



November 3, 2017

Via Electronic Mail

Jeanine Townsend
Clerk to the Board
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814

SUBJECT: Comment Letter – Lower Salinas River Watershed Sediment Toxicity and Pyrethroids in Sediment TMDLs

Dear Ms. Townsend:

Our firm represents the Pyrethroid Working Group (the PWG) in matters related to *Amendment to the Water Quality Control Plan for the Central Coast Basin to Establish Total Maximum Daily Loads (TMDLs) for Sediment Toxicity and Pyrethroid Pesticides in Sediment in the Lower Salinas River Watershed* (Lower Salinas TMDL). On behalf of the PWG, we provide here comments in response to your Notice of Opportunity to Comment.

As a preliminary matter, the comments provided here meet the requirements of the California Code of Regulations, title 23, section 3779, subdivision (f), as directed in the State Water Resources Control Board's (State Water Board) Notice of Opportunity to Comment. Specifically, our comments pertain directly to the final version of the Lower Salinas TMDL as adopted by the Central Coast Regional Water Quality Control Board (Central Coast Water Board) on July 14, 2017. The PWG actively participated in the Central Coast Water Board's administrative process and provided written comments at available opportunities. Further, we provided oral comments before the Central Coast Water Board at its July 14, 2017 meeting that directly relate to the comments provided herein.

Concurrent with the development and submittal of these comments on the Lower Salinas TMDL, the PWG has also prepared and submitted comments on the Central Valley Water Quality Control Board's (Central Valley Water Board) *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Pyrethroid Pesticides Discharges* (Central Valley Pyrethroid Amendment). Many (if not all) of our comments on the Central Valley Pyrethroid Amendment are also applicable to the Lower Salinas TMDL. Accordingly, we hereby incorporate by reference our comments on the Central Valley Pyrethroid Amendment here.

In general, the PWG submits this letter to call out the differences between the Central Coast Water Board and Central Valley Water Board, and their use of certain water quality criteria for six (6) pyrethroid pesticides developed by the University of California Davis (UCD).¹ We believe that the differences between how these criteria are being used by these two regional boards is critical in that the Central Valley Water Board (the entity responsible for development of the criteria) determined that additional information is necessary before these criteria could be adopted as water quality objectives, while on the other hand the Central Coast Water Board finds it appropriate to use the UCD criteria to interpret existing narrative toxicity objectives. In light of existing data and information, and considering the Central Valley Water Board's role in creating the criteria, we find the Central Valley Water Board approach to be more reasonable.

Accordingly, the PWG requests that the State Water Board send the Lower Salinas TMDL back to the Central Coast Water Board with specific direction to require that the Central Coast Water Board reevaluate its use of the UCD criteria as is proposed in the Lower Salinas TMDL, and to consider developing an approach that is consistent with that as developed by the Central Valley Water Board.

I. Background

To better understand the differences between the Central Coast Water Board and Central Valley Water Board actions, it is important to first summarize some of the historical background as it relates to the development of pyrethroid pesticide criteria by UCD. This process started more than ten (10) years ago when the Central Valley Water Board entered into a contract with UCD for the development of a methodology for developing pesticide criteria. Under this contract, UCD developed the *Methodology for Derivation of Pesticide Water Quality Criteria for the Protection of Aquatic Life in the Sacramento and San Joaquin River Basins* (2009) (UCD Methodology). When it released this methodology, Central Valley Water Board staff issued the following statement:

Although the development of the UCD Methodology was funded by the Regional Water Board, the UCD Methodology has not been adopted or endorsed by the Regional Water Board. Therefore criteria developed using the UCD methodology should not be viewed as being inherently more appropriate than other available criteria. Further, criteria developed using the UCD Methodology should not be considered adopted water quality objectives, unless and until the Regional Water Board adopts, and the State Water Board and U.S. EPA approve the criteria as water quality objectives pursuant to all applicable statutory requirements.²

¹ The six (6) pyrethroids for which there are developed criteria are as follows: bifenthrin, cyfluthrin, cypermethrin, esfenvalerate, Lambda-cyhalothrin, and permethrin. Unless otherwise stated, reference to "pyrethroids" in this letter is meant to include these six pyrethroids for which criteria have been developed.

² See Letter to Interested Parties from Jerrold A. Bruns, Environmental Program Manager, Central Valley Water Board (29 September, 2009).

The statement further noted that “Regional Water Board staff intend for pesticide criteria developed using the UCD Methodology to be among criteria considered for adoption as water quality objectives. The UCD Methodology was developed to derive criteria that are protective of aquatic life, but several additional considerations must be evaluated before pesticide water quality objectives can be adopted.” In other words, the UCD Methodology, and pesticide criteria developed from the methodology, should be subject to further scrutiny and consideration prior to being used as water quality objectives, and by extension, before being used to interpret a water quality objective.

Following development of the methodology, UCD then developed criteria for certain pesticides, including six (6) pyrethroids, through this contract. Relevant here, criteria for five (5) pyrethroid pesticides were developed by UCD in 2010 and one (1) in 2014.³ At all times during the development of the criteria, and consistent with the statement made when the UCD Methodology was released, the Central Valley Water Board made it clear that the UCD criteria were not water quality objectives.

In parallel with development of the UCD criteria, Central Valley Water Board staff held and facilitated open stakeholder meetings to discuss the criteria and the Central Valley Water Board’s potential future amendments to the Water Quality Control Plan for the Sacramento-San Joaquin River Basins.

In 2015, due to the availability of additional data and information for the pyrethroid pesticides, the Central Valley Water Board staff reviewed and updated the UCD 2010 (and 2014) criteria.⁴ As such updates occurred, the Central Valley Water Board continued to hold stakeholder meetings periodically to discuss the status of Basin Plan amendment development and to obtain input from all stakeholders with respect to the substance of proposed amendments. The culmination of the Central Valley Water Board’s work and its stakeholder process for addressing pyrethroid pesticides is represented in the Central Valley Water Board’s Pyrethroid Amendments. Through this lengthy process, which included peer reviews along the way, the Central Valley Water Board made several important findings, which are contained within the Central Valley Pyrethroid Amendment. These significant findings are as follows:

- There is insufficient information available to adopt water quality objectives for pyrethroid pesticides at this time;
- It is appropriate to set a “trigger” value in the Basin Plan that then “triggers” development and implementation of management plans and practices rather than water quality objectives;

³ The criteria documents are available at:
https://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/central_valley_pesticides/criteria_method/index.shtml

⁴ Notably, Tessa Fojut, Ph.D. was the Central Valley Water Board staff member that updated the criteria in 2015, and was at UCD working on this contract in 2010 when the criteria were first developed.

- It is appropriate to use freely dissolved (i.e., bioavailable) concentrations of pyrethroids in the water column to determine whether trigger values have been exceeded; and,
- The program of implementation should extend for 20 years.

The Central Valley Water Board adopted the Central Valley Pyrethroid Amendment on June 8, 2017.

For the Central Coast Water Board, their development of the Lower Salinas TMDL is based almost exclusively on what they adopted for the Santa Maria River TMDL in 2014. As a reminder, when the State Water Board approved the Santa Maria River TMDL, the State Water Board specifically directed the Central Coast Water Board to consider the Central Valley Water Board's process. "Expects the Central Coast Water Board to follow the evolving regulation of pyrethroids in the Central Valley region, engage as appropriate in that process, conduct further stakeholder process locally within the Central Coast region and to consider revisions consistent with whereas 8." (State Board Resolution 2014-0033, *Approving an Amendment to the Water Quality Control Plan for the Central Coast Basin to adopt Total Maximum Daily Loads for toxicity and pesticides in the Santa Maria River Watershed.*)

After conducting a typical public review process, the Central Coast Water Board adopted the Lower Salinas TMDL on July 14, 2017. This was more than a year after the close of the Central Coast Water Board's written public comment period (March 7, 2016). At the July 2017 hearing, brief mention was made of the Central Valley Water Board's action that occurred on June 8, 2017. The PWG presented oral comments in response to this brief mention. However, considering the lack of time and consideration given to the Central Valley Water Board's actions by the Central Coast Water Board, and the lack of opportunity for written public comment after Central Valley Water Board action but prior to Central Coast Water Board action, it appears that the Central Coast Water Board acted contrary to the express direction given to them by the State Water Board, which was to give meaningful consideration to the Central Valley region's evolving regulation of pyrethroids.

II. UCD Criteria Are Overly Conservative

As an initial point, it is important to recognize the overly conservative nature of the UCD criteria as developed in 2010, and as they were updated by the Central Valley Water Board in 2015. The UCD Methodology recommends the use of the statistically-derived 5th percentile of the species sensitivity distribution (SSD), unless a more sensitive species falls below that value, at which point the 1st percentile is recommended. The 2010 UCD criteria are set at the 5th percentile level and the updated 2015 criteria are set at the 1st percentile level.

First, whether it is the 1st or 5th percentile, there already exists considerable conservatism built into the UCD Methodology with the safety factors included within the derivation process.⁵ For example, a safety factor of 2 is applied in the derivation process. Second, the 1st percentile approach looks to protect the most sensitive laboratory species rather than the most sensitive beneficial use. The water boards are charged with reasonably protecting the most sensitive beneficial use—not the most sensitive species. Third, other available evidence suggests that the UCD criteria, and as updated in 2015, are overly conservative because the criteria derived are based on toxicity tests using sensitive laboratory *Hyalella azteca*, which do not necessarily reflect the native populations in California’s water bodies.

The Central Valley Water Board ultimately determined it appropriate for the Central Valley Water Board to use 5th percentiles from the UCD updated criteria in 2015 as concentration goals to develop criteria-normalized concentration units that are then incorporated into acute and chronic additivity equations. The PWG found this approach to be reasonable within the Central Valley Pyrethroid Amendment because *goals*—not water quality objectives or values—are being used to interpret narrative water quality objectives.

In contrast, the Central Coast Water Board looks to use the UCD criteria as numeric targets in their proposed Basin Plan Amendments. The numeric targets are described as being “interpretations of the Basin Plan narrative objective for pesticides”⁶ The same targets are also described in the Board’s resolution as being “existing concentration-based water quality objectives”⁷ As discussed further below, how these very conservative criteria are characterized and used by the two regional boards is significant. It is this difference that causes the PWG to have concerns with the Central Coast Water Board’s approach.

III. Central Coast Water Board Should Use UCD Criteria as Triggers Rather Than Numeric Targets

As indicated above, the Central Coast Water Board uses the UCD criteria as numeric targets to interpret a narrative water quality objective. Ironically, the Central Coast Water Board’s Technical Project Report alleges that its basis for evaluating published numeric criteria to interpret a narrative water quality objective comes from a policy that is within the Central Valley Water Board’s Basin Plan—not the Central Coast Water Board Basin Plan.

⁵ “A great deal of conservatism is built into the process via a maximum exceedance of the chronic criteria of only once in three years over a 4-day period and using toxicity values based upon laboratory reared organisms that appear to be more sensitive than native organisms in impacted areas.” (See *External Peer Review of the Scientific Basis of the Proposed Basin Plan Amendment to Establish Control of Pesticide Discharges in the Sacramento and San Joaquin River Basins*, pp. 2-3.)

⁶ See Lower Salinas TMDL, Technical Project Report (04/06/2017), p. 36.

⁷ Lower Salinas TMDL, Attachment A to Resolution No. R3-2016-0003, p. 4, paragraph 13.

The basis of this evaluation is the Central Valley Regional Water Quality Control Board's Policy for Application of Water Quality Objectives that states the board will consider 'relevant numerical criteria and guidelines developed and/or published by other agencies and organizations.'⁸

Putting aside the fact that the Central Coast Water Board does not have such a policy for interpreting narrative objectives with available criteria in its Basin Plan, it is inappropriate to use the UCD criteria in this manner for all of the reasons expressed in the Central Valley Pyrethroid Amendment, which is why the Central Valley Water Board has adopted a different approach. Most significantly, the Central Valley Water Board is adopting triggers because it found that there is inadequate available data and information to use the UCD criteria as water quality objectives or to interpret narrative objectives. The Central Valley Water Board reached this conclusion after holding numerous stakeholder meetings, workshops before the Central Valley Water Board, and after careful consideration of numerous factors. In contrast, the Central Coast Water Board proposes to use the UCD criteria without having the same level of process or discussion associated with these criteria.

To avoid inconsistent policies throughout the state, the PWG recommends that the State Water Board direct the Central Coast Water Board to eliminate use of the UCD criteria as numeric targets and instead consider how they could be used as triggers rather than as criteria to interpret narrative water quality objectives.

IV. Central Coast Water Board Should Use Freely Dissolved (i.e., Bioavailable) Pyrethroid Concentrations

Regardless of the UCD criteria being used as numeric targets or triggers, such criteria represent the bioavailable fraction. Although the Lower Salinas TMDL includes a recommendation for use of freely dissolved concentrations as it relates to water quality targets, this accommodation fails to accurately capture the true nature of pyrethroids. Use of freely dissolved concentrations is an essential consideration, given that pyrethroids are highly hydrophobic and bind tightly to suspended solids and organic matter, and it is the freely dissolved (and hence bioavailable) fraction of the chemical that is available for adsorption through the gills and skin of aquatic organisms (i.e., the portion not bound to solids and organic matter). Use of the freely dissolved concentration (calculated using the best-available science adsorption coefficients) is an appropriate predictor of bioavailability for pyrethroids because it is highly correlated with the bioavailable fraction.⁹ However, rather than making an affirmative statement, the Lower Salinas TMDL states that "staff supports environmental managers' choosing the appropriate assessment method and recognizes there are situations in which whole water samples may be an appropriate assessment method."¹⁰

⁸ Lower Salinas TMDL, Technical Project Report, p. 13.

⁹ See Central Valley Pyrethroid Amendment, pp. 59-63 for best-available coefficients.

¹⁰ Lower Salinas TMDL, Attachment A to Resolution No. R3-2016-0003, p. 3.

The reference to “environmental managers’ choosing” is problematic in that the water quality targets are being set to determine compliance with the TMDL provisions. If the targets are based on criteria that represent freely dissolved concentrations, how is it proper for “environmental managers” to use whole water samples under any circumstance? Use of whole water samples will not properly determine if TMDL compliance has been achieved.

V. Central Coast Water Board Response to Certain Comments Failed to Consider Actual Ecological Impacts and Failed to Consider Data and Information Submitted by the PWG

The PWG provided data and information prepared by Dr. Lenwood Hall that pertained directly to the lower Salinas watershed. In response to this data and information, Central Coast Water Board staff made summary conclusions that this data further supported their findings in the Lower Salinas TMDL. We disagree with their summary conclusions and depiction of the data and information contained in Dr. Hall’s report.

Specifically, the Response to Comments states that sediment concentrations of pyrethroids are toxic in Salinas streams. However, the Response fails to mention important details surrounding this statement based on ecological relevance and actual impacts on designated uses (resident benthic communities). Dr. Hall’s field research in Salinas streams showed that sediment samples collected in 2011 had a sum of pyrethroid Toxic Units (TUs) greater than 1 at various sites based on using toxicity data from a highly sensitive laboratory-reared species (*Hyaella*) in the denominator of the TU equation (environmental concentration/toxicity value of most sensitive species). This TU approach, using a highly sensitive species, should be considered a screening level approach, and does not mean that actual sediment concentrations of pyrethroids are impacting in-stream benthic communities.

The best approach for determining if resident benthic communities are actually impacted is through a bioassessment multiple-stressor field study that includes pyrethroids. A multiple-year bioassessment multiple-stressor field study was conducted in the same Salinas streams addressed in this TMDL (Hall et al. 2013b). This study was specifically designed to determine the relationship of benthic community metrics to physical habitat, pyrethroids and metals. The key conclusion from this study is that physical habitat (specifically sediment deposition) was the most important factor shaping benthic communities in these Salinas streams (Hall et al 2013b). Pyrethroids were not reported to have a significant relationship with benthic community metrics in these Salinas streams. Therefore, actual field data addressing pyrethroid impacts along with other real world stressors on resident benthic communities would not support the need for TMDLs for pyrethroids in the Salinas streams.

Further, in response to comments regarding the need to consider ecosystem impacts, Central Coast Water Board staff merely noted that biological indicators are an important tool for evaluating impacts to beneficial uses, but that staff was not able to evaluate them for this TMDL project. However, Central Coast Water Board staff failed to explain why they were

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unable to consider this information for the TMDL project even though it was provided to them during the written public comment period. As indicated, the bioassessment data are available from a multiple-year/multiple-stressor study (including pyrethroids) in the Salinas watershed and would seem to be the best data available to use for the TMDL process in place of screening level data from single-species laboratory toxicity tests (Hall et al. 2013b). Moreover, submittal of data and information during the written public comment period is intended to inform the Water Board's proposed regulatory action. If such information is to be ignored for whatever reason, it undermines the intent and purpose of the public comment process.

VI. Central Coast Water Board Should Be Directed to Follow the Central Valley Water Board Approach

Although the PWG finds the Central Valley Water Board's 2015 criteria, as well as the UCD 2010 criteria, to be overly conservative with respect to the development of the Central Valley Water Board's Pyrethroid Amendment as a whole, the Central Valley Water Board conducted an open, fair and transparent process that spanned many years. Stakeholder meetings were scheduled and noticed for all interested persons, and all stakeholders were given multiple opportunities to comment on administrative draft versions of proposed amendments. Central Valley Water Board staff were open to varying viewpoints and considered data and information provided by all stakeholders. Overall, the PWG believes that this process led to the development of a scientifically robust and reasonable Basin Plan amendment.

In contrast, the Central Coast Water Board conducted a few public workshops, prepared a staff report and amendments that were released for public comment, and more than a year after closing the written comment period, held a public hearing for adoption. Further, data and information submitted during the comment process appear to have been dismissed without actual consideration. In light of these deficiencies, and lack of consideration of the Central Valley Water Board's action as actually directed by the State Water Board, the PWG believes it appropriate for the State Water Board to reject the Lower Salinas TMDL. In its rejection of the TMDL, the State Water Board should provide clear direction to the Central Coast Water Board regarding changes it should make with respect to addressing pyrethroid pesticides.

Thank you for the opportunity to comment. Please contact me at (916) 469-3847 for questions.

Sincerely,



Theresa A. Dunham

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