



California Sportfishing Protection Alliance

"An Advocate for Fisheries, Habitat and Water Quality"

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Mr. Michael Lauffer, Chief Counsel
Office of Chief Counsel
State Water Resources Control Board
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VIA: Electronic Submission
Hardcopy if Requested

RE: Failure of the Central Valley Regional Water Quality Control Board to Comply with
Applicable Regulations for Issuing NPDES Permits

Dear Mr. Lauffer:

This letter is to follow up on our conversation regarding the Central Valley Regional Water Quality Control Board's (Region 5) failure to comply with explicit mandated regulatory requirements for NPDES permit issuance. These requirements are contained in the federal Clean Water Act and Code of Federal Regulations, Porter-Cologne Water Quality Control Act, Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California and the current edition of the Water Quality Control Plan for the Sacramento and San Joaquin River Basins.

Below is a brief discussion of a number of the regulations the California Sportfishing Protection Alliance (CSPA) believes are routinely ignored and/or misinterpreted by Region 5. The application of the majority these regulations in recent permits issued by Region 5 starkly contrasts with how they were implemented in recent decades under four previous Executive Officers. Cumulatively, these changes represent a significant backsliding in water quality protection at a time when the aquatic communities of the Central Valley are imploding.

As you are aware, CSPA has appealed upwards of forty Region 5 permits to the State Board over the last two years. In the last several months, the State Board has remanded or proposed to remand several permits back to Region 5, including permits for the Yuba City, Davis and Lodi wastewater treatment facilities. However, these orders have failed to evaluate and discuss many, indeed most, of the issues appealed to the State Board.

CSPA believes it might be beneficial and potentially avoid needless litigation if a meeting could be arranged between OCC, State and Regional Board staff and representatives from CSPA to explore how and whether these issues can be amicably resolved. Mindful of the need to avoid compromising the ability of the State Board to impartially review appeals, such discussions could avoid site-specific references or exclude staff assigned to appellate review.

Since CSPA will be discussing these issues with U.S. EPA Region IX, we would suggest that their representatives be asked to attend.

I will be contacting you in the near future to see if a meeting can be arranged. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "Bill Jennings". The signature is fluid and cursive, with the first name "Bill" being more prominent than the last name "Jennings".

Bill Jennings, Executive Director
California Sportfishing Protection Alliance

Attachment: Permitting Issues

CC: Tam M. Doduc, Chair, SWRCB
Arthur G. Baggett, Jr., Member, SWRCB
Charles R. Hoppin, Member, SWRCB
Frances Spivy-Weber, Member, SWRCB
Dorothy R. Rice, Executive Director, SWRCB
Karl E. Longley, Chair, Region 5
Pamela C. Creedon, Executive Officer, Region 5
Ken Landau, Assistant Executive Officer, Region 5
Alexis Strauss, Director, Water Division, U.S. EPA Region 9
Doug Eberhardt, CWA Standards and Permits, U.S. EPA Region 9
Richard McHenry, Compliance & Permitting, CSPA
Michael Lozeau, Esq.
Michael Jackson, Esq.
Andrew Packard, Esq.
Interested Parties

Permitting Issues

Permits issued by the Central Valley Regional Water Quality Control Board (Region 5) routinely ignore/violate requirements pertaining to: significant permit changes without recirculation, Bis(2-ethylhexyl)phthalate, aluminum, oil and grease, settleable solids, turbidity, hardness of the effluent, studies in lieu of required limitations, removal of massed based limitations, no salinity limitations, no limitations where reasonable potential identified, annual average limitations, antibacksliding, antidegradation, incomplete reports of waste discharge, mixing zones, CCR Title 27 and acute and chronic toxicity. Recently, Region 5 has begun exempting violations requiring mandatory minimum penalties in settlement orders. The following discusses these issues.

1. Late Permit Changes

Region 5 has been making significant and substantial changes to proposed Permits after the close of the public comment period without recirculation.

Federal Regulation, 40 CFR 124.6 (e), requires that all draft permits shall be accompanied by a statement of basis, shall be based on the administrative record, shall be publically noticed and made available for public comment. Federal Regulations 40 CFR 124.10 requires notification that a draft permit has been prepared and that at least 30 days are allowed for public comment. Federal Regulations 40 CFR 124.14 contains requirements for reopening the public comment period including reissuance of a draft permit.

For example, at a recent Board Hearing (12/08) significant changes had been made to a proposed Permit after closure of the public comment period. The changes had not been made available for public comment and a new draft permit was not reissued. Specifically:

1. Effluent Limitations for cyanide were removed from the proposed Permit.
2. The Effluent Limitations for ammonia were relaxed.
3. The Effluent Limitation for pH was altered.
4. The Effluent Limitation for chronic toxicity was modified. While we did not object to the actual modification to the Effluent Limitation; however the Compliance Determination was added which we believe unreasonably limits any finding of violation against the discharge of chronically toxic substances.
5. An averaging period for pH shift was added to the Receiving Water Limitation.
6. Monitoring requirements for turbidity, BOD, total suspended solids, and total coliform organisms were relaxed. The effluent dissolved oxygen monitoring was removed altogether and a receiving water monitoring station with the associated monitoring was deleted; and
7. The fact sheet basis for salinity limitations was completely replaced and each salinity constituent discussion has been altered.

CSPA requested that the late revisions be recirculated for adequate review and comment and cited the relevant regulations. The Regional Board's attorney stated during the hearing that the cited Federal Regulations were not applicable to state programs; which is incorrect.

2. Bis(2-ethylhexyl)phthalate

The Region 5 Permits fail to contain Effluent Limitations for bis(2-ethylhexyl)phthalate despite clear reasonable potential to exceed water quality standards in violation of Federal Regulations 40 CFR 122.44.

The Region 5 Permits state that sampling data for bis(2-ethylhexyl)phthalate is subject to error and is discarded without any supporting documentation from the laboratory quality assurance/quality control (QA/QC) documents. Bis(2-ethylhexyl)phthalate is used in the formation of plastics and has been documented in the available literature to be present in plastic pipes, bottles, bags and widely distributed throughout the environment. The Regional Board totally disregards scientific methods, specifically sampling and laboratory QA/QC methodologies, in throwing out data points that would lead to a reasonable potential for a pollutant to exceed water quality standards when the burden should properly be placed on wastewater Dischargers to conduct proper sampling and analysis. The California Water Code (CWC), Section 13377 states in part that: "...the state board or the regional boards shall...issue waste discharge requirements...which apply and ensure compliance with ...water quality control plans, or for the protection of beneficial uses..." Section 122.44(d) of 40 CFR requires that permits include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water. Failure to include an effluent limitation for bis(2-ethylhexyl)phthalate in the Region 5 Permits violates 40 CFR 122.44 and CWC 13377.

The Central Valley Regional Board has begun using the following language in each NPDES permit recently issued and has failed to find reasonable potential for bis(2-ethylhexyl)phthalate to exceed water quality standards regardless of the dataset or the laboratory quality assurance/quality control (QA/QC) provided by the laboratory. The CTR was adopted in May of 2000 and priority pollutants were previously regulated for a short time by the ISWP. Sampling for bis(2-ethylhexyl)phthalate has been conducted for over a decade and the Regional Board staff, despite clean QA/QC results, find the following:

"Since bis(2-ethylhexyl)phthalate is a common contaminant of sample containers, sampling apparatus, and analytical equipment, and sources of the detected bis(2-ethylhexyl)phthalate may be from plastics used for sampling or analytical equipment, the Regional Water Board has determined there is uncertainty in the available data. Consequently, there is insufficient information to complete a reasonable potential analysis at this time. In accordance with Section 1.2 of the SIP Regional Water Board staff shall have discretion to consider if any data are inappropriate or insufficient for use in implementing the policy. Where Regional Water Board staff have found the data are insufficient to determine reasonable potential. Section 1.3 of the SIP allows the Board to implement monitoring for the parameter of concern. Therefore, additional monitoring has been established for bis(2-ethylhexyl)phthalate. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, then this Order may be reopened and modified by adding an

appropriate effluent limitation.”

It has become the Central Valley Regional Board’s policy to not regulate bis(2-ethylhexyl)phthalate despite clear requirements in the SIP and the CTR. The Regional Board total disregards scientific methods, specifically sampling and laboratory QA/QC methodologies, in throwing out data points that would lead to a reasonable potential for a pollutant to exceed water quality standards when the burden should properly be placed on wastewater Dischargers to conduct proper sampling and analysis. Despite the claims, the Regional Board’s permits do not contain any additional language requiring any special assessment or clean sampling and analysis techniques be implemented for bis(2-ethylhexyl)phthalate. Surely it would violate CWC 13267 requirements to justify the need for technical reports and sampling if the Regional Board has no intent on using the data or believes it to be unreliable even before review. 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. US EPA 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.” The proposed Permit fails to comply with 40 CFR 122.44 by failing to contain an Effluent Limitation for bis(2-ethylhexyl)phthalate.

3. Aluminum

The Region 5 Permits fails to contain an Effluent Limitation for aluminum in accordance with Federal Regulations 40 CFR 122.44, US EPA’s interpretation of the regulation, and California Water Code, Section 13377.

Federal Regulations, 40 CFR 122.44 (d)(i), requires that; “Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.” The Basin Plan contains a narrative water quality objective for toxicity that states in part that “[a]ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life” (narrative toxicity objective). Where numeric water quality objectives have not been established, 40 CFR §122.44(d) specifies that WQBELs may be established using USEPA criteria guidance under CWA section 304(a), proposed State criteria or a State policy interpreting narrative criteria supplemented with other relevant information, or an indicator parameter. U.S. EPA developed National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum to prevent toxicity to freshwater aquatic life. The recommended ambient criteria four-day average (chronic) and one-hour average (acute) criteria for aluminum are 87 mg/l and 750 mg/l, respectively.

Region 5 permits consistently do not contain Effluent Limitations based on preventing chronic toxicity. US EPA's 87 ug/l chronic criterion was developed using low pH and hardness testing. California Central Valley waters, the Sacramento River, at the Valley floor, have been sampled to have hardnesses as low as 39 mg/l CaCO₃ by the USGS in February 1996 for the *National Water Quality Assessment Program*. Contributory streams, especially foothill streams, have also been sampled and shown to contain even lower hardness levels. US EPA recognized in their ambient criteria development document, (Ambient Water Quality Criteria for Aluminum, EPA 440/5-86-008) that the pH was in the range 6.5 to 6.6 and that the hardness was below 20 mg/l. Typical values for pH and hardness in the Central Valley alone warrant use of the chronic ambient criteria for aluminum. Despite the hardness and pH values used in the development of the criteria; U.S. EPA's conclusions in their Ambient Criteria for the Protection of Freshwater Aquatic Life recommends that application of the ambient criteria as necessary to be protective of the aquatic beneficial uses of receiving waters in lieu of site-specific criteria.

The drinking water maximum contaminant level (MCL), which is included as a Basin Plan Water Quality Chemical Constituents Objective, for aluminum is 1,000 as a primary MCL and 200 µg/l as a secondary MCL.

Federal Regulations, 40 CFR 122.44 (d)(i), requires that; "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." US EPA 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 California Water Code (CWC), Section 13377 states in part that: "...the state board or the regional boards shall...issue waste discharge requirements... which apply and ensure compliance with ...water quality control plans, or for the protection of beneficial uses..." Section 122.44(d) of 40 CFR requires that permits include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water. Failure to include an effluent limitation based on preventing chronic toxicity for aluminum in the Region 5 Permits violates 40 CFR 122.44 and CWC 13377.

4. Oil and Grease

The Region 5 Permits do not contain Effluent Limitations for oil and grease in violation of Federal Regulations 40 CFR 122.44 and California Water Code, Section 13377

The Region 5 Permits for a domestic wastewater treatment plants, which, by their nature, receive oil and grease in concentrations from home cooking and restaurants present a reasonable potential to exceed the Basin Plan water quality objective for oil and grease (Basin Plan III-5.00). Confirmation sampling is not necessary to establish that domestic wastewater treatment

systems contain oil and grease in concentrations that present a reasonable potential to exceed the water quality objective. It is not unusual for sewerage systems to allow groundwater cleanup systems, such as from leaking underground tanks, to discharge into the sanitary sewer. Groundwater polluted with petroleum hydrocarbons can also infiltrate into the collection system as easily as sewage exfiltrates. The Central Valley Regional Board has a long established history of including oil and grease limitations in NPDES permits at 15 mg/l as a daily maximum and 10 mg/l as a monthly average, which has established BPTC for POTWs.

The recent policy of excluding limits for oil and grease ignores the fact that the Regional Board has an established history of including oil and grease limitations in NPDES permits at 15 mg/l as a daily maximum and 10 mg/l as a monthly average. We believe even these limitations are not necessarily protective. The only guidance we were able to find supporting the 15/10 mg/l limit is an old 1974 EPA memo discussing technological-based limits for stormwater runoff from petroleum refineries and marketing terminals. The 15/10 mg/l standard is clearly inadequate in situations where reasonable potential analyses mandate a water quality-based limitation.

Oil and grease is highly toxic to aquatic life: toxic at concentrations as low as 0.1 mg/L and sublethal toxicities are reported at 10-100 μ g/L. In fact, it has been shown that petroleum products can harm aquatic life at concentrations as low as 1 μ g/l. Oil and grease is also persistent, bioaccumulative and highly toxic in sediment. The US EPA's water quality standard for oil and grease is stated as: "a) 0.01 of the lowest continuous flow 96-hour LC50 to several important freshwater and marine species, each having a demonstrated high susceptibility to oils and petrochemicals, b) Levels of oils or petrochemicals in the sediment which cause deleterious effects to the biota should not be allowed and c) surface waters shall be virtually free from floating nonpetroleum oils of vegetable or animal origin, as well as petroleum-derived oils" Goldbook, 1986, Quality Criteria for Water, EPA 440/5-86-001. A table summarizing lethal toxicities of various petroleum products to aquatic life can be found in EPA's 1976 Quality Criteria for Water (Redbook, pp 210-215). The Basin Plan's narrative limit for oil and grease is stated as "[w]aters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses" Basin Plan, III-5.00.

5. Settleable Solids

The Region 5 Permits contain no Effluent Limitations for settleable solids (SS) which were present in the existing NPDES Permit contrary to the Antibacksliding requirements of the Clean Water Act and Federal Regulations, 40 CFR 122.44 (l)(1).

The existing NPDES permits for domestic facilities contain Effluent Limitations for settleable solids (SS). The most important physical characteristic of wastewater is its total solids content. SS are an approximate measure of the quantity of sludge that will be removed by sedimentation. Low, medium and high strength wastewaters will generally contain 5 ml/l, 10 ml/l and 20 ml/l of SS, respectively. Knowledge of SS parameters is critical for proper wastewater treatment plant design, evaluating sludge quantities, operation and troubleshooting. Excessive SS in the effluent discharge are typically indicative of process upset or overloading of the system. Failure to limit and monitor for SS limits the regulators ability to assess facility operations and determine

compliance. Settleable matter is a water quality objective in the Basin Plan. Failure to include an Effluent Limitations for SS threatens to allow violation of the settleable matter receiving water limitation. We applaud the operators if indeed they did not violate the SS limitation during the life of the existing permit; this does not however remove the reasonable potential to cause exceedances in the future during system upsets or overloading; this also does not constitute “new” information as is required under the antibacksliding regulations.

6. Turbidity

The Region 5 Permits replaces Effluent Limitations for turbidity which were present in the existing permit; contrary to the Antibacksliding requirements of the Clean Water Act and Federal Regulations, 40 CFR 122.44 (l)(1).

Under the Clean Water Act (CWA), point source dischargers are required to obtain federal discharge (NPDES) permits and to comply with water quality based effluent limits (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.

The Region 5 Permit Fact Sheets discuss Pathogens and states that the previous Order established Effluent Limitations for turbidity. Turbidity limitations are maintained in the Region 5 Permits but have been moved to “Special Provisions”, they are no longer Effluent Limitations. The Fact Sheet Pathogen discussion states that infectious agents in sewage are bacteria, parasites and viruses and that tertiary treatment is necessary to effectively remove these agents. This discussion also states that turbidity limitations were originally established: “...to ensure that the treatment system was functioning properly and could meet the limits for total coliform organisms. This discussion is incorrect. First; coliform organism limitations are also an indicator parameter of the effectiveness of tertiary treatment. The coliform limitations in the proposed and past Permit are significantly lower than the Basin Plan Water Quality Objective and are based on the level of treatment recommended by the California Department of Public Health (DPH). Second; both the coliform limitations and turbidity are recommended by DPH as necessary to protect recreational and irrigated agricultural beneficial uses of the receiving water. Turbidity has no lesser standing than coliform organisms in the DPH recommendation. Section 122.44(d) of 40 CFR requires that permits include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water. There are no limitations for viruses and parasites in the Region 5 Permits, which the Regional Board has indicated are necessary to protect the contact recreation and irrigated agricultural uses of the receiving water. Both coliform and turbidity limitations are treatment effectiveness indicators that the levels of bacteria viruses and parasites are adequately removed to protect the beneficial uses. Special Provisions are not Effluent Limitations as required by the Federal Regulations. The turbidity Effluent Limitations must be restored in accordance with the Clean Water Act and Federal regulations 40 CFR 122.44 (l)(1).

The only rationale that can explain moving the turbidity from Effluent Limitations to Provisions is to protect Dischargers from mandatory minimum penalties as prescribed by the California Water Code, Section 13385. It is doubtful that it was intent of the legislature in adopting the mandatory penalty provisions to have the Regional Boards delete Effluent Limitations from permit to avoid penalties.

7. Hardness of the Effluent

The Region 5 Permits establish Effluent Limitations for metals based on the hardness of the effluent and/or the downstream water as opposed to the ambient upstream receiving water hardness as required by Federal Regulations, the California Toxics Rule (CTR, 40 CFR 131.38©(4)).

Federal Regulation 40 CFR 131.38©(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). The Region 5 Permits states that the effluent hardness and the downstream hardness were used to calculate Effluent Limitations for metals. The definition of *ambient* is “in the surrounding area”, “encompassing on all sides”. It has been the Region 5, Sacramento, NPDES Section, in referring to Basin Plan objectives for temperature, to define *ambient* as meaning upstream. It is reasonable to assume, after considering the definition of ambient, that EPA is referring to the hardness of the receiving stream before it is potentially impacted by an effluent discharge. It is also reasonable to make this assumption based on past interpretations and since EPA, in permit writers’ guidance and other reference documents, generally assumes receiving streams have dilution, which would ultimately “encompass” the discharge. Ambient conditions are in-stream conditions unimpacted by the discharge.

The Federal Register, Volume 65, No. 97/Thursday, May 18th 2000 (31692), adopting the California Toxics Rule in confirming that the ambient hardness is the upstream hardness, absent the wastewater discharge, states that: “A hardness equation is most accurate when the relationship between hardness and the other important inorganic constituents, notably alkalinity and pH, are nearly identical in all of the dilution waters used in the toxicity tests and in the surface waters to which the equation is to be applied. If an effluent raises hardness but not alkalinity and/or pH, using the lower hardness of the downstream hardness might provide a lower level of protection than intended by the 1985 guidelines. If it appears that an effluent causes hardness to be inconsistent with alkalinity and/or pH the intended level of protection will usually be maintained or exceeded if either (1) data are available to demonstrate that alkalinity and/or pH do not affect the toxicity of the metal, or (2) the hardness used in the hardness equation is the hardness of upstream water that does not include the effluent. The level of protection intended by the 1985 guidelines can also be provided by using the WER procedure.”

The Regional Board has used the effluent hardness and most recently used the instream effluent hardness measured immediately downstream of the point of discharge, calling such “ambient.” Ambient is defined as “surrounding”; not “in the middle of”. The result of using a higher effluent

or downstream hardness value is that metals are toxic at higher concentrations, discharges have less reasonable potential to exceed water quality standards and the resulting Permits have fewer Effluent Limitations.

8. No Limitations – Studies

Frequently Region 5 Permits fail to include Effluent Limitations for constituents and instead includes a requirement to conduct further studies contrary to US EPA’s interpretation of Federal Regulation, 40 CFR 122.44(d).

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. US EPA 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 calculations indicate reasonable potential, a specific numeric limit MUST be included in the permit. Additional “studies” or data collection efforts may not be substituted for enforceable permit limits where “reasonable potential” has been determined.”

9. Removal of Massed Based Limitations

The Region 5 Permits fail to contain mass-based effluent limits as required by Federal Regulations 40 CFR 122.45(b).

Federal Regulation, 40 CFR 122.45 (b) requires that in the case of POTWs, permit Effluent Limitations, standards, or prohibitions shall be based on design flow. Concentration is not a basis for design flow. Mass limitations are concentration multiplied by the design flow and therefore meet the regulatory requirement.

Section 5.7.1 of U.S. EPA’s *Technical Support Document for Water Quality Based Toxics Control* (TSD, EPA/505/2-90-001) states with regard to mass-based Effluent Limits:

“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 waters, 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 the 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.”

Federal Regulations, 40 CFR 122.45 (B)(1), states the following: “In the case of POTWs, permit effluent limitations, standards, or prohibitions shall be calculated based on design flow.”

Traditional wastewater treatment plant design utilizes average dry weather flow rates for organic, individual constituent, loading rates and peak wet weather flow rates for hydraulic design of pipes, weir overflow rates, and pumps.

Increased wet weather flow rates are typically caused by inflow and infiltration (I/I) into the sewer collection system that dilutes constituent loading rates and does not add to the mass of wastewater constituents.

For POTWs priority pollutants, such as metals, have traditionally been reduced by the reduction of solids from the wastestream, incidental to treatment for organic material. Following adoption of the CTR, compliance with priority pollutants is of critical importance and systems will need to begin utilizing loading rates of individual constituents in the WWTP design process. It is highly likely that the principal design

parameters for individual priority pollutant removal will be based on mass, making mass based Effluent Limitations critically important to compliance. The inclusion of mass limitations will be of increasing importance to achieving compliance with requirements for individual pollutants.

As systems begin to design to comply with priority pollutants, the design systems for POTWs will be more sensitive to similar restrictions as industrial dischargers currently face where production rates (mass loadings) are critical components of treatment system design and compliance. Currently, Industrial Pretreatment Program local limits are frequently based on mass. Failure to include mass limitations would allow industries to discharge mass loads of individual pollutants during periods of wet weather when a dilute concentration was otherwise observed, upsetting treatment processes, causing effluent limitation processes, sludge disposal issues, or problems in the collection system.

TMDLs represent a mass loading that may occur over a given time period to attain and maintain water quality standards. Mass loadings from WWTPs are critical to determining individual discharger allocations once a TMDL has been completed.

Mixing zone allowances will increase the mass loadings of a pollutant to a waterbody and decrease treatment requirements. Accurate mass loadings are critical to mixing zone determinations.

Once toxicity numeric limitations (TUs) have been established, it is necessary to convert toxicity units that can be directly related to mass.

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

10. Salinity Limitations

The Region 5 Permits fails to contain Effluent Limitations for salinity (EC and/or TDS) that are protective of the beneficial uses of the receiving stream and fail to provide adequate treatment in order to achieve water quality objectives and protect beneficial uses of the receiving stream contrary to Federal Regulations, CCR Title 27, the Basin Plan, the SIP, the Antidegradation Policy, the Controllable Factors Policy and the California Water Code.

The Region 5 Permits rarely contain Effluent Limitation for salts (EC or total dissolved solids (TDS)). For expiring or renewed Permits which have salt limitations, they are generally removed and a study requirement is their place.

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. US EPA 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 calculations indicate reasonable potential, a specific numeric limit MUST be included in the permit. Additional “studies” or data collection efforts may not be substituted for enforceable permit limits where “reasonable potential” has been determined.” Inclusion of the proposed limitation for TDS while requiring a mixing zone and dilution study, rather than adopting a fully protective TDS Effluent Limitation violates 40 CFR 122.44(d).

The beneficial uses of most receiving streams in the Central Valley include municipal and domestic supply (MUN), agricultural supply (AGR), industrial supply (IND), warm freshwater habitat (WARM), cold freshwater aquatic habitat (COLD) migration of both warm and cold water aquatic organisms (MIGR) and spawning, reproduction, and/or early development (SPWN).

The discharge of EC or TDS may exceed water quality objectives for each designated beneficial use:

- MUN: The Drinking Water maximum contaminant levels (MCLs) are water quality objectives incorporated into the Basin Plan Chemical Constituents by reference. The MCL for TDS is 500 mg/l as the recommended level, 1,000 mg/l as an upper level and 1,500 mg/l as a short term maximum. *McKee and Wolf* (1971 Water Quality Criteria) cites that waters above 4,000 mg/l TDS are generally unfit for human use.
- AGR: The Basin Plan states, on Page III-3.00 Chemical Constituents, that “Waters shall not contain constituents in concentrations that adversely affect beneficial uses.” The Basin Plan’s “Policy for Application of Water Quality Objectives” provides that in implementing narrative water quality objectives, the Regional Board will consider numerical criteria and guidelines developed by other agencies and organizations. This application of the Basin Plan is consistent with Federal Regulations, 40CFR 122.44(d). For EC, *Ayers R.S. and D.W. Westcott, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985)*, levels above 700 μ mhos/cm will reduce crop yield for sensitive plants. The State Water Resources Control Board’s *Irrigation with Reclaimed Municipal Waste (July 1984)* and *McKee and Wolf* (1971 Water Quality Criteria), state that waters with TDS above 2,100 mg/l are unsuitable for any irrigation under most conditions.
- IND: *McKee and Wolf* (1971 Water Quality Criteria) lists the limiting TDS concentrations for numerous industrial uses in mg/l; boiler feed water 50-3000, brewing 500-1000, canning 850, general food processing 850 and paper manufacturing 80-500.

COLD/MIGR/SPWN: In a *Biological Significance* document sent to the Regional Board regarding the Musco Olive facility, dated November 1st 2006, James M. Harrington, Staff Water Quality Biologist with the California Department of Fish and Game, citing McKee and Wolf (1971 Water Quality Criteria) wrote that: “Surveys of inland fresh waters indicates that good mixes of fish fauna are found where conductivity values range between 150 and 500 umhos/cm. Even in the most alkaline waters, the upper tolerance limit for aquatic life is approximately 2000 umhos/cm.”

The beneficial uses of receiving streams may be degraded by salt concentrations in wastewater discharges and 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. 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 Region 5 Permits does not protect the beneficial uses of the receiving stream, the Sacramento River, and therefore does not comply with the requirements of Federal Regulations and the California Water Code.

The Central Valley Basin Plan, page IV-15.00, contains a *Controllable Factors Policy* which states that: “Controllable water quality factors are not allowed to cause further degradation of water quality in instances where other factors have already resulted in water quality objectives being exceeded. Controllable water quality factors are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the State, that are subject to the authority of the State Water or Regional Water Board, and that may be reasonably controlled.”

The discharge of salt (EC or TDS) may be a designated waste as defined by the CWC, Section 13173(b) as nonhazardous waste that contains pollutants that could be released in concentrations exceeding applicable water quality objectives; which must be regulated in accordance with Title CCR 27. The discharge of salt may exceed the Toxicity and Chemical Constituents (drinking water MCL and at concentrations that adversely affect the industrial and agricultural beneficial uses) water quality objectives. CCR, Title 27, Section 20210, requires that designated wastes shall only be discharged at Class I or Class II waste management units. Designated waste must be kept out of the receiving stream. The Region 5 Permits consistently allow the discharge of a designated waste to surface water in violation of CCR Title 27.

For EC, *Ayers R.S. and D.W. Westcott, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985)*, levels above 700 µmhos/cm will reduce crop yield for sensitive plants. The University of California, Davis Campus, Agricultural Extension Service, published a paper, dated 7 January 1974, stating that there will not be problems to crops associated with salt if the EC remains below 750 µmhos/cm.

11. Reasonable Potential – no Limitations

The Region 5 Permits frequently fail to include an Effluent Limitation despite clear reasonable potential to exceed water quality standards as required by Federal Regulations 40 CFR 122.44 and the permit should not be adopted in accordance with California Water Code Section 13377.

Federal Regulations, 40 CFR 122.44 (d)(i), requires that; “Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.” Even in cases where the discharge clearly exceeds the water quality objective Region 5 fails to include Effluent Limitations. 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.”

12. Annual Average Limitations

Effluent Limitations for secondary drinking water MCLs are improperly regulated as an annual average contrary to Federal Regulations 40 CFR 122.45 (d)(2) and common sense.

Federal Regulation 40 CFR 122.45 (d)(2) requires that permit for POTWs establish Effluent Limitations as average weekly and average monthly unless impracticable. The Region 5 Permits establish Effluent Limitations for secondary drinking water MCLs, such as EC, iron and manganese, as an annual average contrary to the cited Federal Regulation. These secondary standards are based on discoloration and taste and odor; conditions which occur instantaneously. Averaging over a year allows for peak shorter duration concentrations which can exceed the maximum concentration degrading the drinking water beneficial use. Establishing Effluent Limitations for EC, iron and manganese in accordance with the Federal Regulation is not impracticable, to the contrary the Central Valley Regional Board has a long history of having done so. Proof of impracticability is properly a steep slope and the Regional Board has not presented any evidence that properly and legally limiting EC, iron and manganese is impracticable.

13. Antibacksliding

The Region 5 Permits contain Effluent Limitations less stringent than the existing permit contrary to the Antibacksliding requirements of the Clean Water Act and Federal Regulations, 40 CFR 122.44 (l)(1).

Under the Clean Water Act (CWA), point source dischargers are required to obtain federal discharge (NPDES) permits and to comply with water quality based effluent limits (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 EPA 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 Act 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 §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. Section 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 EPA allows a permit to backslide from its previous permit requirements, EPA 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 §303.49.

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

(l) 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);

I 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 301I, 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 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).

(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, issued, 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.

Region 5 has routinely removed Effluent Limitations without meeting any of the regulatory exceptions to the Antidegradation regulations.

14. Antidegradation

The Region 5 Permits rarely contain an adequate antidegradation analysis that complies with the requirements of Section 101(a) of the Clean Water Act, Federal Regulations 40 CFR § 131.12, the State Board's Antidegradation Policy (Resolution 68-16) and California Water Code (CWC) Sections 13146 and 13247.

Each Permit issued by the Central Valley Region states that the Discharger applies best practicable treatment and control (BPTC) of the discharge despite whether; the Discharger is in significant non-compliance with discharge limitations, cannot comply with new limitations or is issued compliance time schedules. In most instances there is no Antidegradation Policy assessment in the permits. There is generally nothing in the Region 5 Permits resembling an analysis that ensures that existing beneficial uses are protected. While the Permits may identify constituents that are included on the 303(d) list as impairing receiving waters, they fail to discuss how and to what degree the identified beneficial uses will be additionally impacted by the discharge. Nor does the Permit analyze the incremental and cumulative impact of increased loading of non-impairing pollutants on beneficial uses. In fact, there is almost never information or discussion on the composition and health of the identified beneficial uses. Any reasonably adequate antidegradation analysis must discuss the affected beneficial uses (i.e., numbers and health of the aquatic ecosystem; extent, composition and viability of agricultural production; people depending upon these waters for water supply; extent of recreational activity; etc.) and the probable effect the discharge will have on these uses.

The antidegradation analyses in the Region 5 Permits are typically not simply deficient, they are usually nonexistent. The brief discussion of antidegradation requirements, in the Findings and Fact Sheet, typically consist only of skeletal, unsupported, undocumented conclusory statements totally lacking in factual analysis. A complete Antidegradation Policy analysis would be of great assistance to the permit writer in preparing protective permits.

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 Board in writing their authority for not complying with such policy. The State Board has adopted the Antidegradation Policy (Resolution 68-16), which the Regional Board has incorporated into its Basin Plan. Therefore, the Regional Board is required by the CWC to comply with the Antidegradation Policy.

Section 101(a) of the Clean Water Act (CWA), the basis for the antidegradation policy, states that the objective of the Act is to “restore and maintain the chemical, biological and physical integrity of the nation’s waters.” Section 303(d)(4) of the CWA carries this further, referring explicitly to the need for states to satisfy the antidegradation regulations at 40 CFR § 131.12 before taking action to lower water quality. These regulations (40 CFR § 131.12(a)) describe the federal antidegradation policy and dictate that states must adopt both a policy at least as stringent as the federal policy as well as implementing procedures.

California’s antidegradation policy is composed of both the federal antidegradation policy and the State Board’s Resolution 68-16 (State Water Resources Control Board, Water Quality Order 86-17, p. 20 (1986) (“Order 86-17”); Memorandum from Chief Counsel William Attwater, SWRCB to Regional Board Executive Officers, “federal Antidegradation Policy,” pp. 2, 18 (Oct. 7, 1987) (“State Antidegradation Guidance”). As a state policy, with inclusion in the Water Quality Control Plan (Basin Plan), the antidegradation policy is binding on all of the Regional Boards (Water Quality Order 86-17, pp. 17-18).

Implementation of the state’s antidegradation policy is guided by the State Antidegradation Guidance, SWRCB Administrative Procedures Update 90-004, 2 July 1990 (“APU 90-004”) and USEPA Region IX, “Guidance on Implementing the Antidegradation Provisions of 40 CFR 131.12” (3 June 1987) (“Region IX Guidance”), as well as Water Quality Order 86-17.

The Regional Board must apply the antidegradation policy whenever it takes an action that will lower water quality (State Antidegradation Guidance, pp. 3, 5, 18, and Region IX Guidance, p. 1). Application of the policy does not depend on whether the action will actually impair beneficial uses (State Antidegradation Guidance, p. 6). Actions that trigger use of the antidegradation policy include issuance, re-issuance, and modification of NPDES and Section 404 permits and waste discharge requirements, waiver of waste discharge requirements, issuance of variances, relocation of discharges, issuance of cleanup and abatement orders, increases in discharges due to industrial production and/or municipal growth and/or other sources, exceptions from otherwise applicable water quality objectives, etc. (State Antidegradation Guidance, pp. 7-10, Region IX Guidance, pp. 2-3). Both the state and federal policies apply to point and nonpoint source pollution (State Antidegradation Guidance p. 6, Region IX Guidance, p. 4).

The State Board’s APU 90-004 specifies guidance to the Regional Boards for implementing the state and federal antidegradation policies and guidance. The guidance establishes a two-tiered process for addressing these policies and sets forth two levels of analysis: a simple analysis and a complete analysis. A simple analysis may be employed where a Regional Board determines that: 1) a reduction in water quality will be spatially localized or limited with respect to the waterbody, e.g. confined to the mixing zone; 2) a reduction in water quality is temporally

limited; 3) a proposed action will produce minor effects which will not result in a significant reduction of water quality; and 4) a proposed activity has been approved in a General Plan and has been adequately subjected to the environmental and economic analysis required in an EIR. A complete antidegradation analysis is required if discharges would result in: 1) a substantial increase in mass emissions of a constituent; or 2) significant mortality, growth impairment, or reproductive impairment of resident species. Regional Boards are advised to apply stricter scrutiny to non-threshold constituents, i.e., carcinogens and other constituents that are deemed to present a risk of source magnitude at all non-zero concentrations. If a Regional Board cannot find that the above determinations can be reached, a complete analysis is required.

Even a minimal antidegradation analysis would require an examination of: 1) existing applicable water quality standards; 2) ambient conditions in receiving waters compared to standards; 3) incremental changes in constituent loading, both concentration and mass; 4) treatability; 5) best practicable treatment and control (BPTC); 6) comparison of the proposed increased loadings relative to other sources; 7) an assessment of the significance of changes in ambient water quality and 8) whether the waterbody was a ONRW. A minimal antidegradation analysis must also analyze whether: 1) such degradation is consistent with the maximum benefit to the people of the state; 2) the activity is necessary to accommodate important economic or social development in the area; 3) the highest statutory and regulatory requirements and best management practices for pollution control are achieved; and 4) resulting water quality is adequate to protect and maintain existing beneficial uses. A BPTC technology analysis must be done on an individual constituent basis; while tertiary treatment may provide BPTC for pathogens, dissolved metals may simply pass through.

There is rarely an economic or socioeconomic analysis in the Region 5 Permits. The few economic evaluations have contained no comparative costs, simply the cost to the Discharger. As a rule-of-thumb, USEPA recommends that the cost of compliance should not be considered excessive until it consumes more than 2% of disposable household income in the region. This threshold is meant to suggest more of a floor than a ceiling when evaluating economic impact. In the Water Quality Standards Handbook, USEPA interprets the phrase “necessary to accommodate important economic or social development” with the phrase “substantial and widespread economic and social impact.”

There is generally nothing resembling an analysis buttressing the typically unsupported claim that BPTC is being provided. An increasing number of wastewater treatment plants around the country and state are employing reverse-osmosis (RO), or even RO-plus. Clearly, micro or nano filtration can in many cases be considered BPTC for wastewater discharges. If this is not the case, the antidegradation analysis must explicitly detail how and why a non-compliant run-of-the-mill secondary or tertiary system that facilitates increased mass loadings of impairing constituents can be considered BPTC.

15. Incomplete Reports of Waste Discharge

The Region 5 Permits are frequented based on an incomplete Report of Waste Discharge (RWD) and in accordance with Federal Regulations 40 CFR 122.21(e) and (h) and 124.3 (a)(2) the State’s *Policy for Implementation of Toxics standards for Inland Surface Waters,*

Enclosed Bays, and Estuaries of California (SIP) and California Water Code Section 13377 the permit should not be issued until the discharge is fully characterized and a protective permit can be written.

Frequently there is no information in the Region 5 Permits to indicate that the wastewater discharge has been characterized for California Toxics Rule (CTR), National Toxics Rule (NTR), drinking water MCLs and other pollutants which could degrade the beneficial uses of the receiving stream and exceed water quality standards and objectives. For the last several years the Regional Board's NPDES permits have contained a spreadsheet detailing the priority pollutant sampling which has, or has not, been monitored. Absent this spreadsheet, one can only conclude that the required priority pollutant sampling, which is necessary to characterize the discharge, has not been conducted. The absence of data is contrary to precedential Water Quality Order WQO 2004-0013 for the City of Yuba City, "The findings or Fact Sheet should cite the specific data on which it relied in its calculations."

EPA established the CTR in May of 2000 (Federal Register / Vol. 65, No. 97 / Thursday, May 18, 2000 / Rules and Regulations, Environmental Protection Agency 40 CFR Part 131, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California) which promulgates: numeric aquatic life criteria for 23 priority toxic pollutants; numeric human health criteria for 57 priority toxic pollutants; and a compliance schedule provision which authorizes the State to issue schedules of compliance for new or revised National Pollutant Discharge Elimination System permit limits based on the federal criteria when certain conditions are met. Section 3, *Implementation*, requires that once the applicable designated uses and water quality criteria for a water body are determined, under the National Pollutant Discharge Elimination System (NPDES) program discharges to the water body must be characterized and the permitting authority must determine the need for permit limits. If a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criteria, the permitting authority must develop permit limits as necessary to meet water quality standards. These permit limits are water quality-based effluent limitations or WQBELs. The terms "cause," "reasonable potential to cause," and "contribute to" are the terms in the NPDES regulations for conditions under which water quality based permit limits are required (See 40 CFR 122.44(d)(1)).

The SWRCB adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP) to implement the CTR. Section 1.2 Data Requirements and Adjustments, of the SIP requires that it is the discharger's responsibility to provide all data and other information requested by the RWQCB before the issuance, reissuance, or modification of a permit to the extent feasible. When implementing the provisions of this Policy, the RWQCB shall use all available, valid, relevant, representative data and information, as determined by the RWQCB.

The SIP required the Regional Board's to require dischargers to characterize their discharges for priority pollutants. On 10 September 2001, the Regional Board mailed out a California Water Code Section 13267 letter to dischargers requiring a minimum of quarterly sampling for priority pollutants, pesticides, drinking water constituents, and other pollutants. The Regional Board's 13267 letter cited SIP Section 1.2 as directing the Board to issue the letter requiring sampling

sufficient to determine reasonable potential for priority pollutants and to calculate Effluent Limitations. The Regional Board's 13267 letter went beyond requiring sampling for CTR and NTR constituents and required a complete assessment for pesticides, drinking water constituents, temperature, hardness and pH and receiving water flow. There is no indication that any this data was ever received or that it was utilized in preparing the Region 5 Permits.

SIP Section 1.3 requires that the Regional Board conduct a reasonable potential analysis for each priority pollutant to determine if a water quality-based Effluent Limitation is required in the permit. Absent the data, the Regional Board cannot possibly comply with SIP requirement of Section 1.3. There is no analysis or discussion in the Region 5 Permits which indicates the Regional Board complied with the requirements of SIP Section 1.3. Failure to include this information, if received, would be in violation of Federal Regulation 40 CFR 124.8 (A)(2), which requires Fact Sheets contain an assessment of the wastes being discharged.

3 years of data only: There are also several instances where the Region 5 Permits is based on an incomplete record of the discharge quality. Specifically, for the removal of limitations for several previously limited pollutants (Antibacksliding discussion) and to justify the reduction of toxicity monitoring. Each of these instances utilizes only 3-years of data. The absence of data is contrary to the SIP, Section 1.2, requirement that the Regional Board use all valid, relevant and representative data. There does not appear to have been any changes in the treatment processes or the quality of the influent, which would invalidate this data.

Federal Regulation, 40 CFR 122.21(e) states in part that: "The Director shall not issue a permit before receiving a complete application for a permit except for NPDES general permits. In accordance with 40 CFR 122.21 (e) and (h) and 124.3 (a)(2) the Regional Board shall not adopt the Region 5 Permits without first a complete application, in this case for industrial landfill, for which the permit application requirements are extensive. An application for a permit is complete when the Director receives an application form and any supplemental information, which are completed to his or her satisfaction. The completeness of any application for a permit shall be judged independently of the status of any other permit application or permit for the same facility or activity."

State Report of Waste Discharge form 200 is required as a part of a complete Report of Waste Discharge. Form 200, part VI states that: "To be approved, your application must include a complete characterization of the discharge." The Federal Report of Waste Discharge forms also require a significant characterization of a wastewater discharge. Federal Application Form 2A, which is required for completion of a Report of Waste Discharge for municipalities, Section B.6, requires that Dischargers whose flow is greater than 0.1 mgd, must submit sampling data for ammonia, chlorine residual, dissolved oxygen, total kjeldahl nitrogen, nitrate plus nitrite nitrogen, oil an grease, phosphorus and TDS. Federal Application Form 2A, Section D, requires that Discharger's whose flow is greater than 1.0 mgd, conduct priority pollutant sampling. Federal Regulation, 40 CFR 122.21(g)(7) requires for existing manufacturing, commercial or mining facilities that a significant list of priority pollutants be sampled to characterize the effluent discharge. This has apparently not been completed.

As the Region 5 Permits state; the California Toxics Rule (CTR)(40 CFR 131, Water Quality Standards) contains water quality standards applicable to this wastewater discharge. The final due date for compliance with CTR water quality standards for all wastewater dischargers in California is May 2010. The State's *Policy for Implementation of Toxics standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (SIP), Section 1.2, requires wastewater dischargers to provide all data and other information requested by the Regional Board before the issuance, reissuance, or modification of a permit to the extent feasible.

Federal Regulation, 40 CFR 122.21(e) states in part that: "The Director shall not issue a permit before receiving a complete application for a permit except for NPDES general permits.

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."

16. Mixing Zones

The Region 5 Permits contain an allowance for a mixing zone that frequently 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.

"A mixing zone is an area where an effluent discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient waterbody. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as acutely toxic conditions are prevented" according to EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD) (USEPA, 1991), (Water quality criteria must be met at the edge of a mixing zone.) Mixing zones are regions within public waters adjacent to point source discharges where pollutants are diluted and dispersed at concentrations that routinely exceed human health and aquatic life water quality standards (the maximum levels of pollutants that can be tolerated without endangering people, aquatic life, and wildlife.) Mixing zone policies allow a discharger's point of compliance with state and federal water quality standards to be moved from the "end of the pipe" to the outer boundaries of a dilution zone. The CWA was adopted to minimize and eventually eliminate the release of pollutants into public waters because fish were dying and people were getting sick. The CWA requires water quality standards (WQS) be met in all waters to prohibit concentrations of pollutants at levels assumed to cause harm. Since WQS criteria are routinely exceeded in mixing zones it is likely that in some locations harm is occurring. The general public is rarely aware that local waters are being degraded within these mixing zones, the location of mixing zones within a waterbody, the nature and quantities of pollutants being diluted, the effects the pollutants might be having on human health or aquatic life, or the uses that may be harmed or eliminated by the discharge. Standing waist deep at a favorite fishing hole, a fisherman has no idea that he is in the middle of a mixing zone for pathogens for a sewage discharger that has not been required to adequately treat their waste.

In 1972, backed by overwhelming public support, Congress overrode President Nixon's veto and passed the Clean Water Act. Under the 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. *Uses + Criteria = Water Quality Standards (WQS)*. WQS are regulations adopted by each state to protect the waters under their jurisdiction. If a waterbody is classified for more than one use, the applicable WQS are the criteria that would protect the most sensitive use.

All wastewater dischargers to surface waters must apply for and receive a permit to discharge pollutants under the National Pollutant Discharge Elimination System (NPDES.) Every NPDES permit is required to list every pollutant the discharger anticipates will be released, and establish effluent limits for these pollutants to ensure the discharger will achieve WQS. NPDES permits also delineate relevant control measures, waste management procedures, and monitoring and reporting schedules.

It is during the process of assigning effluent limits in NPDES permits that variances such as mixing zones alter the permit limits for pollutants by multiplying the scientifically derived water quality criteria by dilution factors. The question of whether mixing zones are legal has never been argued in federal court.

Mixing zones are never mentioned or sanctioned in the CWA. To the contrary, the CWA appears to speak against such a notion:

“whenever...the discharges of pollutants from a point source...would interfere with the attainment or maintenance of that water quality...which shall assure protection of public health, public water supplies, agricultural and industrial uses, and the protection and propagation of a balanced population of shellfish, fish and wildlife, and allow recreational activities in and on the water, effluent limitations...shall be established which can reasonably be expected to contribute to the attainment or maintenance of such water quality.”

A plain reading of the above paragraph calls for the application of effluent limitations whenever necessary to assure that *WQS will be met in all waters*. Despite the language of the Clean Water Act; US EPA adopted 40 CFR 131.13, General policies, that allows States to, at their discretion, include in their State standards, policies generally affecting their application and implementation, such as mixing zones, low flows and variances. According to EPA; (EPA, Policy and Guidance on Mixing Zones, 63 Fed Reg. 36,788 (July 7, 1998)) as long as mixing zones do not eliminate beneficial uses in the whole waterbody, they do not violate federal regulation or law. California has mixing zone policies included in individual Water Quality Control Plans (Basin Plans) and the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (2005) permitting pollutants to be diluted before being measured for compliance with the state's WQS.

Federal Antidegradation regulations at 40 CFR 131.12 require that states protect waters at their present level of quality and that all beneficial uses remain protected. The corresponding State Antidegradation Policy, Resolution 68-16, requires that any degradation of water quality not unreasonably affect present and anticipated beneficial uses. Resolution 68-16 further requires that: “Any activity which produces or may produce or increase volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with the maximum benefit to the people of the State will be maintained.”

- Pollution is defined in the California Water Code as an alteration of water quality to a degree which unreasonably affects beneficial uses. In California, Water Quality Control Plans (Basin Plans) contain water quality standards and objectives which are necessary to protect beneficial uses. The Basin Plan for California’s Central Valley Regional Water Board states that: “According to Section 13050 of the California Water Code, Basin Plans consist of a designation or establishment for the waters within a specified area of beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives. State law also requires that Basin Plans conform to the policies set forth in the Water Code beginning with Section 13000 and any state policy for water quality control. Since beneficial uses, together with their corresponding water quality objectives, can be defined per federal regulations as water quality standards, the Basin Plans are regulatory references for meeting the state and federal requirements for water quality control (40 CFR 131.20).”
- Nuisance is defined in the California Water Code as anything that is injurious to health, indecent, offensive or an obstruction of the free use of property that affects an entire community and occurs as a result of the treatment or disposal of waste.

The Antidegradation Policy (Resolution 68-16) allows water quality to be lowered as long as beneficial uses are protected (pollution or nuisance will not occur), best practicable treatment and control (BPTC) of the discharge is provided, and the degradation is in the best interest of the people of California. Water quality objectives were developed as the maximum concentration of a pollutant necessary to protect beneficial uses and levels above this concentration would be considered pollution. The Antidegradation Policy does not allow water quality standards and objectives to be exceeded. Mixing zone are regions within public waters adjacent to point source discharges where pollutants are diluted and dispersed at concentrations that routinely exceed water quality standards.

The Antidegradation Policy (Resolution 68-16) requires that best practicable treatment or control (BPTC) of the discharge be provided. Mixing zones have been allowed in lieu of treatment to meet water quality standards at the end-of-the-pipe prior to discharge. To comply with the Antidegradation Policy, the trade of receiving water beneficial uses for lower utility rates must be in the best interest of the people of the state and must also pass the test that the Discharger is providing BPTC. By routinely permitting excessive levels of pollutants to be legally discharged, mixing zones act as an economic disincentive to Dischargers who might otherwise have to

design and implement better treatment mechanisms. Although the use of mixing zones may lead to individual, short-term cost savings for the discharger, significant long-term health and economic costs may be placed on the rest of society. An assessment of BPTC, and therefore compliance with the Antidegradation Policy, must assess whether treatment of the wastestream can be accomplished, is feasible, and not simply the additional costs of compliance with water quality standards. A BPTC case can be made for the benefits of prohibiting mixing zones and requiring technologies that provide superior waste treatment and reuse of the wastestream.

EPA's Water Quality Standards Handbook states that: "It is not always necessary to meet all water quality criteria within the discharge pipe to protect the integrity of the waterbody as a whole." 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. EPA recommends that a ZID not be located in an area populated by non-motile or sessile organisms, which presumably would be unable to leave the primary mixing area in time to avoid serious contamination.

Determining the impacts and risks to an ecosystem from mixing pollutants with receiving waters at levels that exceed WQS is extremely complex. The range of effects pollutants have on different organisms and the influence those organisms have on each other further compromises the ability of regulators to assess or ensure "acceptable" short and long-term impacts from the use of mixing zones. Few if any mixing zones are examined prior to the onset of discharging for the potential effects on impacted biota (as opposed to the physical and chemical fate of pollutants in the water column). Biological modeling is especially challenging – while severely toxic discharges may produce immediately observable effects, long-term impacts to the ecosystem can be far more difficult to ascertain. The effects of a mixing zone can be insidious; impacts to species diversity and abundance may be impossible to detect until it is too late for reversal or mitigation.

The *CALIFORNIA CONSTITUTION, ARTICLE 10, WATER, SEC. 2* states that: "It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare. The right to water or to the use or flow of water in or from any natural stream or water course in this State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water. Riparian rights in a stream or water course attach to, but to no more than so much of the flow thereof as may be required or used consistently with this section, for the purposes for which such lands are, or may be made adaptable, in view of such reasonable and beneficial uses; provided, however, that nothing herein contained shall be construed as depriving any riparian owner of the reasonable use of water of the stream to which the owner's land is riparian under reasonable methods of diversion and use, or as depriving any appropriator of water to which the appropriator is lawfully

entitled. This section shall be self-executing, and the Legislature may also enact laws in the furtherance of the policy in this section contained.” The granting of a mixing zone is an unreasonable use of water when proper treatment of the wastestream can be accomplished to meet end-of-pipe limitations. Also contrary to the California Constitution, a mixing zone does not *serve the beneficial use*; to the contrary, beneficial uses are degraded within the mixing zone.

The Central Valley Regional Water Quality Control Board’s Basin Plan, page IV-16.00, requires the Regional Board use EPA’s *Technical Support Document for Water Quality Based Toxics Control (TSD)* in assessing mixing zones. The TSD, page 70, defines a first stage of mixing, close to the point of discharge, where complete mixing is determined by the momentum and buoyancy of the discharge. The second stage is defined by the TSD where the initial momentum and buoyancy of the discharge are diminished and waste is mixed by ambient turbulence. The TSD goes on to state that in large rivers this second stage mixing may extend for miles. There are drinking water intakes, and proposed intakes, downstream of the wastewater discharge, which could be impacted prior to the pollutants from the discharge are completely mixed. The TSD, Section 4.4, requires that if complete mix does not occur in a short distance mixing zone monitoring and modeling must be undertaken.

The State’s *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California (SIP)*, Section 1.4.2.2, contains requirements for a mixing zone study which must be analyzed before a mixing zone is allowed for a wastewater discharge. Properly adopted state Policy requirements are not optional. The proposed Effluent Limitations in the Region 5 Permits are not supported by the scientific investigation that is required by the SIP and the Basin Plan.

SIP Section 1.4.2.2 requires that a mixing zone shall not:

1. Compromise the integrity of the entire waterbody.
2. Cause acutely toxic conditions to aquatic life.
3. Restrict the passage of aquatic life.
4. Adversely impact biologically sensitive habitats.
5. Produce undesirable aquatic life.
6. Result in floating debris.
7. Produce objectionable color, odor, taste or turbidity.
8. Cause objectionable bottom deposits.
9. Cause Nuisance.
10. Dominate the receiving water body or overlap a different mixing zone.
11. Be allowed at or near any drinking water intake.

The Region 5 Permits’ mixing zones have routinely not addressed a single required item of the SIP. A very clear requirement (SIP Section 1.4.2.2) for mixing zones is that the point(s) in the receiving stream where the applicable criteria must be met shall be specified is not in the Region 5 Permits. The “edge of the mixing zone” is not generally defined.

The Central Valley Regional Board routinely grants mixing zones absent any mixing zone analysis for human health criteria despite any knowledge of whether the discharge is “completely mixed” as is required by the SIP (1.4.2.1). Complete mixing must occur within two stream

widths of the discharge point (SIP definitions). The Regional Board's permits state, "There are no known drinking water intakes in the vicinity of the discharge. For constituents where water quality criteria are based on human health objectives, critical environmental impacts are expected to occur far downstream from the source such that complete mixing is a valid assumption." There is no knowledge of whether the discharge is completely mixed within two stream widths, yet a mixing zone is granted without any analysis.

Few mixing zones are adequately evaluated to determine whether the modeling exercise was in fact relevant or accurate, or monitored over time to assess the impacts of the mixing zone on the aquatic environment. The sampling of receiving waters often consists of analyzing one or two points where the mixing zone boundary is supposed to be – finding no pollution at the mixing zone boundary is often considered proof that mixing has been "successful" when in fact the sampling protocol might have missed the plume altogether.

17. CCR Title 27

The Region 5 Permits do not comply with the requirements of California Code of Regulations (CCR) Title 27 for the disposal of sludge which have degraded groundwater quality contrary to the Antidegradation Policy, Resolution 68-16.

Many Region 5 Permits state that sludge is discharged to unlined drying beds and "...historical sludge handling practices unreasonably degraded groundwater." While domestic wastewater may be exempted from CCR Title 27, under certain circumstances, sludge is not exempt. CCR Title 27, Table 2.1, requires undewatered sewage sludge to be disposed at a Class II surface impoundment and dewatered sludge to be disposed at a Class III landfill. Obviously, unlined drying beds, where groundwater has been degraded by these practices, do not meet the requirements of Title 27. The Board's Antidegradation Policy, Resolution 68-16, requires the application of best practicable treatment and control (BPTC) of the discharge. The disposal and storage of sludge to unlined drying beds has degraded groundwater. The wastewater industry standard is to mechanically dewater sludge with immediate removal to a proper disposal area, typically a landfill. Dewatering sludge with removal to a landfill is BPTC.

The proposed waste discharge requirements (WDRs) do not comply with California Code of Regulations (CCR) Title 27 as the discharge is not in compliance with the applicable water quality control plan (Basin Plan).

Discharges of wastewater may be exempted from CCR Title 27 requirements only if: waste discharge requirements have been issued; the discharge is in compliance with the applicable Basin Plan, and; the wastewater is not hazardous (Section 20090). The Basin Plan contains water quality objectives for groundwater. The Basin Plan *Water Quality Objectives for Groundwater* requires groundwater not exceed: 2.2 MPN/100 ml for coliform organisms; the maximum contaminant levels (MCLs) from CCR Title 22 for drinking water; taste or odor producing substances that cause nuisance or adversely affect beneficial uses, and; toxic substances that produce detrimental physiological responses in human, plant, animal or aquatic life associated with designated beneficial uses. The Basin Plan also includes the State and Regional Board Antidegradation Policy (Resolution 68-16). The Antidegradation Policy

requires the maintenance of high quality waters. In accordance with the Antidegradation Policy changes in water quality are allowed only if the change is consistent with maximum benefit to the people of the state; does not unreasonable affect present and anticipated beneficial uses; does not result in water quality that exceeds water quality objectives, and; best practicable treatment and control of the discharge is provided.

Many discharges have caused or at a minimum contributed to exceedance of Basin Plan water quality objectives and therefore do not meet the test of being in compliance with requirements of the Basin Plan. These discharges have also not been shown to be in compliance with the Basin Plan incorporated Antidegradation Policy (68-16). The Antidegradation Policy requires that an allowance for any degradation must be shown to be in the interest of the people of the state, must not exceed water quality standards and that the discharge must provide best practicable treatment and control (BPTC) of the discharge. Typically none of the tests of the Antidegradation Policy have been met.

18. Acute Toxicity

The Region 5 Permits contains Effluent Limitations 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 Clean Water Act.

Under the federal Clean Water Act (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 Region 5 Permits require that the Dischargers 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% mortality (70% 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% 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% 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* (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 Board in writing their authority for not complying with such policy. The State Board has adopted the SIP and the Regional Board is required to the Policy.

US EPA's *Technical Support Document for Water Quality-based Toxics Control* 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 US EPA's rationale the limitations of allowing 70% survival (30% 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 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 Regional Board should be required to prohibit acute toxicity (100% 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; US EPA's *Technical Support Document for Water Quality-based Toxics Control* 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 Region 5 Permits must be revised to prohibit acute toxicity, require 100% 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.

19. Chronic Toxicity

The Region 5 Permits 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).

On March 2, 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, 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 Board in writing their authority for not complying with such policy.

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 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. The Region 5 Permits state that: “...to ensure compliance with the Basin Plan’s narrative toxicity objective, the discharger is required to conduct whole effluent toxicity testing...”. However, sampling does not equate with or ensure compliance. The Permits require the Discharger to conduct an investigation of the possible sources of toxicity if a threshold is exceeded. This language is not a limitation and essentially eviscerates the Regional Board’s authority, and the authority granted to third parties under the Clean Water Act, to find the Discharger in violation for discharging chronically toxic constituents.

20. Mandatory Minimum Penalties

Region 5 has been improperly exempting Mandatory Minimum Penalties in violation of California Water Code Section 13385.

Region 5 has been “exempting” violations of Waste Discharge Requirements (NPDES permits) from mandatory minimum penalties (MMPs) required under California Water Code Section 13385. This has come to our attention recently for two cases where approximately 500 and 110 violations, principally for electrical conductivity (EC), were “exempted” by the Executive Officer. The Executive Officer does not have the discretionary authority to waive imposition of MMPs. In the first case the exemptions for violations dating from 2000 to 2008 were retroactively granted due to a new definition in a permit modification adopted in 2008. In the second case the exemptions were not cited and only discovered upon review of the Board’s database.