

Central Valley Regional Water Quality Control Board
11/12 June 2009 Board Meeting

Response to Comments for the City of Portola
Portola Wastewater Treatment Plant
Tentative Waste Discharge Requirements

The following are Regional Water Quality Control Board, Central Valley Region (Regional Water Board) staff responses to comments submitted by interested parties regarding the tentative Waste Discharge Requirements (NPDES Permit renewal), and rescission of Cease and Desist Order (CDO) 93-068, for the City of Portola Wastewater Treatment Plant (WWTP). Public comments regarding the proposed Orders were required to be submitted to the Regional Water Board by 5:00 p.m. on 13 March 2009 to receive full consideration.

The Regional Water Board received comments regarding the proposed NPDES Permit renewal by the due date from the City of Portola (Discharger), the California Sportfishing Protection Alliance (CSPA), and Central Valley Clean Water Association (CVWCA). The submitted comments were accepted into the record, and are summarized below, followed by Regional Water Board staff responses.

CITY OF PORTOLA COMMENTS

Rescission of Cease and Desist Order. The Discharger had no comments on the tentative Order

General Discharger Comments – The Discharger made minor, non-substantive working changes in their comment letter on the NPDES permit. Changes have been accepted and incorporated into the NPDES permit.

DISCHARGER COMMENT- Item II K., page 3, Compliance Schedules and Interim Requirements. The Discharger is concerned that they may not be able to immediately meet effluent limitations for ammonia and request a time schedule for compliance with ammonia effluent limitations. They indicate that the Regional Water Board may include schedules of compliance and that such a compliance schedule would “enable the City to evaluate and enact appropriate measures to ensure the ability to meet this effluent limitation.”

RESPONSE: The maximum daily effluent limitation for ammonia has been set at 45 mg/L, and the average monthly effluent limitation set at 23 mg/L. As the Discharger has only once exceeded the average monthly effluent limitation value, and that value was 24 mg/L, it appears to Regional Water Board staff that the Discharger should have little trouble meeting the effluent limitations, and Regional Water Board staff sees no reason to establish a compliance schedule. Note also that a time schedule would require interim effluent limitations, which Regional Water Board staff does not believe are necessary.

DISCHARGER COMMENT- Item IV.A.1., page 8, Final Effluent Limitations. If Regional Water Board staff does not allow the Discharger a time schedule, The Discharger requests recalculation of effluent limitations for ammonia using a pH of 8.0, instead of 8.5, the value used by Regional Water Board staff. The Discharger reasons that the receiving water pH has never been measured above 8.0, and that this pH is therefore more representative of conditions to be found in the receiving water/effluent mix.

RESPONSE: The Discharger operates a pond system, and such systems are prone to wide effluent pH swings. The discharge has just been the subject of an ACL due to discharges of high pH effluent in 2006. Therefore, although the pH of the receiving water has not exceeded 8.0, the combined effluent and receiving water could easily exceed that value. Regional Water Board staff feels that the use of the pH value of 8.5 is necessary for adequate protection of the River.

DISCHARGER COMMENT- Item VI.C.2.d., page 21, Groundwater Monitoring. The Discharger states that groundwater monitoring is unnecessary and takes away from resources that could be better spent addressing more pertinent issues. The Discharge States, “The Tentative Waste discharge Requirements and NPDES Permit require extensive monitoring of wastewater influent, effluent, upstream receiving water and downstream receiving water. It also requires a significant number of studies including Whole Effluent Toxicity, Best Practical [sic] Treatment and Control, Mixing Zone and Dilution Study, Septage Receiving, Salinity Reduction, Reclamation, and Reduction of River Discharge, and development of a Pollutant Minimization Program.”

RESPONSE: None of the studies described by the Discharger that are included in the Tentative Order address the potential for groundwater contamination from the Discharger’s pond system. Regional Water Board staff believes that the monitoring wells are necessary to detect this potential contamination. The ponds do not have an engineered liner and significant percolation from the ponds may be taking place.

DISCHARGER COMMENT – Item VI.C.2.e., page 22, Diffuser Installation and Mixing Zone/Dilution Study. The Discharger States that there may be significant institutional barriers to constructing an effluent diffuser because the area of diffuser piping placement is in the FEMA 100 year floodway and within a designated Wild and Scenic Rivers area. The Discharger further states, “...there are technical challenges, in that the constructed wetlands through which the effluent flows reduce the available head between the discharge and the river. In order to install an effective diffusing structure, either the effluent will need to be diverted upstream from the wetlands, sacrificing the beneficial effects of the wetlands on water quality, (and negatively impacting the wetlands), or a structure will need to be constructed between the wetlands and the river discharge point, collecting effluent as well as wetlands contributions. One problem with this scenario is the very limited head available at that point. Either the diffusing structure would be low-head, passive type of limited effectiveness, or a pump would be required, which may not be feasible given the Wild and Scenic and Floodway designations.”

RESPONSE: In consideration of the institutional barriers regarding construction, the Discharger has been allotted over three years from Permit adoption to finish construction of the diffuser.

DISCHARGER COMMENT – General, Monitoring and Reporting Program. The Discharger States, “The City of Portola experiences freezing temperatures that inhibit the collection of water quality samples at some times at some locations. In particular, frozen surfaces of the river and surrounding river bank inhibit upstream and downstream receiving water location sampling. In these instances, with the varying river depths and widths that occur during storm events, at some times there is no access to a sampling point deemed safe by personnel. This condition also occurs in some of the treatment ponds under some limited conditions. The Discharger requests that in the infrequent circumstances when such freezing occurs, that they be relieved from such monitoring, and permitted to note on sample forms “Frozen conditions, not sample taken’, without penalty. This condition is only relevant at times when both the system is discharging and the river is frozen. It is not a typical condition, but it does occur, and poses a risk to the safety of the monitoring personnel.”

RESPONSE: Regional Water Board staff concurs that there may be certain occasions when obtaining samples is unduly dangerous to Portola City staff, and has included a statement similar to that requested in the Order’s monitoring and reporting program. Regional Water Board staff notes that this condition has not occurred in the last five years, and is expected to be infrequent.

CALIFORNIA SPORTFISHING PROTECTION ALLIANCE COMMENTS (CSPA)

CSPA requested designated party status for the board hearing on this matter. The commenter will be granted designated party status for the hearing.

CSPA COMMENT NO. 1. The proposed Permit contains an effluent Limitation for percent removal of BOD contrary to Federal Regulation 40 CFR 133.103 (Secondary Treatment Standards) and 40 CFR 122.44(I)(1) (Antibacksliding)

CSPA states, “The facility is not eligible for relaxed percent removal limitations as the BOD and SS effluent concentrations consistently achievable through proper operation and maintenance of the treatment works do not exceed the minimum level of the effluent quality set forth in 133.102(a) and 133.102(b). ‘This permit requires that the Discharger meet effluent limits of 30 mg/L average monthly effluent concentration for BOD and TSS as this has historically been the capability of the discharger.’ ” (Page F-13)

RESPONSE: Regional Water Board Staff has modified the Tentative Order to require 85 percent removal of BOD and TSS. Regional Water Board staff has also established a reopener to allow the Discharger to demonstrate that they may not be able to comply with effluent limitation of 30 mg/L for both BOD and TSS year-round despite proper operation and maintenance of the Facility, and thus be eligible for “treatment

equivalent to secondary treatment,” including reduced effluent BOD and TSS percentage removals.

CSPA COMMENT NO. 2.-The proposed Permit contains an allowance for a mixing zone that does not comply with the requirements of the *Policy for Implementation of Toxics Standards for Inland surface Waters, Enclosed Bays, and Estuaries of California (SIP) or the Basin Plan.*

RESPONSE: The mixing zone and dilution credits used in the proposed Order are consistent with the Basin Plan and the SIP. The Basin Plan and the SIP allow the Regional Board to authorize a mixing zone and dilution credit. Where there is incomplete mixing, the Regional Board may authorize a mixing zone. The SIP states “Dilution credits and mixing zones for incompletely-mixed discharges shall be considered by the RWQCB only after the discharger has completed an independent mixing zone study and demonstrated to the satisfaction of the RWQCB that a dilution credit is appropriate. Mixing zone studies may include, but are not limited to, tracer studies, dye studies, modeling studies, and monitoring upstream and downstream of the discharge that characterize the extent of actual dilution. These studies may be conducted in accordance with the procedures outlined in Appendix 5.” The study conducted to analyze the mixing zone for this order was a modeling study in accordance with the SIP.

In the case of this Order, the Discharger has completed a modeling study, and provided information that demonstrates to the satisfaction of Regional Water Board staff that dilution credits are appropriate. The ratio of the receiving water (Middle Fork of the Feather River) flow to effluent is required in the permit to be a minimum of 50:1 at all times. This ultimate River dilution results in a mixing zone with a dilution of 20:1.

Both the SIP and the Basin Plan allow mixing zones. The intent of the mixing zones was to allow areas within the receiving water body where water quality objectives are not met, at least in a relatively small area. As the SIP states “The applicable priority pollutant criteria and objectives are to be met throughout a water body except within any mixing zone granted by a RWQCB.” The SIP states that the mixing zone must be calculated using the 1Q10 flow for acute toxicity, and the 7Q10 flow for chronic toxicity. Because discharge to the Middle Fork of the Feather River is prohibited below 40 cfs in the River, this flow has been used for both the 1Q10 and 7Q10 flows.

CSPA’s comments indicate that the “edge of the mixing zone” has not been defined, but this is not the case. As noted by CSPA, the Order states “Use of this mixing model by the Discharger’s engineer allows the assumption of a dilution of at least 40 percent of the ultimate dilution in the River at the edge of the acute toxicity mixing zone, approximately 100 feet downstream of the discharge, with a width of approximately 30 feet.” This information defines the edge of the mixing zone, but additional language has been added to the Order to clarify the dimensions of the mixing zone.

In addition, the Order calls for the installation of a diffuser, which should significantly decrease the size of the mixing zone. The Order also calls for a dye study after installation of the diffuser, with a permit reopener if the mixing zone is not at least as conservative as the current modeling indicates.

CSPA COMMENT NO. 3. The proposed Permit does not contain Effluent Limitations for chronic toxicity and therefore does not comply with Federal regulations, at 40 CFR 122.44(d)(1)(i) and the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP)*.

CSPA contends that a chronic toxicity limitation is required and the proposed permit does not “implement the SIP.”

RESPONSE: Regional Water Board staff disagrees. As stated in the SIP a chronic toxicity effluent limitation is required if the discharge causes, has a reasonable potential to cause, or contributes to chronic toxicity in receiving waters. The Discharger has conducted whole effluent toxicity testing (WET) to demonstrate compliance with the Basin Plan’s narrative toxicity objective. No chronic toxicity or reasonable potential has been documented in the chronic data for the Facility. An effluent limitation (either numeric or narrative) for chronic toxicity is only required if there is reasonable potential. (40 CFR § 122.44(d)(v); SIP, § 4.) The Discharger is required to conduct chronic toxicity testing twice during the life of the new Order to demonstrate continued compliance with the Basin Plan’s narrative toxicity objective. The Order contains a reopener should chronic toxicity occur.

CSPA COMMENT NO. 4 - The proposed Permit fails to contain mass-based effluent limits for ammonia, copper and electrical conductivity as required by Federal Regulations 40 CFR 122.45(b).

RESPONSE: 40 CFR § 122.25(f) states the following:

“Mass limitations. (1) All pollutants limited in permits shall have limitations, standards or prohibitions expressed in terms of mass except:

- (i) For pH, temperature, radiation, or other pollutants which cannot appropriately be expressed by mass;*
- (ii) (ii) When applicable standards and limitations are expressed in terms of other units of measurement; or*
- (iii) If in establishing permit limitations on a case-by-case basis under §125.3, limitations expressed in terms of mass are infeasible because the mass of the pollutant discharged cannot be related to a measure of operation (for example, discharges of TSS from certain mining operations), and permit conditions ensure that dilution will not be used as a substitute for treatment.*

(2) Pollutants limited in terms of mass additionally may be limited in terms of other units of measurement, and the permit shall require the permittee to comply with both limitations.”

40 CFR § 122.25(f)(1)(ii) states that mass limitations are not required when applicable standards are expressed in terms of other units of measurement. The numerical effluent limitations for ammonia, copper, and electrical conductivity in the proposed NPDES permit are based on water quality standards and objectives. These criteria are expressed in terms of concentration, or conductance. Pursuant to 40 CFR 122.25(f)(1)(ii), expressing the effluent limitations in terms of concentration is in accordance with Federal Regulations. Therefore, mass based effluent limitations are not required or necessary.

CSPA COMMENT NO. 5. The proposed Permit does not contain an Effluent Limitation for oil and grease in violation of Federal Regulations 40 CFR 122.44 and California Water Code Section 13377.

RESPONSE: The previous permit, Order R5-2003-0110, does not contain an effluent limitation for oil and grease. The discharge does not have a reasonable potential to cause or contribute to an instream excursion above the Basin Plan’s narrative objectives for oil and grease and floating material. Oil and grease is rarely a problem at publicly owned treatment works (POTWs). The proposed Order is adequately protective.

CSPA COMMENT NO. 6 - The proposed Permit allows for degradation of groundwater quality absent any Antidegradation Policy (Resolution 68-16) analysis or discussion and contrary to California Water Code (CWC) Sections 13146 and 13247. CSPA contends that issuance, re-issuance, and modifications of NPDES permits triggers use of the antidegradation policy.

RESPONSE: State Water Resources Control Board (State Board) Resolution No. 68-16 (the Antidegradation Policy) requires that the Regional Water Board, in regulating the discharge of waste, must maintain the high quality of waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the state, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Water Board’s policies (e.g., quality that exceeds water quality objectives). Resolution No. 68-16 also requires that waste discharged to high quality waters be required to meet waste discharge requirements that will result in the best practicable treatment or control of the discharge. Note that Resolution 68-16 requires that WDRs “will result in” BPTC. Resolution 68-16 does not require immediate compliance in all cases. Rather, the phrasing “will result in” allows WDRs to impose a schedule that requires the discharger to implement BPTC upon completion of a schedule, and after gathering of groundwater data. Section 13263 also allows the board to provide a time schedule to comply with applicable requirements. (Wat. Code § 13263, subd. (c).) The WDRs

satisfy BPTC by providing requirements to implement treatment or control technologies that the Discharger demonstrates are BPTC.

Resolution 68-16 prohibits degradation of groundwater quality as it existed in 1968, or at any time thereafter that groundwater quality was better than in 1968, other than degradation that was previously authorized. An antidegradation analysis is required for an increased volume or concentration of waste. (See, State Water Board's guidelines for implementing the Antidegradation Policy for NPDES permitting, Administrative Procedures Update (APU) 90-004.) This Facility is not discharging any waste in excess of the previous Order, however, and a complete antidegradation analysis is not required. Because there is no current information on the quality of groundwater beneath and in the vicinity of the ponds, it is necessary to perform a BPTC analysis of the treatment process to assure the current permit limits are adequately protecting groundwater. An updated BPTC analysis will allow the Regional Water Board to evaluate whether current treatment continues to be appropriate.

The facility has been in operation for over 50 years. Degradation caused by prior activities at the facility may also require corrective action.

However, limited degradation of high-quality groundwater by some of the typical waste constituents released with discharge from a municipal wastewater treatment plant (after effective source control, treatment, and control) may be consistent with maximum benefit to the people of California at appropriate sites. When allowed, the degree of degradation permitted depends upon many factors (i.e., background water quality, the waste constituent, the beneficial uses and water quality objectives, management practices, source control measures, waste constituent treatability). The Regional Water Board cannot fully evaluate actual impact on groundwater until completion of the groundwater monitoring study required in the Order

This Order does not allow an increased volume of waste or an increase in wastewater flow to groundwater compared to the discharges allowed in Order R5-2004-0050. The concentration of wastes will not increase. This Order therefore does not allow any increased degradation of groundwater.

This Order limits the wastewater discharge to the same value as the previous wastewater discharge, and imposes new effluent limitations for ammonia, copper, and electrical conductivity. This Order contains tasks for assuring that BPTC and the highest water quality consistent with the maximum benefit to the people of the State will be achieved. Upon completion of the scheduled tasks, this Order will therefore prohibit the Discharger from causing or contributing to an exceedence of groundwater objectives. Completion of these BPTC tasks, and implementation of the approved strategies developed from that work, will ensure that BPTC and the highest water quality consistent with the maximum benefit to the people of the State will be achieved.

The Discharger cannot fully evaluate actual impacts on groundwater until completion of groundwater studies. The facility provides wastewater treatment for 2,300 residents and many businesses. Providing continued wastewater treatment is to the maximum benefit of the people of the State. Prohibiting the land discharges pending completion of the BPTC analysis and any necessary upgrades would remove the collection and treatment capacity for all indirect dischargers into the facility, which would create far worse water quality and human health risks than allowing the continued discharges.

This Order establishes requirements to ensure the discharge will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. This Order requires a salinity source reduction, and requires the sampling of groundwater monitoring wells to determine if the discharge of waste further impacts the underlying groundwater quality. Based on the results of the scheduled tasks, this Order may be reopened to reconsider effluent limitations and other requirements to comply with Resolution 68-16. Accordingly, the discharge is consistent with the antidegradation provisions of Resolution 68-16.

CSPA COMMENT NO. 7 - The proposed Permit contains an Effluent Limitation for electrical conductivity (EC) that will cause and contribute to exceedance of the Basin Plan water quality objective contrary to the California Water Code and Federal Regulations.

RESPONSE: The Basin Plan includes a salinity objective of 150 umhos/cm at a 90th percentile for well-mixed waters of the Middle Fork of the Feather River at 25 degrees Celsius. Historical data in the Board's files indicates this objective was to be applied as a 10 year rolling average (Basin Plan at Table III-3 p. III-7.00; Tentative Order at p. F-28). Discharge of effluent to the Middle Fork of the Feather River is restricted to a maximum of 2 percent of the River's flow and the effluent discharge could therefore (at the maximum measured EC concentration of 684 umhos/cm) raise the EC in the River approximately 10 umhos/cm. At this time, since we do not know the 90th percentile EC value for well mixed waters of the Middle Fork of the Feather River as a ten year rolling average, we cannot know if this increase will cause an exceedance of the water quality objective. Absent such data, a conclusion that the discharge of Portola's effluent to the Middle Fork of the Feather River will cause or contribute to an exceedance of the water quality objective is speculative. An effluent limitation of 684 umhos/cm has been set until adequate potable water quality has been obtained (10 years of data) to set a BPTC effluent limitation of 500 umhos/cm over the influent water in the next permit cycle and to determine if there is assimilative capacity in the Middle Fork of the Feather River for electrical conductivity. The Fact Sheet has been clarified in response to this comment.

Relative to the Linda County Water District Order (R5-2006-0096) and the Yuba City Order (R5-2007-0134), whether all of the assimilative capacity of the Feather River actually has been used in the Middle Fork of the Feather River at Portola is subject to analysis of actual data of the Middle Fork of the Feather at Portola and points downstream. Adequate data at Portola has yet to be gathered. In addition, the Discharge points for the Linda County Water District and Yuba City are approximately 100 miles downstream of Portola.

CSPA COMMENT NO. 8. The proposed Permit establishes Effluent Limitations for metals based on the hardness of the effluent as opposed to the ambient upstream

receiving water hardness as required by Federal Regulations, the California Toxics Rule (CTR, 40 CFR 131.38(c)(4)) – CSPA contends that the “Regional Board fails to comply with the regulatory requirement to use the ambient instream hardness for limiting hardness dependant metals under the CTR. Use of the effluent or the effluent receiving water mix simply does not meet the definition of the actual ambient hardness of the receiving stream.”

RESPONSE: Regional Water Board staff disagrees. The proposed Order has established the criteria for hardness-dependent metals based on the reasonable worst-case estimated ambient hardness as required by the SIP, the CTR and Order No. WQO 2008-0008 (City of Davis). Effluent limitations for the discharge must be set to protect the beneficial uses of the receiving water for all discharge conditions. In the absence of the option of including condition-dependent, “floating” effluent limitations that are reflective of actual conditions at the time of discharge, effluent limitations must be set using a reasonable worst-case condition to protect beneficial uses for all discharge conditions. The SIP does not address how to determine hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states that the criteria shall be properly adjusted for hardness using the hardness of the receiving water. The CTR requires that, for waters with a hardness of 400 mg/L (as CaCO₃), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones. The CTR does not define whether the term “ambient,” as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. The Regional Water Board thus has considerable discretion in determining ambient hardness. (Order WQ 2008-0008 (City of Davis), p.10.) The City of Davis order allows the use of “downstream receiving water mixed hardness data” where reliable, representative data are available. (Id., p. 11.)

Recent studies¹ indicate that using the receiving water lowest hardness for establishing water quality criteria is not the most protective for the receiving water (e.g. when the effluent hardness is less than the receiving water hardness). The studies evaluated the relationships between hardness and the CTR metals criterion that is calculated using the CTR metals equation. The Regional Water Board has evaluated these studies and concurs that for some parameters the ambient hardness can be estimated using the lowest hardness value of the effluent, while for some parameters, the use an intermediate value of all hardness values best estimates the worst case ambient conditions. This approach was used to establish water quality-based effluent limitations for hardness-dependent metals in the proposed Order and is protective of the beneficial uses.

Because of the non-linearity of the metals Criterion equation, the relationship can be either concave downward or concave upward as a function of hardness depending on

¹ “Developing Protective Hardness-Based Metal Effluent Limitations”, Robert W. Emerick, PhD., P.E. and John E. Pedri, P.E.

the criterion-specific constants. For those contaminants where the regulatory criteria exhibit a concave downward relationship as a function of hardness (e.g., acute and chronic copper, chromium III, nickel, and zinc, and chronic cadmium) use of the lowest recorded effluent hardness for establishment of water quality objectives is fully protective of all beneficial uses regardless of whether the effluent or receiving water hardness is higher. The lowest effluent hardness value of 52 mg/L was used to establish water quality-based effluent limitations for acute (106 µg/L) and chronic copper (53 µg/L).

CENTRAL VALLEY CLEAN WATER ASSOCIATION (CVCWA) COMMENT

CVCWA requests that the final effluent limitation of 684 umhos/cm be changed from a monthly effluent limitation to and annual average limitation. CVCWA further states, “The revision requested would make the Tentative Order consistent with the Regional Water Board’s current permitting practice of specifying EC limits as annual averages. (See e.g., Order Nos. R5-2009-0010, R5-2009-0007, R5-2008-0177.) The Regional Water Board’s salinity guidance provides that discharge permits should treat salinity consistently. (*Management Guidance for Salinity in Waste Discharge Requirements*, from P. Creedon, et. al to Program Managers (April 26, 2007) at p. 1.) Moreover, the salinity guidance encourages the use of “a long-term average, such as an annual average” for numeric EC limits based on performance. (*Id.* at p. 5.) The EC limit in the Tentative Order is performance-based.

RESPONSE: Regional Water Board staff agrees with CVCWA’s- analysis and has made the proposed change to the Tentative Order