

Central Valley Regional Water Quality Control Board
23/24 October 2008 Board Meeting

Response to Comments
for the
United States Department of the Air Force, Air Force Real Property Agency
Former McClellan Air Force Base, Groundwater Extraction and Treatment System
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 (National Pollutant Discharge Elimination System or NPDES Permit renewal) for the United States Department of the Air Force, Air Force Real Property Agency, Former McClellan Air Force Base, Groundwater Extraction and Treatment System. Public comments regarding the proposed Order were required to be submitted to the Regional Water Board by 5:00 p.m. on 22 September 2008 in order to receive full consideration.

The Regional Water Board received comments regarding the proposed NPDES Permit renewal by the due date from the United States Department of the Air Force, Air Force Real Property Agency (Discharger) and the California Sportfishing Protection Alliance (CSPA). The submitted comments were accepted into the record, and are summarized below, followed by Regional Water Board staff responses.

**United States Department of the Air Force, Air Force Real Property Agency
(Discharger) COMMENTS**

Discharger Comment No. 1. Treatment System.

The Groundwater Extraction and Treatment System (GWTS) air stripper effluent has been sampled at least monthly since April 2001. The only constituents of concern (COCs) detected in that period have been two detections of trichloroethylene (TCE), each at concentrations less than the current allowable effluent limit of 1 µg/L and the proposed new limit of 0.50 µg/L (0.40 µg/L and 0.080 µg/L during August 2001 and September 2007, respectively). During that time, TCE influent concentrations have ranged from approximately 23 µg/L to 110 µg/L. Total volatile organic constituents (VOC) concentrations in the GWTS influent ranged from 24 µg/L to 120 µg/L. These data demonstrate that the air stripper effectively removes VOCs from the groundwater to less than method detection limits. The air stripper was originally designed to reduce influent TCE concentrations of 167 µg/L to 0.3 µg/L. Furthermore, as all anticipated VOC extraction wells are in place, there is no reason to believe that influent concentrations would increase. In fact, they are expected to decrease over time as groundwater remediation proceeds. Therefore the "polishing" function of the six liquid-phase granular activated carbon (LGAC) vessels is not necessary. The Discharger intends to mothball the carbon treatment vessels until such time as it is economical to discontinue air stripping and treat entirely by carbon adsorption, unless other data indicate that carbon is necessary. As noted in the Record of Decision (ROD), *"treatment methods may change as conditions change or new and improved*

technologies become available”, and influent VOC concentrations are lower than in the past and lower than the system design parameters. Therefore, the Discharger requests changes to the language of the WDRs to allow for modifications of the GWTS as necessary, as follows:

- a. On page 1 at section II.B. of the Order, the Discharger requests that “a *low-profile air stripper*” be changed to “*an air stripping tower.*” The Discharger also requests that the following be inserted after the second sentence of the paragraph: “*Process piping allows each treatment technology to be bypassed or reconfigured as necessary to effectively and efficiently treat the process stream.*”
- b. The final VOC ROD was signed in August 2007. The Discharger requests that section I.F. of the Fact Sheet (Attachment F) on page F-4 be replaced with “*The NPDES Program and the California Toxics Rule are included as ARARs in the final VOC ROD, signed in August 2007, for McClellan. As such, the Air Force will continue to comply with the substantive requirements of the permit.*”

On page F-5 at section II.A of the Fact Sheet, the Discharger requests that the first paragraph be changed from “*The Facility is designed to treat 2.88 MGD of contaminated groundwater that is extracted from seven Operable Units (OUs). The system includes a 64,000-gallon influent tank, a low-profile tray air stripper, six 20,000-pound liquid-phase granular activated carbon (GAC) vessels, and two ion exchange (IX) resin vessels.*” to “*The Facility is designed to treat 2.88 MGD of contaminated groundwater that is extracted from the Groundwater Operable Unit (OU). The system includes a 64,000-gallon influent tank, an air stripping tower, two ion exchange (IX) resin vessels and process piping that can allow each treatment technology to be bypassed if appropriate.*”

The Discharger requests that the second paragraph be changed from “*The treatment system consists of an air-stripper with two blowers (one for backup and redundancy) designed to treat up to 2,000 gallons per minute (GPM) and remove approximately 99% of VOCs in groundwater entering the stripper. The Discharger previously used an Alzata (off-gas) treatment system which was removed in March 2006.*” to “*The treatment system consists of an air-stripper with two blowers (one for backup and redundancy) designed to treat up to 2,000 gallons per minute (gpm), removing greater than 99% of VOCs in groundwater entering the stripper, and discharges the off-gas to the atmosphere. An off-gas treatment system was removed in March 2006.*”

The Discharger requests that the third paragraph be changed from “*GAC trains are utilized for effluent polishing subsequent to air stripping. Each GAC train consists of two vessels, operated in parallel or in series. Each GAC contact vessel is 10 feet in diameter and 10 feet in length, providing 10.5 minutes of contact. The GWTS configuration was changed in 2005 to accommodate the IX Hexavalent Chromium Full Scale Treatment System. Two vessels are now used in series (lead/lag) to*

accommodate the new IX system, operating at flows of up to 750 GPM. The other six vessels are operated in parallel for VOC polishing.” to “The existing GAC vessels are mothballed and no longer in use. The GWTS configuration was changed in 2003 to accommodate the IX Hexavalent Chromium Full Scale Treatment System. Two converted carbon vessels used in series (lead/lag) contain IX resin and are capable of operating at flows up to 750 gpm.”

- c. Due to the effectiveness of the air stripper, GAC polishing is no longer necessary and the Discharger intends to discontinue its use. Its reference should be removed. On page F-41 at section VI.A.4. and on Page F-43 at section VI.B.7. of the Fact Sheet, the Discharger requests that the following statement be changed from “*Considering this new information regarding influent and effluent quality, the use of air stripping for VOC removal, and the use of GAC units for effluent polishing, ...*” to “*Considering this new information regarding influent and effluent quality and the use of air stripping for VOC removal,...*”.

RESPONSE: Regional Water Board staff has made the suggested modifications in the proposed Order to reflect current operations at the Facility and to allow for future modifications of the treatment system as necessary.

Discharger Comment No. 2. Discharge Locations.

The locations of Discharge Point Nos. 001 and 002 shown on Figure B-1 are incorrect. A corrected figure was provided by the Discharger.

RESPONSE: The updated map depicting the correct locations of Discharge Point Nos. 001 and 002 has been included in Attachment B of the proposed Order.

Discharger Comment No. 3. 1,1,2-Trichloroethylene.

1,1,2-Trichloroethane is not a contaminant of concern at the GWTS; therefore, reference to this compound on page 5 at section II.M of the Order should be removed. The text indicates that there is an effluent limitation for 1,1,1-trichloroethane; however, there is no limit for this compound in the permit.

RESPONSE: Regional Water Board staff concurs and has made the suggested modifications to the proposed Order.

Discharger Comment No. 4. Effluent and Receiving Water Monitoring for Temperature, pH, Dissolved Oxygen, and Electrical Conductivity.

Reduce the monitoring frequency from weekly to monthly for discharge. In addition, remove the requirement for a Receiving Water pH and Temperature Objective Investigation. Water quality parameter data collected weekly from 2003 – 2008 fall within a limited range (Temperature 13.7 – 30.6 C, pH: 4.66 – 8.5, Dissolved Oxygen: 2.02 – 11.55 mg/L [the effluent is aerated as it spills from the pipe into the receiving water], Electrical Conductivity: 210 – 463 μ mhos/cm [one EC result on 6 September 2006 was 3 μ mhos/cm, this may be an error] see attached Table 1).

Remove the requirement for weekly sampling of the receiving water. Magpie Creek, upstream from the GWTS discharge, contains little or no water of quality throughout much of the year. Results from weekly measurements of Magpie Upstream show the water quality to be poor. The water from the GWTS discharge improves the environment for the stream ecosystem. Furthermore, this fact is recognized and therefore the frequent excursions of the GWTS effluent parameters from the poorer quality water upstream of the GWTS, which are regularly reported by the Discharger to the Regional Water Board, are not considered important.

RESPONSE:

Temperature and pH. Initially during the permit development process, reasonable potential to exceed receiving water limitations for pH change and temperature increases was evaluated using a daily averaging period. In light of the exceedances of the limitations for pH and temperature identified using a daily averaging period, Regional Water Board staff included a requirement for the Discharger to perform a study to evaluate the cause for these exceedances and propose a plan, including a schedule, for ensuring water quality objectives will not be violated in the future. However, upon further review, Regional Water Board staff found that, for the reasons discussed below, an annual averaging period for determining compliance with the receiving water limitations for pH and temperature change is more appropriate. The annual averaging period was included in the proposed Order. While the annual averaging period was applied in the Order upon re-evaluation, the study requirement contained in section VI.C.2.b of the proposed Order and the findings contained in section VII.B.2.b of the Fact Sheet were inadvertently retained.

As stated in section V.A.2 of the Fact Sheet for the proposed Order, the Basin Plan allows an appropriate averaging period for the objective for pH change in the receiving stream. Additionally, the Regional Water Board recently adopted Resolution No. R5-2007-0136 to adopt a Basin Plan amendment to remove the

objective for pH change. The Basin Plan amendment was approved by the State Water Board and is awaiting approval from the Office of Administrative Law and USEPA. As described in the Final Staff Report for the amendment, the change of the pH water quality objective is not supported by current science regarding the effects of pH on beneficial uses, nor are they consistent with current USEPA criteria for pH in ambient waters. Creeks and streams, particularly under low flow conditions such as Magpie Creek and Don Julio Creek, may be subject to substantial, natural diurnal fluctuations in pH, often greater than 0.5 pH units. Scientific literature, supported by pH criteria for the protection of aquatic life, provides evidence that, when pH is maintained within the range of 6.5 to 8.5, rapid changes in pH would not cause adverse impacts to freshwater aquatic life. Since there is no technical information available that indicates that aquatic organisms are adversely affected by shifts in pH within the 6.5 to 8.5 range, an averaging period is considered appropriate and an annual averaging period for determining compliance with the 0.5 receiving water pH limitation was included in the proposed Order.

Evaluation of upstream and downstream monitoring data indicate annual average pH decreases of 0.52 units for April 2005 through December 2005, 0.54 units for January 2006 through December 2006, and 0.66 units for January 2007 through December 2007. Although the annual averages for pH change are greater than the allowable 0.5 units, the driving factor for these changes above 0.5 is the fact that the pH of the upstream receiving water frequently exceeds the water quality objective of 8.5 while the effluent is consistently maintained between 6.5 and 8.5 (i.e., a greater change is recorded when the upstream pH is greater than the objective of 8.5). This situation tends to result in the effluent diluting the receiving water downstream of the discharge, resulting in compliance with receiving water objectives.

As stated in section V.A.3 of the Fact Sheet for the proposed Order, the Basin Plan allows an appropriate averaging period for the objective for temperature increases in the receiving stream. Because Magpie Creek and Don Julio Creek are ephemeral streams, the temperature of the upstream receiving waters is highly variable. Because the influence of the discharge from the Facility tends to stabilize the temperatures within the receiving waters, an averaging period is considered appropriate and an annual averaging period for determining compliance with the restriction to increase the temperature by no more than 5°F in the receiving water was included in the proposed Order. Evaluation of upstream and downstream monitoring data indicates that the effluent on average decreased the temperature of the receiving water by 2.49°F for April through December 2005 and by 0.17°F for January through December 2006, and increased the temperature of the receiving water by 0.70°F for January 2007 through December 2007.

Based on the above information, the study requirement contained in section VI.C.2.b of the proposed Order and the findings contained in section VII.B.2.b of the Fact Sheet have been removed from the Tentative Order. The Fact Sheet at sections V.A.2 and V.A.3 have been revised to provide additional rationale for the annual averaging periods allowed for receiving water limitations for pH change and temperature increases. Additionally, as a thorough data set has already been compiled and because monthly monitoring will provide sufficient data to evaluate the effects of the effluent on the receiving stream, weekly effluent and receiving water monitoring requirements have been reduced to monthly.

Electrical Conductivity. Because the Discharger discharges to Magpie Creek and Don Julio Creek, tributaries of the Sacramento River via Roblas Creek, the Natomas East Main Drainage Canal (NEMDC), and eventually the Sacramento – San Joaquin Delta, the Regional Water Board is concerned over the salt contribution to Delta waters. Therefore, effluent and receiving water monitoring for electrical conductivity, an indicator of salinity, are required by the proposed Order. However, monitoring data collected over the term of Order No. R5-2003-0052-A01 for electrical conductivity does not indicate reasonable potential to exceed water quality criteria. Thus, the monitoring frequency has been decreased from weekly to monthly in order to continue to characterize salinity in the effluent and assess the impacts of the discharge on the receiving water.

Dissolved Oxygen. Receiving water limitations have been included in the proposed Order for dissolved oxygen. Receiving water monitoring conducted over the term of Order No. R5-2003-0052-A01 does not indicate that the discharge has affected the dissolved oxygen concentration of the receiving waters. Therefore, the monitoring frequency for dissolved oxygen in the effluent and receiving water has been reduced from weekly to monthly in order to continue to evaluate the effects of the discharge on the receiving waters.

Discharger Comment No. 5. Effluent and Receiving Water Monitoring for Copper.

Remove the requirement for quarterly copper sampling of the effluent and receiving water from the WDRs. The requirement is based on stated copper detections in the effluent; specifically page F-21 refers to a dissolved copper concentration of 2.1 µg/L for a sample collected during February 2008. This is an error – copper samples were not collected from the receiving water or effluent during February 2008. The water discharged from the CERCLA plant (not the GWTS) during February 2008 had a total copper concentration of 2.1 µg/L. As shown in Table 2 of the attachment to the Discharger's comments, dissolved copper has been detected only once (1 µg/L during October 2007) in more than 50 samples collected since 2001. The maximum effluent

concentration (MEC) of dissolved copper in the effluent of 1.0 µg/L is below the continuous concentration limit for freshwater aquatic life range of 10-15 µg/L (based on the effluent hardness range of 120-176 mg/L, see Table 3 of the attachment to the Discharger's comments for hardness data) for dissolved copper listed on the tables of Water Quality Limits (Compilation of Water Quality Goals, August 2007, RWQCB). These historical data show that copper is not present in the effluent at concentrations that affect freshwater aquatic life. Also, because of the above data, Attachment G should be edited to show a dissolved copper MEC of 1.0 µg/L, not 2.1 µg/L. It should also be edited to show dissolved copper as having "no reasonable potential", by changing the "Y" in the "Reasonable Potential" column to "N".

RESPONSE: Regional Water Board staff acknowledges that the February 2008 sample was not from the GWTS, but from the CERCLA plant. In addition, based on review of the additional monitoring data provided by the Discharger, staff believes the one detected dissolved copper sample is not representative of the discharge. Because dissolved copper represents a fraction of total copper, dissolved copper concentrations are expected to be lower than total concentrations. The effluent dissolved sample collected in October 2007 is greater than the sample for total copper taken on the same day, which was not detected with a method detection level of 0.18 µg/L. Therefore, the October 2007 samples are questionable and should not be used as part of the reasonable potential analysis. The fact that total copper was not detected in all 57 samples since 2001, supports the decision to not use the October 2007 data for the reasonable potential analysis. Consequently, there is no reasonable potential for copper. The proposed Order has been modified to remove the quarterly effluent monitoring for copper and the Fact Sheet has been modified accordingly.

Discharger Comment No. 6. Effluent and Receiving Water Monitoring for Zinc.

Remove the requirement for quarterly zinc sampling of the effluent and receiving water. The maximum total zinc effluent concentration of 33 µg/L (see Table 4 of the attachment to the Discharger's comments for zinc results) is below the continuous concentration limit for freshwater aquatic life range of 140-190 µg/L (based on the effluent hardness range of 120–176 mg/L) for total zinc on the tables of Water Quality Limits (Compilation of Water Quality Goals, August 2007, RWQCB). These historical data show that zinc is not present in the effluent at concentrations that affect freshwater aquatic life. Also, Attachment G should be edited to show dissolved and total (recoverable) zinc MECs of 10 µg/L and 33 µg/L, respectively, not 41 µg/L and 11 µg/L. It should also be edited to show dissolved and total (recoverable) zinc as having "no reasonable potential", by changing the "Y" in the "Reasonable Potential" column to "N".

RESPONSE: Regional Water Board staff agrees with the Discharger and the proposed Order has been modified accordingly.

Discharger Comment No. 7. Effluent and Receiving Water Monitoring for Selenium.

Selenium samples are collected concurrently with the hexavalent chromium samples as a cost savings measure. Amend the requirement to allow collecting grab samples, not composites. Reduce the requirement from monthly sampling to annual. Monthly samples have been collected from July 2003-2008. The highest effluent selenium concentration was 2.7 µg/L on 7 November 2007, which is less than the average monthly limitation of 3.6 µg/L. (See Table 5 of the attachment to the Discharger's comments for selenium results).

RESPONSE: Although monitoring data during the term of Order No. R5-2003-0052-A01 indicates that selenium in the effluent does not exhibit reasonable potential to exceed water quality criteria, this Order retains effluent limitations for selenium due to continued detections of selenium in the effluent, the lack of monitoring data that demonstrates that selenium is also not present in the influent, the fact that selenium is a bioaccumulative pollutant, and to ensure that the Discharger continues to treat the contaminated groundwater for selenium. Because effluent concentrations of selenium have been below the applicable water quality criteria, the Regional Water Board staff agree that relaxed effluent monitoring is appropriate. However, annual monitoring is unlikely to provide sufficient data to determine compliance with effluent limitations or evaluate the performance of the GWTS at removing selenium from the influent. Therefore, monthly monitoring has been reduced to quarterly in the proposed Order. Because variability is not expected in the effluent from a groundwater cleanup, the proposed Order has been modified to allow grab samples for selenium.

Discharger Comment No. 8. Effluent and Receiving Water Monitoring for Hexavalent Chromium.

Change the requirement to allow collecting grab samples rather than 24-hour composite samples. Collecting a 24-hour composite sample would exceed the EPA method required holding time of 24 hours. Although the analytical method allows for sample preservation to extend the holding time beyond 24 hours, immediate preservation is not possible using an autosampler to collect 24-hour composite samples.

RESPONSE: Because variability is not expected in the effluent from a groundwater cleanup, the proposed Order has been modified to allow grab samples for hexavalent chromium.

Discharger Comment No. 9. Effluent and Receiving Water Monitoring for Mercury.

The permit indicates on the Attachment G table (page G-1) that the discharge does not have a reasonable potential to cause or contribute to an in stream excursion of water quality objective for mercury (dissolved or total). Data have been collected from July 2003 through July 2008. See Table 6 of the attachment to the Discharger's comments for mercury data. Therefore reduce the requirement for monthly sampling to annual sampling.

RESPONSE: The Sacramento River from Knights Landing to the Delta and the Sacramento – San Joaquin Delta downstream of the discharge are on the 303(d) list for mercury. The Regional Water Board is currently developing a TMDL for total mercury and/or methylmercury. Monthly effluent monitoring data collected during the term of Order No. R5-2003-0052-A01 indicates multiple detections of total mercury in the effluent, but not at concentrations that exceed water quality objectives. Because mercury is still being detected in the effluent and a TMDL has not yet been finalized, continued monitoring will be required. However, the tentative Order has been modified to reduce the monitoring frequency from monthly to semi-annually for total mercury.

Discharger Comment No. 10. Effluent and Receiving Water Monitoring for Methylmercury.

Remove the permit requirement for methylmercury sampling. As stated in a letter dated 1 November 2004 (see Discharger's attachment), the Discharger stated that the Discharger "*does not believe that [methylmercury] sampling is necessary because there is no reasonable basis for suspecting the presence of methylmercury in the subject discharges of the former McClellan and Mather Air Force Bases.*" Technical bases for this conclusion are also provided in the letter. The Discharger's position remains the same.

RESPONSE: The Discharger submitted a letter on 1 November 2004 stating that the Discharger "*does not believe that [methylmercury] sampling is necessary because there is no reasonable basis for suspecting the presence of methylmercury in the subject discharges of the former McClellan and Mather Air Force Bases.*" Furthermore, the letter explains that methylation (i.e., the

transformation of mercury to methylmercury) occurs primarily in aquatic environments with low pH, anaerobic conditions, with high concentrations of organic matter and suitable microorganisms, conditions that do not occur at any stage of the GWTS. However, information on the presence of methylmercury in the groundwater is unavailable and, based on multiple detections of mercury in the effluent there is the potential for methylation to occur in the receiving water. Due to the impairment of surface waters downstream of the discharge due to mercury, and the pending TMDL, Regional Water Board staff finds that monitoring for methylmercury is necessary. However, the proposed Order has been revised to reduce the monitoring frequency for methylmercury from quarterly to semi-annually.

Discharger Comment No. 11. Effluent and Receiving Water Monitoring for Total Dissolved Solids and Salinity.

Reduce the requirement for quarterly total dissolved solids sampling to annual sampling of the effluent. The permit indicates on the Attachment G table (page G-1) that the discharge does not have a reasonable potential to cause or contribute to an in stream excursion of WQO for total dissolved solids.

RESPONSE: Because the Discharger discharges to Magpie Creek and Don Julio Creek, tributaries of the Sacramento River via Roblas Creek the NEMDC, and eventually the Sacramento – San Joaquin Delta, the Regional Water Board is concerned over the salt contribution to Delta waters. Therefore, effluent and receiving water monitoring for total dissolved solids, an indicator of salinity, are required in the tentative Order. However, monitoring data collected over the term of Order No. R5-2003-0052-A01 for total dissolved solids does not indicate reasonable potential to exceed water quality criteria. Thus, the monitoring frequency has been decreased from quarterly to annually in order to continue to characterize salinity in the effluent and assess the impacts of the discharge on the receiving water.

Discharger Comment No. 12. Effluent and Receiving Water Monitoring for Toxicity.

Eliminate the acute and chronic toxicity testing requirements. The current permit, NPDES No. R5-2003-0052-A01, includes semi-annual acute toxicity testing and 3-species chronic toxicity during the first year of the permit. The GWTS effluent is stable and has never failed these toxicity tests. Therefore, they are considered unnecessary, especially as the influent groundwater is now of even better quality than in the past.

RESPONSE: Because Order No. R5-2003-0052-A01 only required semi-annual toxicity testing during the first year of the permit, sufficient toxicity testing data was not available during this permit renewal to determine reasonable potential for the discharge to cause or contribute to acute or chronic toxicity in the receiving waters. Due to the nature of pollutants treated at a groundwater cleanup, the presence of toxic pollutants in the discharge (e.g., selenium and chromium VI), and the potential for synergistic effects from these pollutants in the receiving water, Regional Water Board staff finds that semi-annual acute and chronic toxicity testing requirements are appropriate in order to demonstrate compliance with the effluent limitation for acute toxicity and to demonstrate compliance with the Basin Plan's narrative toxicity objective.

Discharger Comment No. 13. Effluent and Receiving Water Monitoring for Priority Pollutants.

Reduce the sampling requirement for semi-volatile organic constituents (SVOCs) and inorganics (metals) from quarterly during third year of the permit, to once during the third year of the permit.

Remove the permit requirement for pesticide sampling at GWTS. Annual sampling results from 2001 through 2008 show no detectable concentrations of pesticides in the effluent; therefore the annual sampling requirement from Order No. R5-2003-0052-A01 was not included in the tentative permit.

RESPONSE: In accordance with Section 1.3 of the SIP, periodic monitoring (at least once prior to reissuance of a permit) for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established in the proposed Order. Because historical data does not indicate the presence of priority pollutants above the applicable criteria or objectives other than those for which effluent limitations have been established in the proposed Order and because variability in the quality of effluent from a groundwater cleanup is not expected, Regional Water Board staff find that priority pollutant monitoring once during the third year will provide sufficient data to conduct a meaningful reasonable potential analysis for the next permit renewal. The proposed Order has been modified to reduce the monitoring frequency for priority pollutants from quarterly during the third year of the permit term to once during the third year of the permit term.

Discharger Comment No. 14. Editorial Comment.

The Discharger commented on the receiving water limitations contained on pages 12 and 13 of the proposed Order that monitoring is not required for compliance with limitations for bacteria, radioactivity, settleable substances, and tastes and odors.

RESPONSE: Receiving water limitations are included in the Order based on water quality objectives contained in the Basin Plan. The discharge of bacteria and radionuclides from a groundwater cleanup are not expected from a groundwater cleanup and monitoring has not been required in the proposed Order for these constituents. Section VIII.A.2 of the Monitoring and Reporting Program (Attachment E) requires the Discharger to keep a log of the receiving water conditions, paying attention to bottom deposits and potential nuisance conditions, among other conditions. Should settleable substances be present in concentrations that result in bottom deposits in the receiving water or taste- or odor-producing substances be present in concentrations that cause nuisance conditions, the Discharger shall report these observations in the log of receiving water conditions.

Discharger Comment No. 15. Editorial Comment.

The Discharger commented that the Standard Provisions contained in sections VI.A.2.l and VI.A.2.u apply to publicly owned treatment works (POTWs) and, because the Facility is not a POTW, should be removed from the proposed Order.

RESPONSE: The standard provisions contained in sections VI.A.2.l and VI.A.2.u are Regional Water Board standard provisions and it is clear in the tentative order that the provisions do not apply to the discharge. In order to maintain consistency with other permits the proposed Order will not be changed.

Discharger Comment No. 16. Editorial Comment.

The Discharger commented that the table of contents for the Monitoring and Reporting Program (Attachment E) should be updated.

RESPONSE: The table of contents for the Monitoring and Reporting Program (Attachment E) has been updated in the proposed Order.

Discharger Comment No. 17. Editorial Comment.

The Discharger commented that the waste discharge identification (WDID) should be included in Table F-1 on page F-3 of the Fact Sheet.

RESPONSE: The WDID, 5A340700006, has been included in Table F-1 of the proposed Order.

Discharger Comment No. 18. Editorial Comment.

The Discharger commented that the title of the facility contact and authorized person to sign and submit reports should be changed from Remedial Program Manager to BRAC Environmental Coordinator in Table F-1 on page F-3 of the Fact Sheet.

RESPONSE: The correct title has been included in the proposed Order.

Discharger Comment No. 19. Editorial Comment.

The Discharger commented that throughout the proposed Order, references to Order No. R5-2003-0052 should be changed to Order No. R5-2003-0052-A01 as the Order was revised on 21 October 2005.

RESPONSE: References to Order No. R5-2003-0052 have been modified to refer to Order No. R5-2003-0052-A01 throughout the proposed Order.

Discharger Comment No. 20. Editorial Comment.

The Discharger commented that section I.E on page F-4 of the Fact Sheet incorrectly references another facility and should be revised.

RESPONSE: The reference has been revised to refer to Order No. R5-2003-0052-A01 in the proposed Order.

Discharger Comment No. 21. Editorial Comment.

The Discharger commented that a maximum monthly volume of 3.3 million gallons are available for all of the Discharger's outfalls to discharge to the municipal sewer system and that somewhat less than that can be used by the GWTS. Therefore, the Discharger suggested that the language in the fifth sentence of the last paragraph of section II.A be revised.

RESPONSE: The suggested revision has been incorporated in the proposed Order.

Discharger Comment No. 22. Editorial Comment.

The Discharger commented that the highest daily discharge concentration of 11.0 µg/L for chromium VI in Table F-2 of the Fact Sheet occurred prior to 1 March 2008 and

should be included in the row corresponding to the interim effluent limitations for chromium VI which were effective until 1 March 2008.

RESPONSE: Table F-2 of the Fact Sheet has been updated to show that the highest daily discharge of chromium VI prior to 1 March 2008 was 11.0 µg/L, which occurred on 5 April 2006 and 7 March 2007. The table was also updated to show that the highest daily discharge of chromium VI subsequent to 1 March 2008 was 8.8 µg/L, which occurred on 12 March 2008.

Discharger Comment No. 23. Editorial Comment.

The Discharger commented that section II.E on page F-7 of the Fact Sheet should be completed.

RESPONSE: The Discharger has not indicated any planned changes to the Facility. Therefore, the section has been modified to indicate that planned changes are not applicable.

Discharger Comment No. 24. Editorial Comment.

The Discharger commented that footnote numbers 5, 6, 8, and 9 on Table F-17 at page F-39 present the mass loading rate in units of MGD instead of pounds.

RESPONSE: The Regional Water Board staff acknowledges the error and has made the suggested edits.

California Sportfishing Protection Alliance (CSPA) COMMENTS

CSPA Comment No. 1. Editorial Comment.

CSPA commented that footnote numbers 2 and 3 on Tables 6 and 7 present the mass loading rate in units of MGD instead of pounds.

RESPONSE: The Regional Water Board staff acknowledges the error and has made the suggested edits.

CSPA Comment No. 2. Editorial Comment.

CSPA commented that section II.E of the Fact Sheet contains a note reminding the permit writer to describe any changes in the permit.

RESPONSE: The Discharger has not indicated any planned changes to the Facility. Therefore, the section has been modified to indicate that planned changes are not applicable.

CSPA Comment No. 3. The proposed permit fails to contain mass-based effluent limits for carbon tetrachloride; chromium (VI); dichlorobromomethane; 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethylene; tetrachloroethylene; trichloroethylene; vinyl chloride; and cis-1,2-dichloroethylene as required by Federal Regulations 40 CFR 122.45(b).

The proposed Permit Fact Sheet states that: “A *technology-based effluent limitation for flow is established in this Order to monitor performance of the groundwater treatment system from the standpoint of volumes being treated.*” In other words, the system is designed to treat a maximum volume of pollutants. The treatment system described in the proposed Permit consists of an air stripper, granular activated carbon, ion exchange and resin vessels all of which are designed based on the mass of pollutants to be treated. Mass limitations are critically important to assure that the system is not overloaded and to determine a schedule for maintenance; such as for carbon regeneration prior to pollutant breakthrough. Section 5.7.1 of USEPA’s *Technical Support Document for Water Quality-based Toxics Control* (TSD, EPA/505/2-90-001) states with regard to mass-based effluent limitations:

“Mass-based effluent limits are required by NPDES regulations at 40 CFR 122.45(f). The regulation requires that all pollutants limited in NPDES permits have limits, standards, or prohibitions expressed in terms of mass with three exceptions, including one for pollutants that cannot be expressed appropriately by mass. Examples of such pollutants are pH, temperature, radiation, and whole effluent toxicity. Mass limitations in terms of pounds per day or kilograms per day can be calculated for all chemical-specific toxics such as chlorine or chromium. Mass-based limits should be calculated using concentration limits at critical flows. For example, a permit limit of 10 mg/L of cadmium discharged at an average rate of 1 million gallons per day also would contain a limit of 38 kilograms/day of cadmium.

Mass based limits are particularly important for control of bioconcentratable pollutants. Concentration based limits will not adequately control discharges of these pollutants if the effluent concentrations are below detection levels. For these pollutants, controlling mass loadings to the receiving water is critical for preventing adverse environmental impacts.

However, mass-based effluent limits alone may not assure attainment of water quality standards in waters with low dilution. In these matters, the quantity of effluent discharged has a strong effect on the instream dilution and therefore upon the RWC. At the extreme case of a stream that is 100 percent effluent, it is the

effluent concentration rather than the mass discharge that dictates instream concentration. Therefore, EPA recommends that permit limits on both mass and concentration be specified for effluents discharging into waters with less than 100 fold dilution to ensure attainment of water quality standards.”

Federal Regulations, 40 CFR 122.45(f), states the following with regard to 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 be expressed by mass;*
 - (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.”*

Mass limitations are feasible for pollutants being regulated by the proposed Permit. This is clearly evidenced by the fact that the existing Permit, Order No. R5-2003-0052-A01 contained mass limitations for most of the limited constituents. As stated in our opening paragraph, mass limits are also necessary to assure that the system operates and is maintained to prevent violations of discharge limitations.

In addition to the above citation, on 26 June 2006 USEPA, Mr. Douglas Eberhardt, Chief of the CWA Standards and Permits Office, sent a letter to Dave Carlson at the Regional Water Board strongly recommending that NPDES permit effluent limitations be expressed in terms of mass as well as concentration.

RESPONSE: 40 CFR 122.45(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) 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 122.45(f)(1)(ii) states that mass limitations are not required when applicable standards and limitations are expressed in terms of other units of measurement. Numerical effluent limitations for carbon tetrachloride; 1,1-dichloroethylene; and 1,2-dichloroethane (AMEL) in the proposed permit are based on water quality standards and objectives. These standards and objectives are expressed in terms of concentration. Numerical effluent limitations for dichlorobromomethane, 1,1-dichloroethane, cis-1,2-dichloroethylene, tetrachloroethylene, trichloroethylene, vinyl chloride, and 1,2-dichloroethane (MDEL) are based on the ability of the treatment system to reduce constituents below concentration-based reporting levels. Pursuant to 40 CFR 122.25(f)(1)(ii), expressing the effluent limitations in terms of concentration is in accordance with Federal Regulations.

Mass limitations for bioaccumulative substances and constituents with an associated 303(d) listing are included in the proposed Order. The proposed Order includes mass limitations for 1) selenium since it is a bioaccumulative constituent, and 2) mercury since it is a bioaccumulative constituent and a TMDL is pending. For those pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based, mass-based effluent limitations are not included in this Order.

CSPA Comment No. 4. The proposed Permit contains effluent limitations less stringent than the existing Permit (Order No. R5-2003-0052-A01) and contrary to the antibacksliding requirements of the Clean Water Act (CWA) and Federal Regulations, 40 CFR 122.44(l)(1). Specifically, mass limitations for chromium (VI), dichlorobromomethane; 1,1-dichloroethane; 1,2-dichloroethane; 1,1-

dichloroethylene; tetrachloroethylene; trichloroethylene; and vinyl chloride have been eliminated.

Under the CWA, point source dischargers are required to obtain federal discharge (NPDES) permits and to comply with water quality-based effluent limitations (WQBELs) in NPDES permits sufficient to make progress toward the achievement of water quality standards or goals. The antibacksliding and antidegradation rules clearly spell out the interest of Congress in achieving the CWA's goal of continued progress toward eliminating all pollutant discharges. Congress clearly chose an overriding environmental interest in clean water through discharge reduction, imposition of technological controls, and adoption of a rule against relaxation of limitations once they are established.

Upon permit reissuance, modification, or renewal, a discharger may seek a relaxation of permit limitations. However, according to the CWA, relaxation of a WQBEL is permissible only if the requirements of the antibacksliding rule are met. The antibacksliding regulations prohibit USEPA from reissuing NPDES permits containing interim effluent limitations, standards or conditions less stringent than the final limits contained in the previous permit, with limited exceptions. These regulations also prohibit, with some exceptions, the reissuance of permits originally based on best professional judgment (BPJ) to incorporate the effluent guidelines promulgated under CWA §304(b), which would result in limits less stringent than those in the previous BPJ-based permit. Congress statutorily ratified the general prohibition against backsliding by enacting §§402(o) and 303(d)(4) under the 1987 amendments to the CWA. The amendments preserve present pollution control levels achieved by dischargers by prohibiting the adoption of less stringent effluent limitations than those already contained in their discharge permits, except in certain narrowly defined circumstances.

When attempting to backslide from WQBELs under either the antidegradation rule or an exception to the antibacksliding rule, relaxed permit limits must not result in a violation of applicable water quality standards. The general prohibition against backsliding found in §402(o)(1) of the CWA contains several exceptions. Specifically, under §402(o)(2), a permit may be renewed, reissued, or modified to contain a less stringent effluent limitation applicable to a pollutant if: (A) material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation; (B)(i) information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance; or (ii) the Administrator determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under subsection (a)(1)(B) of this section; (C) a less stringent effluent limitation is necessary because of events over which the permittee has no control and for which there is no reasonably available remedy [(e.g., Acts of God)]; (D) the permittee has received a permit

modification under section 1311(c), 1311(g), 1311(h), 1311(i), 1311(k), 1311(n), or 1326(a) of this title; or (E) the permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit, and has properly operated and maintained the facilities, but has nevertheless been unable to achieve the previous effluent limitations, in which case the limitations in the reviewed, reissued, or modified permit may reflect the level of pollutant control actually achieved (but shall not be less stringent than required by effluent guidelines in effect at the time of permit renewal, reissuance, or modification).

Even if a discharger can meet either the requirements of the antidegradation rule under CWA §303(d)(4) or one of the statutory exceptions listed in §402(o)(2), there are still limitations as to how far a permit may be allowed to backslide. CWA § 402(o)(3) acts as a floor to restrict the extent to which BPJ and water quality-based permit limitations may be relaxed under the antibacksliding rule. Under this subsection, even if USEPA allows a permit to backslide from its previous permit requirements, USEPA may never allow the reissued permit to contain effluent limitations which are less stringent than the current effluent limitation guidelines for that pollutant, or which would cause the receiving waters to violate the applicable state water quality standard adopted under the authority of CWA §303.49.

Federal regulations 40 CFR 122.44 (l)(1) have been adopted to implement the antibacksliding requirements of the CWA:

- “(1) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under Sec. 122.62)*
- (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.*
 - (i) Exceptions—A permit with respect to which paragraph (l)(2) of this section applies may be renewed, reissued, or modified to contain a less stringent effluent limitation applicable to a pollutant, if:*

- (A) Material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation;*
 - (B)(1) Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance; or (2) The Administrator determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b);*
 - (C) A less stringent effluent limitation is necessary because of events over which the permittee has no control and for which there is no reasonably available remedy;*
 - (D) The permittee has received a permit modification under section 301(c), 301(g), 301(h), 301(i), 301(k), 301(n), or 316(a); or*
 - (E) The permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations, in which case the limitations in the renewed, reissued, or modified permit may reflect the level of pollutant control actually achieved (but shall not be less stringent than required by effluent guidelines in effect at the time of permit renewal, reissuance, or modification).*
- (ii) Limitations. In no event may a permit with respect to which paragraph (1)(2) of this section applies be renewed, reissued, or modified to contain an effluent limitation which is less stringent than required by effluent guidelines in effect at the time the permit is renewed, reissued, or modified. In no event may such a permit to discharge into waters be renewed, reissued, or modified to contain a less stringent effluent limitation if the implementation of such limitation would result in a violation of a water quality standard under section 303 applicable to such waters.*

RESPONSE: The response to CPSA Comment No. 4 addresses the need for mass limitations. As stated in response to CSPA Comment No. 4, the mass limitations are not necessary to protect the beneficial uses of the receiving water and are not required by Federal Regulations. Although the mass limitations for chromium VI, dichlorobromomethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, tetrachloroethylene, trichloroethylene, and vinyl chloride have been removed in the proposed Order, this does not constitute backsliding, because; (1) the proposed Order includes more stringent concentration-based effluent limitations for these constituents, and (2) the design flow has not increased, which is the basis for calculating mass-based

effluent limitations. Compliance with the concentration-based limits will ensure that significantly less mass of the pollutants is discharged to the receiving water.

CSPA Comment No. 5. The proposed Permit contains an Effluent Limitation for acute toxicity that allows mortality to aquatic life that exceeds the Basin Plan water quality objective and does not comply with Federal regulations, at 40 CFR 122.44 (d)(1)(i) or the CWA.

Under the federal CWA, states are required to classify surface waters by *uses* – the beneficial purposes provided by the waterbody. For example, a waterbody may be designated as a drinking water source, or for supporting the growth and propagation of aquatic life, or for allowing contact recreation, or as a water source for industrial activities, or all of the above. States must then adopt *criteria* – numeric and narrative limits on pollution, sufficient to protect the uses assigned to the waterbody. Federal regulations, at 40 CFR 122.44 (d)(1)(i), adopted to require implementation of the CWA, require that limitations must control all pollutants or pollutant parameters which the Director determines are or may be discharged at a level which will cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. The Water Quality Control Plan for the Sacramento/San Joaquin River Basins (Basin Plan), Water Quality Objectives (Page III-8.00), for Toxicity is a narrative criteria which states that all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This section of the Basin Plan further states, in part that, compliance with this objective will be determined by analysis of indicator organisms (toxicity tests).

The proposed Permit requires that the Discharger conduct acute toxicity tests and states that compliance with the toxicity objective will be determined by analysis of indicator organisms. However, the Tentative Permit contains a discharge limitation that allows 30 percent mortality (70 percent survival) of fish species in any given toxicity test. Surely, mortality is a detrimental physiological response to aquatic life.

For an ephemeral or low flow stream, allowing 30 percent mortality in acute toxicity tests allows that same level of mortality in the receiving stream, in violation of federal regulations and contributes to exceedance of the Basin Plan's narrative water quality objective for toxicity. In receiving streams where dilution may be available the primary mixing area is commonly referred to as the zone of initial dilution, or ZID. Within the ZID acute aquatic life criteria are exceeded. To satisfy the CWA prohibition against the discharge of toxic pollutants in toxic amounts, regulators assume that if the ZID is small, significant numbers of aquatic organisms will not be present in the ZID long enough to encounter acutely toxic conditions. The allowance of 30 percent mortality will result in acute toxicity within the ZID. Before the discharge can be allowed a complete mixing zone analysis is required in accordance with the Basin Plan and the *Policy for*

Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Policy or SIP) to show that discharge limitations prevent toxicity; such an analysis has not been completed. CWC Sections 13146 and 13247 require that the Board in carrying out activities which affect water quality shall comply with state policy for water quality control unless otherwise directed by statute, in which case they shall indicate to the State Water Board in writing their authority for not complying with such policy. The State Water Board has adopted the SIP and the Regional Water Board is required to the Policy.

USEPA's TSD states, on page 104, that:

“When setting a whole effluent toxicity limit to protect against acute effects, some permitting authorities use an end-of-pipe approach. Typically these limits are established as an LC50>100% effluent at the end of the pipe. These limits are routinely set without any consideration as to the fate of the effluent and the concentrations of toxicant(s) after the discharge enters the receiving water. Limits derived in this way are not water quality based limits and suffer from significant deficiencies since the toxicity of a pollutant depends mostly upon concentration, duration of exposure, and repetitiveness of the exposure. This is especially true in effluent dominated waters. For example, an effluent that has an LC50=100% contains enough toxicity to be lethal up to 50% of the test organisms. If the effluent is discharged to a low flow receiving waterbody that provides no more than a three fold dilution at the critical flow, significant mortality can occur in the receiving water. Furthermore, such a limit could not assure protection against chronic effects in the receiving waterbody. Chronic effects could occur if the dilution in the receiving water multiplied by the acute to chronic ratio is greater than 100 percent. Therefore, in effluent dominated situations, limits set using this approach may be severely underprotective. In contrast, whole effluent toxicity limits set using this approach in very high receiving water flow conditions may be overly restrictive.”

Following USEPA's rationale the limitations of allowing 70 percent survival (30 percent mortality) in acute toxicity tests, as is the case in the cited LC50, will result in the allowance of toxic discharges to ephemeral streams, which is representative of the receiving waters at Davis. While the State and Regional Water Board's method of prescribing an effluent limitation of 70 percent survival may be protective in waterbodies with significant dilution; such a limitation should be subject to a complete mixing zone analysis. For an ephemeral receiving stream a mixing zone analysis would not be applicable under worst-case dry stream conditions. The Order should be revised to require the Regional Water Board to prohibit acute toxicity (100 percent survival as compared to the laboratory control) in accordance with Federal regulations, at 40 CFR 122.44 (d)(1)(i).

With regard to WET testing variability; USEPA's TSD states, on page 11, that:

“In summary, whole effluent toxicity testing can represent practical tests that estimate potential receiving water impacts. Permit limits that are developed correctly from whole effluent toxicity tests should protect biota if the discharged effluent meets the limits. It is important not confuse permit limit variability with toxicity test variability.” (emphasis added)

The proposed Permit must be revised to prohibit acute toxicity, require 100 percent survival in toxicity tests, in accordance with Federal regulations, at 40 CFR 122.44 (d)(1)(i), the CWA, the SIP, the CWC and the Basin Plan.

RESPONSE: The acute whole effluent toxicity limitations establish additional thresholds to control acute toxicity in the effluent: survival in one test no less than 70 percent and a median of no less than 90 percent survival in three consecutive tests. Some in-test mortality can occur by chance. To account for this, the acute toxicity test acceptability criteria allow 10 percent mortality (requires 90 percent survival) in the control. Thus, the acute toxicity limitations allow for some test variability, but impose ceilings for exceptional events (i.e., 30 percent mortality or more), and for repeat events (i.e., median of three events exceeding mortality of 10 percent). These effluent limitations are consistent with USEPA guidance document titled "Guidance for NPDES Permit Issuance", dated February 1994, which states the following:

"In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc."

The appropriateness of the acute toxicity effluent limitations was also addressed in State Water Board WQO 2008-0008 for the City of Davis. In WQO 2008-0008, the State Water Board concurred with the Regional Water Board's implementation of the acute toxicity effluent limitations.

CSPA Comment No. 6. 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 SIP.

The proposed Permit contains a finding for SIP which states that:

“On 2 March 2000, the State Water Board adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Policy or SIP). The SIP became effective on 28 April 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on 18 May 2000 with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005 that became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.”

The SIP, Section 4, Toxicity Control Provisions, Water Quality-Based Toxicity Control, states that: *“A chronic toxicity effluent limitation is required in permits for all dischargers that will cause, have a reasonable potential to cause, or contribute to chronic toxicity in receiving waters.”* The SIP is a state Policy and CWC Sections 13146 and 13247 require that the Board in carrying out activities which affect water quality shall comply with state policy for water quality control unless otherwise directed by statute, in which case they shall indicate to the State Water Board in writing their authority for not complying with such policy.

Federal regulations, at 40 CFR 122.44 (d)(1)(i), require that limitations must control all pollutants or pollutant parameters which the Director determines are or may be discharged at a level which will cause, or contribute to an excursion above any State water quality standard, including state narrative criteria for water quality. There has been no argument that domestic sewage contains toxic substances and presents a reasonable potential to cause toxicity if not properly treated and discharged. The Basin Plan, Water Quality Objectives (Page III-8.00) for Toxicity is a narrative criteria which states that all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. The Proposed Permit contains Effluent Limitation B, 1, e, which states that: *“There shall be no chronic toxicity in the effluent discharge”*. However, “chronic toxicity” is not defined. If the definition of chronic toxicity is that; in chronic bioassay tests there shall be no mortality and growth and reproduction shall not be statistically different than the laboratory control; the limitation is acceptable. A numeric or well-defined effluent limitation for chronic toxicity must be included in the Order.

Proposed Permit is quite simply wrong; by failing to include a numeric or well-defined effluent limitation prohibiting chronic toxicity the proposed Permit does not “...implement the SIP”. The Regional Water Board has commented time and again that no chronic toxicity effluent limitations are being included in NPDES permit until the State Water

Board adopts a numeric limitation. The Regional Water Board explanation does not excuse the proposed Permit's failure to comply with Federal Regulations, the SIP, the Basin Plan and the CWC. The Regional Water Board's Basin Plan, as cited above, already states that: "...waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses..." Accordingly, the proposed Permit must be revised to prohibit chronic toxicity (mortality and adverse sublethal impacts to aquatic life, (sublethal toxic impacts are clearly defined in USEPA's toxicity guidance manuals)) in accordance with Federal regulations, at 40 CFR 122.44 (d)(1)(i) and the Basin Plan and the SIP.

RESPONSE: As stated in the Fact Sheet, Section IV.C.5.b., there is insufficient chronic whole effluent toxicity (WET) data to determine if the discharge has a reasonable potential to cause or contribute to an instream exceedance of the Basin Plan's narrative toxicity objective. Therefore, the proposed Order requires semi-annual chronic WET monitoring. In addition to WET monitoring, Special Provision VI.C.2.a of the proposed Order requires the Discharger to develop an Initial Investigative Toxicity Reduction Evaluation (TRE) Work Plan, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if a pattern of toxicity is demonstrated.

CSPA Comment No. 7. The Fact Sheet Compliance Summary shows the discharge regularly causes exceedances of the receiving water limitations for temperature and pH, yet an enforcement action is not proposed.

Federal Regulation, 40 CFR 122.4(a), (d) and (g) require that no permit may be issued when the conditions of the permit do not provide for compliance with the applicable requirements of the CWA, or regulations promulgated under the CWA, when imposition of conditions cannot ensure compliance with applicable water quality requirements and for any discharge inconsistent with a plan or plan amendment approved under Section 208(b) of the CWA.

RESPONSE: See response to Discharger Comment No. 4.

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)).

Federal Regulation 40 CFR 131.38(c)(4) states that: “*For purposes of calculating freshwater aquatic life criteria for metals from the equations in paragraph (b)(2) of this section, for waters with a hardness of 400 mg/l or less as calcium carbonate, the actual ambient hardness of the surface water shall be used in those equations.*” (Emphasis added). Page F-18 of the proposed Permit states that the effluent hardness was used to calculate the reasonable potential for exceeding water quality standards for metals (chromium, copper, cadmium, nickel and zinc).

The hardness of the receiving water was 38 mg/L and the hardness of the effluent was 120 mg/l. The lower hardness results in higher toxicity rates and therefore an effluent limitation is more likely to be required for the discharge. The Regional Water Board staff have chosen to ignore Federal Regulations. There are procedures for changing regulations if peer reviewed science indicates the need to do so, none of which have been followed. The proposed Permit failure to include effluent limitations for copper, cadmium, silver and zinc based on the actual ambient hardness of the surface water is contrary to the federal regulations and must be amended to comply with the cited regulatory requirement.

RESPONSE: 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 hardness conditions at the time of discharge, effluent limitations must be set using a reasonable worst-case condition in order 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, in Section 1.2, 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.¹ 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.)

¹ See 40 CFR 131.38(c)(4)(i)

The point in the receiving water affected by the discharge is downstream of the discharge. As the effluent mixes with the receiving water, the hardness of the receiving water can change. Therefore, it is appropriate to use the ambient hardness downstream of the discharge that is a mixture of the effluent and receiving water for the determination of the CTR hardness-dependent metals criteria. Recent studies¹ indicate that using the lowest recorded receiving water hardness for establishing water quality criteria is not always protective of the receiving water under various mixing conditions (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 relationship between hardness and the resulting criterion in the CTR equation can exhibit either a downward-facing (i.e., concave downward) or an upward-facing (i.e., concave upward) curve depending on the values of criterion-specific constants.

For those contaminants where the regulatory criteria exhibit a concave downward relationship as a function of hardness (i.e. cadmium (chronic), chromium (III), copper, nickel, and zinc), 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. Use of the lowest recorded effluent hardness is also protective under all possible mixing conditions between the effluent and the receiving water (i.e., from high dilution to no dilution).

For those metals where the regulatory criteria exhibit a concave upward relationship as a function of hardness (i.e. cadmium (acute), lead, and silver (acute)), a water quality objective based on either the effluent hardness or the receiving water hardness alone, would not be protective under all mixing scenarios. Instead, both the hardness of the receiving water and the effluent is required to determine the reasonable worst-case ambient hardness.

Section IV.C.2.b of the Fact Sheet has been modified to provide clarification of the methodology used for estimating the reasonable worst-case ambient hardness for determination of hardness-dependent CTR metals criteria.

CSPA Comment No. 9. The proposed Permit fails to utilize valid, reliable, and representative effluent data in conducting a reasonable potential and limits

¹ "Developing Protective Hardness-Based Metal Effluent Limitations", Robert W. Emerick, Ph.D., P.E. and John E. Pedri, P.E.

derivation calculations for copper contrary to USEPA's interpretation of Federal Regulations, 40 CFR 122.44(d), and should not be adopted in accordance with 40 CFR 122.4 (a), (d) and (g) and CWC Section 13377.

Federal Regulations, 40 CFR 122.44(d), requires that limits must be included in permits where pollutants will cause, have reasonable potential to cause, or contribute to an exceedance of the State's water quality standards. USEPA has interpreted 40 CFR 122.44(d) in *Central Tenets of the National Pollutant Discharge Elimination System (NPDES) Permitting Program* (Factsheets and Outreach Materials, 08/16/2002) that; although States will likely have unique implementation policies there are certain tenets that may not be waived by State procedures. These tenets include that "*where valid, reliable, and representative effluent data or instream background data are available they MUST be used in applicable reasonable potential and limits derivation calculations. Data may not be arbitrarily discarded or ignored.*" The Regional Water Board has failed to valid, reliable and representative data in developing limitations, contrary to the cited Federal Regulation.

Federal Regulation, 40 CFR 122.4 (a), (d) and (g) require that no permit may be issued when the conditions of the permit do not provide for compliance with the applicable requirements of the CWA, or regulations promulgated under the CWA, when imposition of conditions cannot ensure compliance with applicable water quality requirements and for any discharge inconsistent with a plan or plan amendment approved under Section 208(b) of the CWA. In accordance with 40 CFR 122.4 (a), (d) and (g) the proposed Permit may not be adopted for failing to include protective limitations based on valid, reliable and representative data.

California Water Code, section 13377, requires that: "*Notwithstanding any other provision of this division, the state board and the regional boards shall, as required or authorized by the Federal Water Pollution Control Act, as amended, issue waste discharge and dredged or fill material permits which apply and ensure compliance with all applicable provisions of the act and acts amendatory thereof or supplementary, thereto, together with any more stringent effluent standards or limitations necessary to implement water quality control plans, or for the protection of beneficial uses, or to prevent nuisance.*"

The lowest hardness of the receiving water was recorded as 38 mg/L, which translates to a 4-day average (CCC) for copper of 4.0 µg/L and a 1-hour average (CMC) of 5.7 µg/L as derived directly from the California Toxics Rule (CTR). The highest recorded receiving water copper concentration was 12 µg/L. The highest recorded copper concentration of the effluent was 2.1 µg/L; however this was for dissolved not total copper. The total copper concentration would be higher than the dissolved fraction. It is also necessary to consider the statistical variability of the effluent sampling as required by Federal regulations, 40 CFR § 122.44(d)(1)(ii). With only two effluent samples (n = 2)

and utilizing the statistical procedures from USEPA's TSD, Table 3-1; with a coefficient of variation of 0.6 (since there are less than 10 samples), the RP multiplying factor is 7.4 and the projected maximum effluent concentration for copper will be 15.54 µg/L. There is a reasonable potential for copper to exceed the CTR criteria and an effluent limitation is required.

The permit concludes that the data set is inadequate and that it is uncertain whether a reasonable potential exists for copper to exceed water quality standard. Federal Regulations, 40 CFR 122.44(d), requires that limits must be included in permits where pollutants will cause, have reasonable potential to cause, or contribute to an exceedance of the State's water quality standards. USEPA has interpreted 40 CFR 122.44(d) in *Central Tenets of the National Pollutant Discharge Elimination System (NPDES) Permitting Program* (Factsheets and Outreach Materials, 08/16/2002) that although States will likely have unique implementation policies there are certain tenets that may not be waived by State procedures. These tenets include that "*where the preponderance of evidence clearly indicates the potential to cause or contribute to an exceedance of State water quality standards (even though the data may be sparse or absent) a limit MUST be included in the permit.*"

RESPONSE: See response to Discharger Comment #5.