Toxics Rule was a formal rulemaking process with notice and comment by which EPA pre-authorized the use of a correctly applied water-effect ratio. That same process has not yet taken place in States not included in the National Toxics Rule.

As described in Section 131.36(b)(iii) of the water quality standards regulation (the official regulatory reference to the National Toxics Rule), the water-effect ratio is a site-specific calculation. As indicated on page 60866 of the preamble to the National Toxics Rule, the rule was constructed as a rebuttable presumption. The water-effect ratio is assigned a value of 1.0 until a different water-effect ratio is derived from suitable tests representative of conditions in the affected waterbody. It is the responsibility of the State to determine whether to rebut the assumed value of 1.0 in the National Toxics Rule and apply another value of the water-effect ratio in order to establish a site-specific criterion. The site-specific criterion is then used to develop appropriate NPDES permit limits. The rule thus provides a State with the flexibility to derive an appropriate site-specific criterion for specific waterbodies.”

California’s *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (SIP) allows for WERs in Section 1.2 (Data Requirements and Adjustments). SIP Section 1.2 states that:

“The RWQCB may adjust the criteria/objective for metals with \*discharger-specific Water Effect Ratios established in accordance with U.S. EPA guidance – Interim Guidance on Determination and Use of Water Effect Ratios for Metals (EPA-823-B-94-001) or Streamlined Water-Effect Ratio Procedure for Discharges of Copper (EPA-822-R-01-005), if appropriate.”

On 24 March 2000 the Fish and Wildlife Service National Marine Fisheries Service issued a final biological opinion on the effects of the final promulgation of the CTR on listed species and critical habitats in California in accordance with section 7 of the Endangered Species Act of 1973. The biological opinion is binding and required certain actions by EPA. Section V, B of the opinion required with regard to water effect ratios (WERs) that:

“EPA, in cooperation with the Services, will issue a clarification to the *Interim Guidance on the Determination and Use of Water-Effect Ratios for Metals* (EPA 1994) concerning the use of calcium-to-magnesium ratios in laboratory water, which can result in inaccurate and under-protective criteria values for federally listed species considered in the Services’ opinion. EPA, in cooperation with the Services, will also issue a clarification to the *Interim Guidance* addressing the proper acclimation of test organisms prior to testing in applying water-effect ratios (WERs).”

The WER requirement is based on the following discussion contained in the 24 March 2000 biological opinion:

*“Water Effect Ratios*

Except in waters that are extremely effluent-dominated, WERs are  $> 1$  and result in higher numeric criteria. Note that, in the examples above, use of a site-specific WER for copper raised the criterion concentration allowed at the site from 4.1 ug/L to 6.2 ug/L, an increase of 50 percent. A WER may be more important than site water hardness or metal-specific conversion factors and translators in determining a criterion and hence the metal loading allowed (see hardness and adding discussions below).

EPA has published guidelines for determining a site-specific WER, which outline procedures for water sampling, toxicity testing, acclimating test organisms, etc. (USEPA 1994). When site water toxicity is lower than laboratory water toxicity, criteria may be raised because: 1) differences in calcium to magnesium ratios in hardness between laboratory water and site water can significantly alter the WER; 2) toxicity testing for WER development is not required across the same range of test organisms used in criteria development; and 3) the inherent variabilities associated with living organisms used in toxicity testing can be magnified when used in a ratio.

EPA guidelines for WER determinations (USEPA 1994) instruct users to reconstitute laboratory waters according to protocols that result in a calcium-to-magnesium ratio of  $\sim 0.7$  across the range of hardness values (USEPA 1989, 1991). This proportion ( $\sim 0.7$ ) of calcium to magnesium is far less than the ratio found in most natural waters (Welsh *et al.* 1997). The Services agree with Welsh *et al.* (1997) that imbalances in Ca-to-Mg ratios between site waters and dilution waters may result in WERs which are overestimated because calcium ions are more protective of metals toxicity than are magnesium ions. The EPA has noted this problem with determining WERs but limits the suggested correction of matching the laboratory Ca-to-Mg ratio and the site ratio to a single sentence at the end of the proposed rule. Thus, the significance and correction of this problem is not adequately addressed.

EPA metal criteria are based on over 900 records of laboratory toxicity tests (USEPA 1992) using hundreds of thousands of individual test organisms, including dozens of species across many genera, trophic levels, and sensitivities to provide protection to an estimated 95 percent of the genera most of the time (USEPA 1985f). The use of a ratio based WER determined with 2 or 3 test species limits the reliability of the resultant site-specific criteria and calls into question the level of protection provided for families or genera not represented in the WER testing

The inherent variability of toxicity testing can also have a significant effect on the final WER determination, especially because it is used in a ratio. As discussed above, the EPA has developed its criteria based on a relatively large database. However, even with such a large database variability in test results can still cause difficulty in determining a criteria value. For example, Cd data were so variable that EPA abandoned the acute to chronic ratio method of determining the chronic criterion (USEPA 1985b). Instead, EPA applied the acute method to derive a chronic value. The EPA criteria document for Cd (USEPA 1985b) notes a chronic value for chinook salmon of 1.563 ug/L with a range of 1.3 to 1.88 ug/L. This is a variability of 17 percent in either direction, which is rather good (inter and intra laboratory variability higher than 17 percent is not unusual). Therefore, if this data is used in a ratio such as a WER, the variability alone could result in a 34 percent difference in the values used. A potential WER using such data could range from 0.7 to 1.4. Thus, a site-specific criteria could increase by 40 percent due to natural variability in the toxicity testing alone. In development of a site-specific WER, fewer tests are conducted and with fewer species, increasing the likelihood that natural variation in toxicity test results could affect the outcome. Care should also be taken to make sure that test results between lab and site water are significantly different. If 95 percent confidence intervals for the tests overlap then they are likely not significantly different and should not be used to determine a WER. Thus, toxicity tests should be conducted and carefully evaluated to minimize experimental variance when collecting data to calculate WERs.

Zooplankton such as cladocerans (*Daphnia sp.*) are commonly used in bioassays to determine national and site-specific criteria or develop WERs and translation factors. As sensitive as cladocerans seem to be it is possible that the life stage of cladocerans being used in most bioassays are not the most sensitive. Shurin and Dodson (1997) found that sexual reproduction in cladocerans is more sensitive to toxicants than the asexual reproductive stage and that most bioassays utilize daphnia during the asexual phase because they are well fed and cultured under low stress situations. Under stress (low temperature, drought, low food supply) cladocerans and other zooplankton use sexual reproduction to produce resting eggs that can remain dormant for months to years until more favorable conditions return. The loss or a decrease in the production of resting eggs can have a significant long-term effect on the populations of these species. Snell and Carmona (1995) found that for a rotifer zooplankton, sexual reproduction was more strongly affected by several toxicants, including cadmium, than asexual reproduction. The authors concluded that the “level of toxicants presently allowable in surface waters . . . may expose zooplankton populations to greater ecological risks than is currently believed.” Other metals may also be more toxic to the sexual stage of zooplankton adding additional doubt to the protectiveness of some criteria and WERs.

Procedures for acclimation of test organisms prior to toxicity testing may also be inadequate to assure meaningful comparisons between site and laboratory waters. For the reasons stated above, the Services believe that the EPA procedures for determining WERs for metals may result in criteria that are not protective of threatened or endangered aquatic species. Thus, WERs of three (3) or less are unacceptable because they are likely within the variance of the toxicity tests. WERs over three must be carefully developed and evaluated to ensure that listed species will be protected.”

The proposed aluminum limitation is established at 200 ug/l as an annual average. According to US EPA’s ambient criteria for the protection of aquatic life acute toxicity can occur based on a one hour average concentration. The one-hour average water quality criteria for aluminum is 750 ug/l. The maximum effluent concentration (MEC) from the wastewater treatment plant for aluminum was 720 ug/L. Using US EPA’s statistical procedures from the Technical Support Document for Water Quality Based Toxics Control (TSD) the projected maximum effluent concentration would exceed 750 ug/l. An annual average limitation for aluminum of 200 ug/l would statistically allow for one-hour peak concentrations above the acute criterion and would, according to US EPA, cause acute toxicity.

The proposed Permit amendment, page 5, states that: “Although analysis of the effluent data shows that the MEC of 720 ug/L and the maximum observed annual average effluent concentration of 232 ug/L is greater than the applicable WQBELs Secondary MCL, the Facility is able to immediately comply with the final aluminum effluent limitation.” An effluent aluminum concentration of 232 ug/l cannot comply with a limit of 200 ug/l. The Regional Board’s conclusion makes no sense, except that the conclusion must be made in order to avoid the issuance of an accompanying enforcement order. It is frankly amazing that technical staff is apparently willing to state that 232 is less than 200 in order to avoid a proper enforcement order.

In summary:

According to US EPA’s interpretation of the Clean Water Act, the derivation of WERs establishes a site-specific water quality criterion subject to EPA review and approval. Site-specific objectives must comply with federal regulations 40 CFR 122.44 (d) and California Water Code Section 13241.

The SIP established procedures for establishing WERs in California. However, aluminum is not a priority pollutant and is not subject to the terms, requirements and, in this case, exemptions of the SIP.

The Fish and Wildlife Service and National Marine Fisheries Service have been highly critical of US EPA’s WER procedures as not being protective of aquatic life. The WER procedures have

been described as inaccurate and under-protective criteria values for federally listed species considered in the Services' opinion.

Aluminum is not a priority pollutant and is not applicable for derivation of a WER under the SIP. The proposed WER for aluminum at the City of Auburn does not comply with 40 CFR 122.44 and California Water Code Section 13241. According to the Water Quality Standards and aquatic life experts at the Fish and Wildlife Service and National Marine Fisheries Service the US EPA's WER procedures used are not protective of the aquatic life beneficial uses of Auburn Ravine. The proposed permit amendment does not specify the procedures used to develop the WER and therefore the Fact Sheet does not contain the basis for the limitation as required by 40 CFR 124.8. An annual average limitation for aluminum of 200 ug/l would statistically allow for one-hour peak concentrations above the acute criterion and would, according to US EPA, cause acute toxicity.

Thank you for considering these comments. If you have questions or require clarification, please don't hesitate to contact us.

Sincerely,

A handwritten signature in black ink, appearing to read "Bill Jennings". The signature is written in a cursive, flowing style.

Bill Jennings, Executive Director  
California Sportfishing Protection Alliance