



California Sportfishing Protection Alliance

"An Advocate for Fisheries, Habitat and Water Quality"

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4 November 2008

Ms. Jeanine Townsend
Clerk to the Board
State Water Resources Control Board
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VIA: Electronic Submission
Hardcopy if Requested

RE: **Comments to A-1895 – November 18, 2008 Board Meeting:** Proposed Order:
Petition of California Sportfishing Protection Alliance (Waste Discharges
Requirements order No. R5-2007-0134 [NPDES No. CA0079260] for the City of
Yuba City Wastewater Treatment Plant, Sutter County), Central Valley Water
Board.

Dear Ms. Townsend:

On 6 October 2008 the State Board issued a Draft Order addressing CSPA's petition for review of the Central Valley Water Board's NPDES Permit for the City of Yuba City (Permit). The California Sportfishing Protection Alliance (CSPA) has reviewed the proposed Order in the above-entitled matter and submits the following comments.

The Feather River runs from Oroville Dam to the Sacramento River. Along the valley floor the river flows past the close neighboring communities of Marysville, Linda, and Yuba City. Yuba City has developed a park along the water front adjacent to Shanghai Falls. Pools have formed both above and below Shanghai falls. This is reported to be one of the best fishing areas along the Feather River. Large numbers of fishermen can be seen wading deep into the pools during much of the year as the fish linger in the pooled water. The area is also frequently used for other water recreational activities.

Yuba City's secondary treated sewage outfall diffuser sits in the middle of the pool atop Shanghai Falls. The Regional Board has issued an NPDES permit regulating the wastewater discharge. The NPDES permit allows for mixing zones, an area within the Feather River where water quality objectives are not met. All this occurs in an area where kids swim, fishermen fish and fish congregate. Our principal objections to the permit are simple.

The State Board's *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California* (SIP) prohibits mixing zones from causing or allowing acute toxicity to aquatic organisms. The following two passages

from US EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD) (USEPA, 1991), Section 2.2.2, define our concern:

“To ensure mixing zones do not impair the integrity of the waterbody, it should be determined that the mixing zone will not cause lethality to passing organisms and, considering the likely pathways of exposure, that there are no significant human health risks.”

“If a full analysis of concentrations and hydraulic residence times within the mixing zone indicates that organisms drifting through the plume along the path of maximum exposure would not be exposed to concentrations exceeding the acute criteria when averaged over the 1-hour averaging period for acute criteria, then lethality to swimming or drifting organisms ordinarily should not be expected, even for fast acting toxicants.”

The Yuba City mixing zone, aquatic life drift time, was based on the surface velocity of the river by timing a floating ball as it floated from point a to point b. This is not accurate; fish have been documented to stay resident in the pool surrounding the mixing zone. Fish will be present in the mixing zone for more than 1-hour, exceeding the acute criteria time period, resulting in mortality.

The fishermen and recreational users are in the middle of the wastewater discharge. The California Department of Public Health is on record as advising that a secondary level of treatment is not protective of recreational use unless a twenty to one dilution is provided. Obviously this dilution would not be achieved if fishermen are standing directly above the diffuser. Pathogens were not considered in the mixing zone analysis. Pathogens were also not discussed in an Antidegradation Policy analysis, although the permit allows for a significant increase in the flow rate. A proper Antidegradation Policy analysis would have found that tertiary treatment is routinely required in the Central Valley and can be considered best practicable treatment and control of the discharge. How many people have been sick from Yuba City's sewage discharge? We believe a proper Antidegradation Policy assessment would have shown that they should meet the same test as most communities in the Central Valley in having to treat their sewage adequately to protect the beneficial use rather than be allowed a mixing zone.

Each of the communities of Marysville, Linda and Yuba City have domestic wastewater ponds located within the flood plane, which flood and overflow during high water events constituting illegal sewage discharges to surface waters. Yuba City utilizes these ponds for an alternative discharge during periods of treatment plant upset to avoid immediate compliance with their surface water discharge. However, the fact that this “upset” water is discharged when the ponds overflow has been ignored. Although there are many significant issues with these discharges; the pond overflow discharges were not considered in the mixing zone analysis.

Our specific comments are as follows:

- 1. The Draft State Board Order, A-1895, would remand Yuba City's NPDES Permit (Permit), Order No. R5-2007-0134, NPDES No. CA0079260, to the Central Valley Regional Water Quality Control Board (Regional Board) for further analysis of a mixing zone study and modification of the Permit based on the study results and to specify points of compliance within the receiving stream, the Feather River. The Draft Order does not however address numerous other points raised in the petition regarding the allowance for a mixing zone.**

“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 which is injurious to health, indecent, offensive or an obstruction of the free use of property which 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. 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 proposed Permit 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.

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 in the Permit.

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.

Specific Mixing Zone Comments:

1. The Draft Order remand to identify the points of compliance within the receiving stream are based on clear requirements of the SIP, Section 1.4.2.2, that the point(s) in the receiving stream where applicable water criteria must be met shall be specified in the Permit.

A mixing zone is an allocated impact zone where water quality criteria can be exceeded. 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. 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 intent of specifying the point of compliance is to monitor compliance and to verify the model results. Specification of the point of compliance is meaningless without monitoring to determine whether the model was correct in predicting the area of the mixing zone and available dilution. Remand of the Permit to specify the points of compliance without requiring monitoring the individual constituent(s) to determine whether the water quality objective is met at the boundary of the mixing zone is meaningless. The remand should also require that the Permit be reopened and modified if compliance with each individual constituent, subject to the mixing zone, exceeds the water quality objective at the point of compliance.

2. The Draft Order does not address SIP Section 1.4.2.2 requires that a mixing zone shall not cause acutely toxic conditions to aquatic life.

The Basin Plan (page III-8.00) *Toxicity* Water Quality Objective “All waters shall be maintained free of toxic substances that produce detrimental physiological responses in human, plant, animal, or aquatic life.” This section of the Basin Plan also requires that material and relevant information submitted by the Discharger and other interested parties...will be considered to evaluate compliance with the objective. The record shows consultation and recommendation against allowing a mixing zone as follows:

- a. After reviewing proposals for mixing zone for Linda County Water District, which is located across the river in the immediate area of the Yuba City discharge the California Department of Fish and Game concluded that: “We would recommend that because of the anadromous species (in particular listed species present) and the potential for extended exposure to the proposed discharge, that the allowance of a mixing zone is not appropriate.”

Regional Board staff consulted with the California Department of Fish and

Game (DFG) regarding the fishery at Shanghai Bend and Shanghai Falls in the Feather River. A 17 November 2005 letter from DFG stated:

“The Feather River in this area supports fall-, late fall-, and spring-run Chinook salmon, steelhead trout, striped bass, American shad and a variety of other game and non-game species. Spring-run Chinook salmon are federal and state listed threatened species and steelhead trout is a federal listed threatened species.

Because of the river configuration at Shanghai Bend, adult anadromous fish including fall-, late fall- and spring-run Chinook salmon, steelhead trout, striped bass, and American shad often congregate immediately below Shanghai Bend for extended durations during their upstream migration. During lower flow periods the problem is exasperated, and in fact some species (American shad and striped bass) appear to be essentially blocked (DFG unpublished data) immediately below Shanghai Bend.

Additionally, juveniles (including listed federal and state species) use the area for rearing and migration. The entire instream production of salmonids (fall-, late fall- and spring-run Chinook salmon, and steelhead trout) in the Feather River and Yuba River must pass Shanghai Bend. The Yuba River is basically the last large river in the Central Valley that is maintained solely by natural in-stream production of salmon and steelhead trout, and is essentially the only wild steelhead fishery remaining in the Central Valley.

Because of the extended periods that juvenile and adult fish spend in the Feather River at Shanghai Bend, they would be subject to extended exposure to any discharges. It is likely that such exposure will ultimately result in decrease population viability and survival of salmonids and other species, including federal and state listed species. We would recommend that because of the anadromous species (in particular listed species present) and the potential for extended exposure to the proposed discharge, that the allowance of a mixing zone is not appropriate.” (Emphasis added)

On 29 March 2005, DFG staff responded to Regional Board staff via email, in summary that: “fish, specifically American Chad, Striped Bass, Chinook Salmon and Green Sturgeon are impacted by Shanghai Falls and tend to “hold a bit below the falls” and may remain below the falls for longer periods, particularly during low water years, thereby increasing exposure times, and that DFG would never support a project that discharges acutely toxic materials to a waterway that will likely soon be designated as critical habitat.” (Emphasis added)

In June of 2003, the California Department of Water Resources (DWR) prepared a draft report *Juvenile Fishes of the Lower Feather River: Distribution, Emigration Patterns, and Association with Environmental Variables* which states in the introduction that “The Feather River is significant because it is the largest tributary to the Sacramento River system, is home to two federally listed endangered species (Central Valley spring-run Chinook salmon and Central Valley steelhead *Orcorhynchus mykiss*)...”

In email communications dated 27 December 2004, when asked by Regional Board staff about the Shanghai area of the Feather River, DWR staff stated:

“Adult salmon could certainly be present as early as Mid-April through the fall, although the majority will be present June-September. There is no evidence or reason for adult salmon to spend any length of time in this area. We have done some radio tracking studies in the Feather [River] recently but very few fish were monitored this low in the river. I would be potentially concerned about sturgeon adults (white and green) however. We have observed them at Shanghai in June. During low flows they may spend a large amount of time there. Large number of juveniles will be moving through the area from January through March...”

A letter dated 25 April 1973 from the Wildlife Conservation Board discusses the Shanghai Bend area of the Feather River, in part, as follows:

“The affected portion of the Feather River is a well-known shad and striped bass fishing area and, in spite of the lack of public access, is heavily fished. At least ten percent of all the Feather River shad fishing occurs in the vicinity of the 108-acre Steele property. This use amounts to about 4,000 angler days per year...Other angler attractions include runs of 50 to 60 thousand adult king salmon, which pass through the Shanghai Bend area each year and fair to excellent populations of smallmouth bass and channel catfish, which attract fishermen on a year-round basis.”

- b. The Draft Order states that we, as petitioner, have not proven that the allowance for a mixing zone allows for acutely toxic conditions. The burden to prove that a mixing zone does not cause acute toxicity should be on the Discharger and the permitting agency. However, acute toxicity will occur when an aquatic organism stays within the mixing zone for longer than 1-hour at pollutant concentrations above the recommended acute criterion.

Acute toxicity to aquatic life is prohibited in mixing zones (SIP 1.4.2.2). However mixing zones are areas where water quality objectives are allowed by the permitting agency to be exceeded. The permitting agency is however to assure that the allowance for a mixing zone does not causes acutely toxic conditions. Acutely toxic concentrations of pollutants are typically determined from US EPA recommendations in their *Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life* which is developed for individual toxic constituents. Acute toxicity level recommendations are typically presented as 1-hour average concentrations; constituent A will not be acutely toxic if the 1-hour average concentration is below level x).

The requirement of a mixing zone is to determine the “drift time” to assure that aquatic life is not within the acutely toxic area for longer than 1-hour. The method for *Prevention of Lethality to Passing Organisms* is presented in Section 4.3.3 of US EPA’s *Technical Support Document for Water Quality-based Toxics Control* (TSD) (EPA/505/2-90-001). The Basin Plan (IV-17.00) requires the use of the TSD in determining the size of mixing zones. For Yuba City’s mixing zone the Discharger simply measured the surface water velocity by floating a ball and used this value as the drift time for aquatic organisms; not a technique recommended by the TSD.

One of the alternatives presented in the TSD is to show: “...that a drifting organism would not be exposed to 1-hour average concentrations...”. In this case, the advice and recommendations from DFG, DWR and the Wildlife Conservation Board, as presented above, show that fish stay in the area of the discharge for long periods of time, well above the 1-hour allowance. With an allowance to discharge wastes above the acute criteria the mixing zone will allow for acute toxicity as prohibited by the SIP. The mixing zone for acutely toxic constituents cannot be allowed in accordance with the SIP.

- c. The determination of assimilative capacity in the mixing zone analysis failed to consider effluent water quality data for the Linda County Water District (LCWD) domestic wastewater discharge to the Feather River. Receiving water sampling conducted to determine the assimilative capacity of the receiving stream was collected while the LCWD WWTP was not discharging. The City of Marysville is also in negotiations to discharge their domestic wastewater to the LCWD’s collection system. LCWD has repaired their effluent outfall and has an NPDES discharge that is immediately upstream of Yuba City’s outfall. The additional pollutant load from LCWD must be assessed. Failure to account for the additional pollutant load over-estimates the assimilative capacity of the Feather River. The Discharger could have easily added the LCWD concentration of pollutants to the mixing zone analysis and failed to do so. By failing to consider the Linda County discharge the mixing zone analysis is incomplete and the resultant Effluent Limitations may result in exceedance of water quality objectives.

Confirming that the LCWD discharge could result in over allocation of the river, the State Board's Water Quality Order (WQO) 2004-0013 found (p. 13) the following:

“The decision of the Regional Board to limit the City to 80% of the allocated assimilative capacity that will be granted is adequately justified. The relative flow contributions of the City [of Yuba City] and Linda [County Water District] are readily identified. If both dischargers were granted full dilution credits, at times there would be a lack of assimilative capacity. It is not appropriate to grant full dilution credits to one discharger on a stretch of river, so that another discharger would receive no dilution credits. Moreover, if there are more dischargers in the future, a more rigorous allocation scheme may be required.”

- d. The mixing zone analysis did not account for pathogens and the need to protect the contact recreation beneficial uses within the mixing zone which is heavily used for fishing and recreation. Contact recreation (REC-1) in the Feather River at the point of discharge is well documented as an extensively used fishing area and lies adjacent to a Yuba City park. The public has access to the point of discharge and there is significant documentation the point of discharge is heavily used for REC-1 uses. The public will be within the mixing zone in contact with secondary treated domestic sewage. Most NPDES permits issued by the Sacramento office of the Central Valley Regional Board contain the following discussion: “The principal infectious agents (pathogens) that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. Tertiary treatment, consisting of chemical coagulation, sedimentation, and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. The wastewater must be treated to tertiary standards (filtered), or equivalent, to protect contact recreational and food crop irrigation uses.” The Regional Board's requirements for tertiary treatment to protect the contact recreational use are based on recommendations from the California Department of Public Health. In 1987 DPH issued the *Uniform Guidelines for the Disinfection of Wastewater* (Uniform Guidelines) as recommendations to the Regional Water Quality Control Boards regarding disinfection requirements for wastewater discharges to surface waters. The Uniform Guidelines recommend that tertiary treatment is required unless a twenty-to-one in stream dilution is available; this dilution is not available within portions of the mixing zone which is heavily used for fishing and recreation. 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.

- e. The mixing zone fails to consider Additive Toxicity as required by the Basin Plan. The Basin Plan, at (IV-17.00), states the following:

“Where multiple toxic pollutants exist together in water, the potential for toxicological interactions exists. On a case by case basis, the Regional Water Board will evaluate available receiving water and effluent data to determine whether there is reasonable potential for interactive toxicity. Pollutants which are carcinogens or which manifest their toxic effects on the same organ systems or through similar mechanisms will generally be considered to have potentially additive toxicity. The following formula will be used to assist the Regional Water Board in making determinations:

$$\sum_{i=1}^n \frac{[\text{Concentration of Toxic Substance}]}{[\text{Toxicologic Limit for Substance in Water}]} < 1.0$$

The concentration of each toxic substance is divided by its toxicologic limit. The resulting ratios are added for substances having similar toxicologic effects and, separately, for carcinogens. If such a sum of ratios is less than one, an additive toxicity problem is assumed not to exist. If the summation is equal to or greater than one, the combination of chemicals is assumed to present an unacceptable level of toxicological risk. For example, monitoring shows that ground water beneath a site has been degraded by three volatile organic chemicals, A, B, and C, in concentrations of 0.3, 0.4, and 0.04 mg/l, respectively. Toxicologic limits for these chemicals are 0.7, 3, and 0.06 mg/l, respectively. Individually, no chemical exceeds its toxicologic limit. However, an additive toxicity calculation shows:

$$\frac{0.3}{0.7} + \frac{0.4}{3} + \frac{0.04}{0.06} = 1.2$$

The sum of the ratios is greater than unity (>1.0); therefore the additive toxicity criterion has been violated. The concentrations of chemicals A, B, and C together present a potentially unacceptable level of toxicity.”

The in-stream, after complete mixing, fractional toxicity or ratio for each constituent with a WQBEL based on full allocation of assimilative capacity is necessarily equal to unity. As demonstrated below, the in-stream, after complete mixing, additive effect of multiple chemicals with WQBELs based on full allocation of assimilative capacity which manifest their toxic effects on the same organ systems or through similar mechanisms must, therefore, present an unacceptable level of toxicity. Even if full allocation of assimilative capacity has not been granted, additive toxicity must still be evaluated.

Additive Toxicity—Aquatic Toxicity from Heavy Metals

The Order contains the following final effluent limitations for the heavy metals copper, lead, and zinc which all act on aquatic organisms in the same fashion. Therefore, additive toxicity for these constituents must be considered.

Order No. R5-2003-0089 found reasonable potential for cadmium, with an observed maximum effluent concentration of 6.4 mg/l for a sample collected 7 February 2002. In fact, Order No. R5-2003-0089 reported an average effluent cadmium concentration of 2.57 mg/l, based on the results of 29 sampling events. The criterion continuous concentration (CCC) for cadmium at a hardness of 32 mg/l is 1.0 mg/l, while the CCC for cadmium at a hardness of 23 mg/l is 0.78 mg/l. Cadmium concentrations in the Yuba City discharge will also contribute to additive toxicity.

Order No. R5-2003-0089 reported an observed maximum effluent total chromium concentration of 16 mg/l and an observed maximum upstream total chromium concentration of 7.2 mg/l. Chromium III is the most common valent state for chromium. Chromium III concentrations in the Yuba City discharge will also contribute to additive toxicity.

The Permit reports an observed maximum effluent nickel concentration of 15 mg/l and an observed maximum upstream nickel concentration of 10 mg/l. The CCC for nickel at a hardness of 32 mg/l is 19 mg/l, while the CCC for nickel at a hardness of 23 mg/l is 15 mg/l. Nickel concentrations in the Yuba City discharge will also contribute to additive toxicity.

Order No. R5-2003-0089 reported an observed maximum effluent silver concentration of 0.35 mg/l. The maximum observed concentration was detected above the MDL of 0.12 mg/l, but below the quantification level. Silver concentrations in the Yuba City discharge will also contribute to additive toxicity.

The sum of the toxicity ratios for water in the Feather River, following complete mixing and beyond the boundary of any mixing zone, is greater than unity and, therefore, denotes an unacceptable risk of acute (lethal) aquatic toxicity within the Feather River. The receiving stream is designated as critical habitat and 303(d)-listed for unknown toxicity and additive toxicity is critical to protecting the aquatic life beneficial use.

Additive Toxicity—Human Carcinogenicity

The permit contains effluent limitations for carcinogens (cancer-causing compounds): bis(2-ethylhexyl) phthalate; chlorodibromomethane;

dichlorobromomethane; TCDD-equivalents, and tetrachloroethylene are all carcinogens. Therefore, additive toxicity for these constituents must be considered. The sum of the toxicity ratios for water in the Feather River, following complete mixing and beyond the boundary of any mixing zone, is greater than unity and, therefore, denotes an unacceptable risk of carcinogenicity within the Feather River.

In addition, the tentative permit fails to include effluent limitations for other carcinogens present in the discharge which must be included in an additive toxicity evaluation, including arsenic, MTBE, trichloroethylene, chloroform, pentachlorophenol, 2,4,6-trichlorophenol and 2,3,7,8 TCDD equivalents.

- f. The mixing zone failed to consider that 100% of the assimilative capacity for electrical conductivity (EC) within the Feather River was previously granted to LCWD. The permit allowed for an expanded flow rate and therefore allocated unavailable capacity to Yuba City. Order No. R5-2006-0096, for the Linda County Water District discharge to the Feather River, included the following discussion regarding allocation of the remaining assimilative capacity for electrical conductivity:

*“**Electrical Conductivity**—The Basin Plan includes a water quality objective that electrical conductivity (at 25°C) “[s]hall not exceed 150 micromhos/cm (90 percentile) in well-mixed waters of the Feather River.” One of the water bodies to which this objective applies is the Feather River from the Fish Barrier Dam at Oroville to the Sacramento River. Electrical conductivity in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan objective for electrical conductivity in the Feather River. An Effluent Limitation for electrical conductivity is included in this Order and is based on the Basin Plan objective for electrical conductivity in the Feather River and consideration of available assimilative capacity.*

The maximum 30-day 90th percentile effluent and receiving water (R-1) electrical conductivity concentrations for the period beginning 1 January 2001 and ending 31 August 2005 were 777 µmhos/cm and 146 µmhos/cm, respectively. The human health dilution ratio (described in WQBEL Calculations IV.C.4.d on page 63) is appropriate to use because it applies to criteria that are applicable over longer time periods than the toxicity dilution ratios.

Yuba City’s WWTP discharge consumes a portion of the EC dilution available in the Feather River. WDRs Order No. R5-2003-0085 permits Yuba City’s WWTP to discharge up to 7.0 mgd of effluent with a maximum allowable EC concentration of 830 µmhos/cm to the Feather River. Using a mass balance, the 90th percentile EC of the Feather River would be 149.42 µmhos/cm.

$$EC = ((EC_{Linda} Q_{Linda}) + (EC_{Yuba\ City} Q_{Yuba\ City}) + (EC_{Feather\ River} Q_{Feather\ River})) / (Q_{Linda} + Q_{Yuba} + Q_{Feather})$$

$$149.42 \mu\text{mhos/cm} = ((780 \mu\text{mhos/cm} \times 5.0 \text{ mgd}) + (830 \mu\text{mhos/cm} \times 7.0 \text{ mgd}) + (146 \mu\text{mhos/cm} \times 2318 \text{ mgd})) / (5.0 \text{ mgd} + 7.0 \text{ mgd} + 2318 \text{ mgd})$$

This Order includes a maximum 30-day 90th percentile Effluent Limitation for electrical conductivity of 780 $\mu\text{mhos/cm}$ that is based upon the WWTP's 30-day 90th percentile effluent electrical conductivity concentration.

This Order grants the remainder of the EC assimilative capacity of the Feather River to this discharge. *Redistribution of EC allocation for discharges to the Feather River may be considered when this Order is renewed or reopened.*” [emphasis added]

Under the Clean Water Act and the NPDES permit regulations (40 CFR 122.4(i)), when a new source seeks to obtain a permit for a discharge of pollutants to a stream segment already exceeding its water quality standards for that pollutant, no permit may be issued. An exception to this prohibition is where the new source demonstrates, before the close of the public comment period for the proposed permit, that: (1) there are sufficient remaining pollutant load allocations for the discharge, and (2) existing dischargers in the stream segment are subject to compliance schedules designed to bring the stream segment into compliance with applicable water quality standards. The Ninth Circuit Court of Appeals has ruled in *Friends of Pinto Creek v. United States Environmental Protection Agency* that a new or expanded wastewater discharge may not be allowed into an impaired waterway unless all existing discharges have been identified and are subject to compliance schedules.

2. **The Draft Order misinterprets the petition in requiring monitoring at points 001 and 002 into the wastewater ponds. The Discharger discharges wastewater from the wastewater ponds into the Feather River, an NPDES Discharge. Monitoring requirements are inadequate in accordance with Federal regulations, 40 CFR §§ 122.44(i), 122.48 and 40 CFR 122.41(j)(1), which require that NPDES permits include requirements to monitor sufficient to assure compliance with permit limitations and requirements, the mass or other measurement specified in the permit for each pollutant limited in the permit, and the volume of effluent discharged from each outfall.**

Facilities that discharge wastewater are required to evaluate compliance with the limitations established in the permit. The Order states that monitoring for the discharge from ponds at point 002 will be conducted at discharge point 001. The placement of wastewater disposal ponds within a floodplain is simply bad engineering. The permittee is responsible for providing a safe and accessible sampling point that is representative of the discharge, 40 CFR 122.41(j)(1). Allowing a wastewater discharge to go unmonitored because it is unsafe to enter the floodplain only compounds that bad judgment. The ponds should be properly closed; the City owns and operates a wastewater treatment

plant that discharges directly to surface waters and the ponds are not necessary. A proper “emergency” pond could be constructed outside the floodplain if the City believes it is necessary. NPDES permits are required to include monitoring specifying the type, the interval, and the frequency sufficient to yield data which are representative of the monitored activity including, when appropriate, continuous monitoring. According to the Order’s discussion of the pond system; the ponds are utilized for storage of wastewater effluent and are the point of discharge during periods of facility maintenance and upset. Pollutant concentrations in ponds magnify as water evaporates and as stated, the ponds receive wastewater unfit to discharge at point 001. The quality of wastewater discharged from the ponds will be significantly degraded compared to the effluent discharge at point 001. The discharge at point 001 is not representative of the quality of the wastes at point 002. Failure to require monitoring at discharge point 002 blatantly violates Federal Regulations, 40 CFR §§ 122.44(i) and 122.48.

3. The Order Authorizes Inappropriate and Illegal (40 CFR §122.45) Averaging Periods for Iron, Manganese, and Methylene Blue Active Substances.

The permit includes Effluent Limitations for Iron, Manganese and methylene blue active substances (MBAS) as an annual average. 40 CFR §122.45 requires that: “For continuous discharges all permit effluent limitations...shall unless impracticable be stated as...[a]verage weekly and average monthly discharge limitations for POTWs.” U.S. EPA, in its *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD) recommends a maximum daily limitation rather than an average weekly limitation for water quality based permitting. It is not impracticable to state the secondary maximum contaminant levels for iron, manganese, and methylene blue active substances as average weekly and monthly discharge limitations.

Iron is a secondary MCL based on discoloration, discoloration occurs instantaneously, not over a years period of time. Manganese is also a secondary MCL however based on taste and odor, taste and odor issues occur instantaneously, not over a years period of time. Limiting these constituents to be regulated on an annual, average will allow for peaks well above the secondary MCLs directly impacting the numerous documented downstream domestic water users. There does not appear to be any reasoning or logic applied to the Regional Board staff’s attempts to relax water quality objectives contrary to Federal Regulations. The permit must be remanded to the Regional Board to be amended to limit iron, manganese and MBAS in accordance with the cited Federal Regulation.

4. The Draft Order fails to address that the Permit contained no Effluent Limitations for numerous constituents which were limited in the existing permit, contrary to the Antidegradation 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);

(C) A less stringent effluent limitation is necessary because of events over which the permittee has no control and for which there is no reasonably available remedy;

(D) The permittee has received a permit modification under section 301(c), 301(g), 301(h), 301(i), 301(k), 301(n), or 316(a); or

(E) The permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations, in which case the limitations in the 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.

WDR Order No. R5-2003-0089 found reasonable potential and contained effluent limitations for the following constituents that are not limited in the current NPDES permit:

- Arsenic
- Bis (2-ethylhexyl) phthalate
- Cadmium
- Chloroform
- cis-1,2-Dichloroethene
- MTBE
- Nitrite + Nitrate (as N)
- Pentachlorophenol
- Thiobencarb
- Trichloroethylene
- 2,4,6-Trichlorophenol

The permit did not present any valid reason why reasonable potential for these constituents does not still exist or why the limitations were removed. The permit must be remanded to the Regional Board to be revised to include effluent limitations for the constituents listed above.

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

Sincerely,



Bill Jennings, Executive Director
California Sportfishing Protection Alliance

Cc: State Water Board Members
Interested Parties