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January 21, 2011

Charles R. Hoppin, Chairman and Members
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

c/o Jeanine Townsend, Clerk to the Board
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SUBJECT: Comment Letter: Draft Policy for Toxicity Assessment and Control

Dear Chairman Hoppin and Members:

The undersigned clean water associations (CWAs) appreciate the opportunity to provide written comments on the State Water Resources Control Board's (State Water Board's) Draft Policy for Toxicity Assessment and Control (Policy). Our associations represent local public wastewater agencies providing sewer collection, wastewater treatment and water recycling services to millions of Californians. Our associations are fully committed to the effective and appropriate implementation of the toxicity assessment and control program, and support the use of toxicity testing as a tool to address uncertainties associated with chemical specific monitoring and biological assessment. The following comments are respectfully submitted with this premise in mind, and with the intent to improve the implementation of toxicity test provisions designed to assess the water quality of surface waters, enclosed bays, and estuaries within the State of California.

Our associations recognize that a properly drafted toxicity policy can bring consistency and clarity to the current region-by-region approach. However, we have three major concerns regarding the Policy as currently proposed.

- The proposed Policy does not implement a regulatory strategy based on rapid identification and control of constituents causing persistent chronic toxicity, but rather

assesses punitive violations for single sample failures of a chronic toxicity screening test, the results of which have an acknowledged level of uncertainty, particularly related to potential effects in the receiving water environment.

- As such, the proposed Policy does not reflect the ultimate goal of the toxicity testing program, which should be to use toxicity tests as an investigative tool to identify and then control specific persistent chemicals and/or activities that are the source of the toxicity.
- Finally, the proposed Policy provides no added incentive for permit holders to identify and control the cause of toxicity, particularly when, as in the case of publicly owned treatment works (POTWs), the discharger has limited control over the chemical composition of its influent.

Other issues with the proposed Policy range from concern regarding a high rate of false determinations of toxicity to incomplete and inaccurate analysis of alternative approaches and the economic impact of the proposed Policy, as detailed in the attachments to this letter. Of particular concern is that use of single test limits will lead to numerous false determinations of toxicity, where non-toxic discharges and receiving waters are incorrectly identified as toxic. This, in turn, will lead to the waste of significant Water Board and POTW resources to respond to non-toxic, false indications of toxicity. Taken to its logical conclusion, the proposed Policy could also ultimately lead to inappropriate use of public funds to provide unnecessary treatment plant upgrades based on non-existent biological community impacts. Yet, even after these improvements, the effluent will still sometimes test as “toxic” due to the rate of false determinations of toxicity. Our associations believe that numeric limits for low levels of chronic toxicity are inappropriate, as there is no evidence linking low level chronic toxicity in POTW discharges to in-stream biological impacts.

Recommended Approach

Despite these concerns, we believe many of these issues can be addressed and the proposed Policy improved by modifying it to utilize robust multiple test triggers, as opposed to the currently proposed single test numeric approach and focusing on persistent toxicity. The use of multiple test triggers would satisfy the State Water Board’s goals of establishing a consistent and enforceable objective that will be effective in identifying toxic discharges that could have adverse effects in receiving waters. Our proposed alternative approach will also, through enforceable permit requirements, require the investigations necessary to identify and control the constituents causing the toxicity in such discharges and provide incentives for permit holders to be responsive and timely. Briefly, we recommend that, for POTWs over 5 mgd, the proposed Policy:

- Include statewide narrative toxicity objectives for acute and chronic toxicity (e.g., “There shall be no [acute/chronic] toxicity to aquatic organisms in ambient waters

caused by controllable water quality factors, outside any designated mixing zone.”).

- Use a two-phased trigger for accelerated chronic toxicity monitoring as follows:
 - If a toxicity test shows an unacceptably high level of chronic toxicity, a second test must be run to confirm this toxicity. If this second test fails to confirm elevated toxicity, a third test must be run to provide added certainty that this was not a persistent event. This additional toxicity testing (second and, if necessary, third test) must be completed and reported within 30 days.
 - If the above initial trigger phase fails to confirm elevated toxicity, no further actions are required and the discharger would return to normal compliance monitoring. However, if elevated toxicity is confirmed, the discharger would conduct accelerated testing comprising up to six additional toxicity tests over 90 days. If any two of these six tests exhibit elevated toxicity, the discharger would initiate a TRE Work Plan. Otherwise, the discharger would return to normal compliance monitoring.
- We recommend implementing the narrative objective using the EC/IC25 (point estimates) method, as recommended in methods promulgated by the United States Environmental Protection Agency (EPA).
- Compliance with the toxicity objectives would be based upon the permit holder’s adherence to these requirements and test schedules.
- A violation of the chronic toxicity effluent limitation would occur if the discharger did any of the following:
 - Failed to prepare and submit an initial TRE Work Plan within 90 days after permit issuance
 - Failed to amend TRE Work Plan as requested by Regional Board after review
 - Failed to report toxicity test results
 - Failed to perform toxicity tests at the required frequency
 - Failed to initiate accelerated testing after exceeding the accelerated testing trigger

- Failed to conduct accelerated testing at minimum required frequencies (every two weeks)
- Failed to initiate TRE Work Plan when TRE trigger was exceeded
- Failed to conduct specific steps in the TRE Work Plan at the specified frequency

The two-phased trigger approach outlined above will be equally effective in providing an early warning of potential effluent toxicity as the proposed Policy, and because it will address our concerns noted above, is a better approach to the ultimate goal of avoiding adverse impacts from persistent toxicity. Our recommended approach will focus discharger and Water Board resources on identifying and addressing the causes of persistent toxicity that could adversely affect receiving waters. The table below provides a comparison of the associations' proposed alternative with the proposed Policy as currently drafted:

**Table 1: Comparison of Alternative Toxicity Policy Approaches:
 (Advantages unique to the CWA proposed approach are bolded and underlined.)**

Feature	CWA Proposed Approach [narrative objective, narrative limits with numeric triggers]	SWRCB Proposed Approach [numeric objective, numeric limits]	Similar to CWA Approach except with numeric limits in lieu of numeric triggers
Will allow multiple test results to verify persistent toxicity	<u>Yes</u>	No	Uncertain
Will be consistent with EPA Permit Writer's Guide	Yes	Yes	Yes
Provides compliance incentives to POTWs (through performance of TRE)	<u>Yes</u>	No	No
Provides clear measure of compliance	Yes	Yes	Yes
Simplifies Regional Board efforts in response to toxicity (compared to SIP ¹)	Yes	Yes	Yes

¹ Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California (SIP).

Provides reasonable protection of aquatic life uses	Yes	Yes	Yes
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Though not reflected in the table, all of the alternatives can serve the goal of statewide consistency, but this will only occur if the provisions in the proposed Policy allowing Regional Water Boards to deviate from the policy are deleted or substantially revised. Further, with regard to compliance incentives, the narrative approach will actually be more effective than the numeric alternatives, in that a discharger who responds promptly and undertakes the required implementation steps can still avoid a violation, whereas under the numeric approaches, the discharger will be in violation as soon as the numeric limit is exceeded, without regard to the ability to identify and address the causes of the toxicity.

Small Community Impacts

In addition, our associations remain concerned that the proposed Policy will impose a disproportionate economic burden on small wastewater agencies, given the high costs of conducting the required toxicity testing. Each chronic toxicity test costs approximately \$1,000, and the proposed Policy would significantly increase the number of tests required for small POTWs. The proposed Policy requires routine testing monthly for all POTWs over 1 mgd and quarterly for all POTWs under 1 mgd (average dry weather flow). Many smaller agencies are currently required to test once per permit cycle, or at most once per year, for toxicity. To address these concerns, we recommend the following alternative approach:

- If reasonable potential (RP) for POTWs is to be presumed for larger discharges, as now proposed, we recommend that the threshold for this presumption (which implies automatic applicability of effluent limitations for toxicity) be raised from 1 mgd to 5 mgd. This is consistent with the discharge level used by EPA as a threshold for the requirement of industrial pretreatment programs.²
- The criteria for determining RP should be adjusted from the proposed 10% effects level to a 25% effects level.
- Routine toxicity monitoring should be modified to annual for POTWs smaller than 1 mgd, and quarterly for POTWs between 1 and 5 mgd.
- Under the proposed Policy, RP is forever: Once an effluent limitation has been imposed in an NPDES permit, no mechanism exists in the proposed Policy for the

² As discussed in our detailed comments, reasonable potential should not be presumed for any size discharger, as this is inconsistent with federal law. Only those dischargers that have demonstrated RP should receive effluent limitations for chronic toxicity. See 40 C.F.R. § 122.44(d)(1)(iv); EPA NPDES Permit Writers Manual at 6-38, EPA-833-K-10-001 (Sept. 2010).

effluent limitation to be reconsidered, no matter how many “clean” tests the POTW has reported. For POTWs under 5 mgd, Regional Boards should be required to reassess RP each permit cycle (just as they do for chemical-specific effluent limitations).

Our associations appreciate the opportunity to develop and recommend an alternative approach for the State Water Board’s consideration. We look forward to working with the State Board Water and staff to refine these concepts in the coming weeks, including assisting in developing specific Policy language to implement the alternative. We remain hopeful that we can arrive at a reasonable, protective Policy that more effectively meets the stated goals of the State Water Board.

Sincerely,



Amy Chastain, BACWA



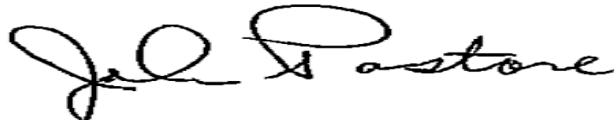
Roberta Larson, CASA



Debbie Webster, CVCWA



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ATTACHMENT A

**CLEAN WATER ASSOCIATION
TECHNICAL COMMENTS
PROPOSED POLICY FOR TOXICITY ASSESSMENT AND CONTROL**

1. Numeric WET Limits for Chronic Toxicity Are Inappropriate

Chronic Toxicity Is a Poor Predictor of In-stream Impacts

Field studies conducted by the United States Environmental Protection Agency (EPA) and others in the 1980s have led to a common misperception that the results of whole effluent toxicity (WET) tests are relatively good predictors of in-stream biological impacts. However, these early studies have been criticized for selecting sites exhibiting large in-stream effects with known biological impacts and did not evaluate waters and effluents exhibiting low to moderate sublethal chronic effects. Furthermore, none of these studies demonstrated predictive accuracy. EPA's experts now acknowledge that WET test failures caused solely by changes in growth or reproduction may not accurately predict in-stream impairment. Although they contend that "when significant lethality is seen in toxicity tests there is a very high potential of aquatic ecosystem impairment," they "continue to struggle with the idea that sublethal effects on indicator species can result in detectable adverse ecosystem responses."³ Furthermore, more recent scientific research on this topic has demonstrated that chronic toxicity as measured in the WET tests is a poor predictor of in-stream impacts with "nearly a 50% probability that toxicity exhibited in WET tests may not be reflected in-stream, even for those effluents exhibiting a relatively high failure rate (>90%)."⁴ Additionally, the authors concluded that "a surprising result of this study was the lack of relationship between *Ceriodaphnia dubia* acute and chronic endpoints and in-stream biological results" and that even when using the more robust EC/IC25 statistical analyses, "poor agreement was observed between WET results and in-stream biological condition, contrary to results previously reported by EPA and other research entities."⁵ A subsequent Water Environment Research Foundation (WERF) study published in 2007 described nearly identical findings,⁶ even though this study focused on effluent-dominated streams where effluent WET tests would be expected to be more predictive of in-stream effects.

Therefore, the use of numeric WET objectives and limitations will not result in greater protection of receiving biological conditions. The EPA peer review of the WERF study concurred that, "the actual level of false positives in 'real life' as defined by this [EPA's Interlaboratory WET

³ A Review of Single Species Toxicity Tests: Are the Tests Reliable Predictors of Aquatic Ecosystem Responses?, EPA, EPA/600/R-97/114, July 1999, p. 24.

⁴ Diamond, J. and C. Daley. 2000. What is the relationship between whole effluent toxicity and instream biological condition? *Environ. Toxicol. Chem.* 19:158-168

⁵ Evaluating Whole Effluent Toxicity Testing as an Indicator of Instream Biological Condition. WERF Project Report 95-HHE-1. 1999.

⁶ Evaluation of WET Testing as an Indicator of Aquatic Health in Effluent-Dominated Streams. WERF Project Report 03-ECO-2T. 2007.

Variability, 2000] study can be expected to be higher. These tests are applied, too often, as decisive when they are far from such.”⁷

A Step-Wise Approach Utilizing Accelerated Testing and TRE Triggers is Consistent With Federal, State, and Regional Guidance

The EPA Technical Support Document (TSD)⁸ recommends that a discharger conduct a toxicity identification evaluation (TIE) in response to a positive WET test result and that chemical-specific limits on the identified constituent be applied along with continued WET monitoring. The TSD further recommends that if toxicity is observed subsequently, this process should be repeated. EPA Region 9 and 10 WET guidance indicates that “the principal mechanism for bringing a discharger into compliance with a water quality-based WET requirement is a toxicity reduction evaluation.”⁹ The EPA has indicated that the current WET regulatory strategy utilized in California (i.e., narrative limit with numeric triggers to accelerated testing and toxicity identification) meets its requirements, as it is “fully implementing” its NPDES WET program¹⁰.

Furthermore, a step-wise approach using narrative effluent limits with prescriptive accelerated monitoring and toxicity reduction evaluation (TRE) triggers has been effectively utilized in California¹¹ for over ten years, particularly in the Los Angeles and Santa Ana regions. Such an approach is supported by a diverse national expert advisory panel¹² formed by the Society of

⁷ EPA, Summary Report: Peer Review of “Preliminary Report: Interlaboratory Variability Study of EPA Short-Term Chronic and Acute Whole Effluent Toxicity Test Methods” (WET Study Report), prepared by Versar, Inc. (March 2001) (“Peer Review Report”), p. 18.

⁸ Technical Support Document for Water Quality-Based Toxics Control, EPA Office of Water, March 1991, EPA/505/2-90-001, p. 62, Section 3.3.7. *See also* EPA NPDES Permit Writers Manual at 6-40, EPA-833-K-10-001 (Sept. 2010)(stating that “A permit also *could* include a requirement to conduct a toxicity identification evaluation and toxicity reduction evaluation (TIE/TRE) as a *special condition* in an NPDES permit.”)(emphasis added).

⁹ EPA Regions 9 and 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs, EPA, May 31, 1996, pp. 2-1, 4-1, and 5-2.

¹⁰ September 29, 2009 EPA Headquarters EPA NPDES WET Program presentation provided by Linda Boornazian, Director of Water Permits Division, Laura Phillips (EPA WPD/OWM), and Debra Denton (EPA Region 9) – see slides 6 and 7 of Appendix 1.

¹¹ *See e.g.*, California Regional Water Quality Control Board, Los Angeles Region MRPs:

No. CI-5662 - NPDES No. CA0054119, No. CI-5059 - NPDES No. CA0054011, No. CI-2848 - NPDES No. CA0053716, No. CI-5542 - NPDES No. CA0054119, No. CI-0755 - NPDES No. CA0053619, No. CI-4993 - NPDES No. CA0054216, No. CI-2960 - NPDES No. CA0054313.

¹² SETAC WET Expert Advisory Panels, <http://www.setac.org/wettre.html>, Sections 1 and 4. Application of TIEs/TREs to Whole Effluent Toxicity Testing: Principles and Guidance. A Report of the Society of Environmental Toxicology and Chemistry (SETAC) WET Expert Advisory Panel on TIE/TRE, peer reviewed by the SETAC WET Expert Advisory Panels Steering Committee. June 1998. Produced under the SETAC

Environmental Toxicology and Chemistry (SETAC) and funded by the EPA to provide guidance on WET issues and by the State Water Board Toxicity Task Force,¹³ which was specifically assembled to provide guidance on the regulatory use of toxicity test within the State. This Task Force included representatives from non-governmental organizations, POTWs, EPA, State and Regional Boards and reached complete consensus that the State Board should adopt a process to implement toxicity objectives that included routine monitoring, accelerated testing triggers, and toxicity reduction evaluation (TRE) triggers very similar to those proposed herein by the associations. The Task Force also recommended that the State Board “should adopt a provision that: No single test result shall constitute a violation”; a recommendation that was objected to only by Department of Fish and Game.

Biological Systems are Inherently Variable

WET tests are not chemical measurements. Instead, these tests are tools to measure how certain sensitive tests organisms respond to a particular water sample. The variability in the response of these test organisms is one factor that produces variability in WET results. Also, the measurements are influenced by a number of factors that may be wholly unconnected to toxicity, including ionic changes in water chemistry, presence/absence of trace elements in the water, seasonality, light levels, and temperature. For example, in some cities local water supplies are very soft. Extreme low hardness is known to adversely impact the normal rate of reproduction in *Ceriodaphnia dubia*. In this instance, it is the *absence* of essential elements rather than the presence of harmful pollutants that may lead to mistaken conclusions about effluent “toxicity.”

While WET test procedures attempt to minimize variability, they cannot eliminate it altogether. The EPA promulgated method for WET warns, “The interpretation of the results of the analysis of data from any of the toxicity tests described in this manual can become problematic because of the inherent variability and sometimes unavoidable anomalies in biological data.”¹⁴ Furthermore, EPA guidance states, “The allowable frequency for criteria excursions should refer to true excursions of the criteria, not to spurious excursions caused by analytical variability or error.”¹⁵

Foundation’s WET Cooperative Agreement with U.S. Environmental Protection Agency, No. CX 824845-01-0.
<http://www.setac.org/wettre.html>

¹³ Memo to Members of the State Water Resources Control Board from the Toxicity Task Force, September 27, 1995. Recommendations 2, 5, 9, and 10.

¹⁴ EPA. Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Water to Freshwater Organisms, Fourth Ed., EPA-821-R-02-013. October 2002. Section 9.4.1.1, p. 39.

¹⁵ Technical Support Document for Water Quality-Based Toxics Control, EPA Office of Water, March 1991, EPA/505/2-90-001. See Appendix entitled “Technical Support Document for Water Quality Based Toxics Control – Responsiveness Summary,” p. 11.

Toxicity Cannot Be Proactively Addressed for Many Dischargers

Under the proposed Policy, POTWs that discharge without dilution credits must discharge non-toxic effluent at all times. It is not possible for such dischargers to proactively cause their non-toxic effluent to be more non-toxic or more reliably non-toxic. When effluent toxicity does occur, the cause of the toxicity cannot be addressed through source control or additional treatment until the source of the toxicant has been identified. In these cases, it is not appropriate to consider the discharge “out of compliance” or “in violation” while the cause of the toxicity is still under investigation, as long as the discharger is aggressively seeking the source of the toxicity and, once identified, taking responsible action to reduce the source. A well-articulated toxicity regulatory strategy using numeric toxicity triggers with enforceable TRE requirements would allow time for such identification, while failure on the part of a discharger to adequately implement this process in response to toxicity would constitute a violation of the narrative toxicity limitation and expose the discharger to the imposition of penalties and other enforcement actions.

2. *Numeric WET Limits for Acute and Chronic Toxicity are Unnecessary*

Numeric WET Limits Will Not Reduce Water Board Resources Needed to Ensure Compliance

The State Water Board Staff Report claims that numeric WET limits are necessary to provide adequate protection of aquatic life and that numeric WET limits represent an efficient regulatory tool that minimizes the resources Regional Boards need to devote to compliance.¹⁶ However, in addition to the punitive numeric limits included in the proposed Policy, the Policy as proposed also requires a step-wise approach that includes numeric thresholds for accelerated testing followed by additional numeric triggers for TRE implementation. Therefore, as the Policy is proposed, in order to assure protection of receiving waters from discharges that may cause aquatic toxicity, Regional Boards will have to continue to evaluate discharger efforts to aggressively and effectively identify toxicants through accelerated testing and TRE implementation. Even though State Water Board staff appear to believe that immediate violation status in response to routine monitoring exceedances will ensure that dischargers aggressively conduct accelerated testing and TREs, the associations believe that the use of numeric accelerated testing and TRE triggers, with the threat of violations if dischargers do not aggressively conduct accelerated testing and TREs, have provided and would continue to provide incentive to take appropriate and necessary steps in response to WET exceedances.

Additionally, as detailed below, the proposed Policy would result in an unacceptably high rate of false determinations of chronic toxicity. This, in turn, will lead to the need to actually expend more Water Board resources to address the false determinations, or episodic toxicity events that do not lend themselves to resolution through accelerated monitoring or TRES.

¹⁶ Policy for Toxicity Assessment and Control Staff Report. October 2010. Division of Water Quality State Water Resources Control Board. Page 44.

Numeric WET Limits for Chronic Toxicity Will Not Result in Greater Environmental Protection

Even if one ignores the most recent and definitive conclusions contained in peer-reviewed studies indicating that chronic WET tests are poor predictors of in-stream impacts, it is generally understood that a single episodic release of effluent showing chronic toxicity, even with a relatively high effect, will not result in adverse environmental impacts. Resident organisms in receiving waters have adaptive mechanisms to address short-term exposures (weeks and months) that are not accounted for in chronic WET testing. These mechanisms range from simple avoidance to having the ability to alter reproductive cycles that are controlled against in the WET test. Second, exposure conditions are typically exaggerated in WET tests. The tests include intentionally low dilution factors and an assumed lack of environmental assimilation and attenuation of potential toxicants. Therefore, most toxicologists agree that chronic WET tests, are typically over protective. Finally, as detailed below, the high rate of false determinations of chronic toxicity that would result from the proposed Policy would make identification of real persistent toxicity-related problems more difficult, because they will be masked by a flood of false or episodic toxicity results.

Use of Numeric WET Triggers for POTWs Has Been Protective of Receiving Water Beneficial Uses

The Surface Water Ambient Monitoring Program (SWAMP) recently released a report summarizing the toxicity of receiving waters in California from 2001 through 2009.¹⁷ Although this report summarized both water column and sediment toxicity data collected by SWAMP, only the water column toxicity results from the SWAMP report are relevant to the proposed Policy. Most of the data used in the report were collected from studies designed to specifically examine impacts from human activities, so sites were generally located lower in the watersheds and/or near potential pollutant sources. In other words, the majority of the results used in this study likely represent the worst water quality conditions in the state (page 8 of the report).

Figure 7 of the SWAMP report includes a region-by-region breakdown of the water column toxicity results. Of those regions with a reasonable number of sites, Region 4 (Los Angeles Region) had the fewest sites exhibiting moderate to high toxicity, with only 5% of the 162 sites from this region falling within this range. Coincidentally, 5% is also the estimated statistical false positive error rate for the TST (in other words, samples that were not toxic but were mistakenly identified as toxic), which was used to analyze the data in report. The majority of sites evaluated for Region 4 were located primarily in the highly urbanized Los Angeles basin in freshwaters that are POTW effluent dependent. NPDES permits for POTWs in Region 4 contain stringent, clearly defined numeric accelerated testing triggers combined with equally prescriptive numeric TRE triggers. Therefore, the lack of receiving water toxicity in this region, as documented in the SWAMP report, can be directly attributed to the successful implementation of POTW WET

¹⁷ Summary Of Toxicity in California Waters: 2001 – 2009. November 2010. Surface Water Ambient Monitoring Program.

regulation using numeric triggers for accelerated testing and TRE implementation. In other words, the use of numeric triggers, as opposed to numeric limits, can and has been effective at minimizing or nearly eliminating POTW-related receiving water toxicity. As a result, it would make sense for the State Water Board to adopt the associations' recommended alternative, which is consistent with a statewide WET policy that parallels the approach being used in Region 4 for POTWs.

Furthermore, the SWAMP report confirms that POTW discharges in general are not significant contributors to receiving water toxicity. POTWs have had NPDES permit requirements to conduct chronic WET testing for two decades, with most permits also containing prescriptive triggers for accelerated testing and TRE implementation. This regulatory approach to WET testing has led to significant improvements in effluent quality that ultimately resulted only in rare instances of downstream receiving water toxicity. Adoption of punitive statewide numeric WET limits in POTW permits will therefore not likely lead to any improvement in receiving water conditions and will more likely only result in the waste of public funds to address perceived but non-existent receiving water problems.

The authors of the SWAMP report (page 6) indicate that declines in invertebrate population densities and other ecological effects can be directly related to "pesticide-laden streams draining intensive agriculture" and in "watersheds dominated by residential land use," not to POTW discharges. In short, receiving water toxicity and related beneficial use impacts in California are not linked to POTW discharges.

Additionally, a report prepared by Heal the Bay¹⁸ was briefly referenced in the Staff Report associated with the proposed WET Policy¹⁹ (page 62). The Staff Report contends that,

[T]he toxicity provisions presently in the [Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California] SIP provide minimal protection of aquatic life beneficial uses because they lack numeric objectives and a comprehensive methodology. Additionally, the inconsistencies that exist among the toxicity requirements established in NPDES permits, WDRs, conditional waivers, and Basin Plans have the potential to further weaken water quality standards. As noted in a 2008 study of 42 major dischargers in the Los Angeles Region, there were 15 permits containing numeric limits, nine containing narrative limits, 15 incorporating monitoring triggers, and three possessing no limits at all. Furthermore, 472 chronic and acute toxicity exceedances were reported between 2000 and 2008 (Stevenson et al. 2009). The

¹⁸ Stevenson et al. 2009. License to Kill; The Ineffectiveness of Toxicity Testing as a Regulatory Tool in the Los Angeles Region, 2000 – 2008.

¹⁹ State Water Resources Control Board, California Environmental Protection Agency. *Staff Report: Policy for Toxicity Assessment and Control*, October 2010.

proposed Policy seeks to resolve permit discrepancies by establishing uniform numeric objectives for chronic and acute toxicity. Doing so will improve water quality and increase the protection of aquatic biota inhabiting the state's inland surface waters, enclosed bays, and estuaries.

In responding to these statements, we note that a detailed review of the Heal the Bay study, included as Appendix 1, identified several significant errors, incorrect interpretations, and improper assumptions that call into question the validity of the report's conclusions. Regarding permitting consistency, the Staff Report information extrapolated from the Heal the Bay report is highly misleading. The table in Figure 1 of the Heal the Bay report is riddled with errors. As an example, the report incorrectly portrays the regulatory tools used to regulate toxicity at four of the eight NPDES facilities operated by the Sanitation Districts of Los Angeles County (LACSD). The State Water Board staff report makes no distinction between ocean and inland dischargers when discussing the consistency of application of chronic toxicity limits. There are differing regulatory requirements for ocean and inland dischargers for toxicity and, therefore, a difference in the application of limits is to be expected. The Los Angeles Regional Water Board should be consulted to obtain a correct portrait of chronic toxicity limitations in the Los Angeles Region.

The Staff Report additionally attempts to use the Heal the Bay report as evidence that an excessive amount of toxic wastewater is being discharged in the state. However, the Heal the Bay report failed to account for biological variability and the relatively high false positive error rate associated with hypothesis testing in their analysis, using a single test exceedance of 1.0 TUC as a conclusive indication of toxicity. In order to account for inherent variability and false positive results, the Los Angeles Regional Water Board specifically set the chronic toxicity numeric accelerated testing and TRE triggers as multiple test thresholds, with a monthly median 1.0 TUC for accelerated testing and two of six 1.0 TUC exceedances as the TRE trigger. For example, Heal the Bay identified 46 single test 1.0 TUC exceedances out of 636 tests final effluent chronic tests conducted after installation of ammonia removal treatment at seven LACSD facilities. As stated above, scientific research indicates that single, isolated toxicity test results are very poor indicators of adverse effects in receiving waters. For the chronic test results in question, a monthly median 1.0 TUC exceedance (more likely indicative of persistent toxicity) was observed on only five occasions during this same time period. TRE testing eventually identified and controlled the causative agent in four instances and the fifth was determined by additional confirmatory testing to be a false positive result. By accounting for the inherent variability and false positive error rate associated with WET testing, and by focusing resources on persistent toxicity by using multiple test triggers, the discharger was able to effectively eliminate toxicity causing constituents once identified.

Furthermore, implementation of ammonia removal treatment to reduce toxicity at most POTWs discharging to freshwater was not addressed in the report. For water reclamation plants (WRPs) operated by LACSD, this treatment was effective as of October 2003; for the Burbank WRP, it was effective as of June 2003. The two City of Los Angeles water reclamation plants, the Tillman and LA-Glendale WRPs, did not complete ammonia treatment until 2007. Instead, the

report grouped together all acute and chronic toxicity results for the entire period of 2000 to 2008. This provides an exceedingly misleading portrayal of the current toxicity situation in the Los Angeles region, since ammonia was determined to be the primary cause of toxicity in undiluted effluent prior to implementation of ammonia removal treatment at these WRPs. For example, 200 out of 330 individual final effluent chronic toxicity tests were above 1.0 TUc at Sanitation Districts' Long Beach, Los Coyotes, Pomona, Whittier Narrows, San Jose Creek, Valencia, and Saugus WRPs in the period 2000 through October 2003. After ammonia removal treatment was installed, from October 2003 through August 2008, only 46 out of 636 individual chronic toxicity tests were above 1.0 TUc at the same facilities, and only five exceedances of a 1.0 TUc monthly median (the regulatory standard). Clearly, implementation of numeric toxicity triggers combined with stringent accelerated testing and TIE provisions (which led to nitrification) has resulted in a significant reduction of chronic toxicity in wastewater discharged in the Los Angeles Region.

In summary, the *License to Kill* report used a flawed and incorrect chronic toxicity threshold, incorrectly presumed adverse receiving water effects related to single test failures, failed to recognize and correct for false determinations of toxicity, did not recognize the improvements obtained through alternative enforcement actions (permit requirements to address and remove ammonia identified as the cause of WET exceedances), failed to examine WET results before and after permit mandated treatment upgrades, and incorrectly assessed toxicity-related permit conditions.

3. The Incorrect Identification of Non-Toxic Samples as Toxic Under the Proposed Policy Would Be Unacceptably High

The associations are tremendously concerned that the proposed Policy will lead to an unacceptably high frequency of incorrectly identifying a non-toxic effluent as "toxic." The EPA guidance on the TST²⁰ (TST Guidance) and the proposed Policy conservatively estimate that a 5% statistical false positive error rate (i.e., incorrectly identifying a non-toxic sample as "toxic") for individual tests is incorporated into the TST analysis. While even a 5% false positive rate is unacceptably high from a discharger point of view, it is important to note that the actual false determination of toxicity will likely be significantly higher. The explicit 5% statistical false positive error rate stated in the proposed Policy is actually a regulatory management decision made by EPA to identify no more than 5% of the tests with a 10% effect or less as "toxic" regardless of whether the sample was actually or truly toxic. This statistical false positive error rate as incorporated into the proposed Policy fails to address the much more significant concern of incorrectly identifying a non-toxic sample as toxic regardless of the measured effect. This "false determination of toxicity rate" can only be accurately estimated through the evaluation of multiple toxicity results conducted on known, non-toxic blank samples.

²⁰ EPA. National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document. EPA 833-R-10-003; June 2010.

This issue of incorrectly identifying a non-toxic sample as toxic using blind testing on known non-toxic blank samples was a critical component in the United States Court of Appeals ruling in the case of *Edison Electric Institute, et al v. USEPA*.²¹ According to that ruling, “EPA defines a false positive test result as one indicating toxicity in a blank study.” The ruling further described that the results of the EPA’s WET Interlaboratory Variability Study²² conducted on non-toxic blank samples demonstrated that no individual test’s false positive error rate exceeded 5% using the NOEC or EC/IC25. Additionally, the same false positive error rates were also instrumental in the eventual promulgation of the WET methods.²³ Citing the results obtained from the EPA’s WET Interlaboratory Variability Study, EPA determined that the false positive error rate associated with the NOEC and EC/IC25 as determined using non-toxic blank samples was 3.7% and 4.35% for the *Ceriodaphnia dubia* and fathead minnow chronic tests, respectively.

Using the same non-toxic blank data from the EPA Variability Study, Tri-TAC and CASA evaluated the frequency at which the TST analysis incorrectly identified non-toxic blank samples as toxic with *Ceriodaphnia dubia* and fathead minnow test organisms. Since all these samples were known to be non-toxic blank samples, any identification of toxicity would be a false determination of toxicity. **This evaluation found an unacceptable 14.8% and 8.3% of the EPA clean water, non-toxic samples tested with *Ceriodaphnia dubia* and fathead minnow, respectively, would have been incorrectly identified as toxic using the TST.** Details of the *Ceriodaphnia dubia* results are contained in Table 1.

Since a numeric effluent violation would be assessed with every identification of toxicity under to the proposed Policy, a discharger of **non-toxic** effluent with a monthly monitoring frequency would be expected to accrue nine violations over the course of a five-year permit cycle, or about two violations a year based on a 15% false toxicity determination rate. The resulting impact of these false determinations would be the performance of 54 unnecessary accelerated tests as well as enforcement liability under the California Water Code and the Clean Water Act for the cumulative total for these false violations.

Conversely, the probability that the same discharger of **non-toxic** effluent will not accrue any effluent toxicity violations during a permit cycle would be functionally zero (<0.006%). With an 8% false determination of toxicity rate, a discharger of **non-toxic** effluent with a monthly monitoring frequency would be expected to accrue five violations over the course of a five-year permit cycle resulting in 30 unnecessary accelerated tests. The probability that a discharger of non-toxic effluent would not accrue any effluent toxicity violations during a permit cycle would

²¹ U.S. Court of Appeals-D.C. Circuit Judgment (*Edison Electric Institute, et al v. Environmental Protection Agency*; Case No. 96-1062; Dec. 10, 2004.

²² EPA. Final Report: Interlaboratory Variability Study of EPA Short-term Chronic and Acute Whole Effluent Toxicity Test Methods-Vol. 1 & 2; EPA-821-B-01-004; September, 2001.

²³ Federal Register, November 19, 2002. Vol. 67, No. 223, 69968.

be less than 1% (0.7%). Even at a 5% statistical false positive error rate, a discharger of **non-toxic** effluent with a monthly monitoring frequency would be expected to accrue three violations and eighteen accelerated tests over the course of a five-year permit cycle. The probability that the same discharger of **non-toxic** effluent will not accrue any effluent toxicity violations during a permit cycle would be less than 5% (4.6%).

Although it is generally conceded that an enforcement action or citizen lawsuit is unlikely in response to a single WET violation, a 40% probability exists that a discharger of completely non-toxic effluent will observe ten or more single test exceedances during a five-year permit cycle at a 14.8% false determination of toxicity rate. The probability that the same discharger will observe five or more exceedances is over 95%. Therefore, it is the real risk of observing multiple WET exceedances in a non-toxic effluent and the potential enforcement of citizen actions in response to these multiple cumulative occurrences that is most concerning to POTWs.

4. *High False Determination of Toxicity Rates Would Cause Unwarranted 303(d) "Impaired Waters" Listings*

In addition to the issues associated with final effluent numeric limit compliance determination, the false determination of toxicity rates associated with the proposed Policy are also likely to ultimately result in nearly every waterbody in California eventually being included on the 303(d) list due to toxicity related impairments, including many that are not impaired. This would generate a grossly inaccurate portrayal of the condition of California's water bodies and result in hundreds of unnecessary Total Maximum Daily Loads (TMDLs) being required in non-toxic waters that are meeting all aquatic life beneficial uses.

Table 3.1 of California's 303(d) listing policy²⁴ specifies that if two or more of 24 measurements in a waterbody exceeds the water quality objective, the waterbody will be listed as impaired. At a 15% false determination of toxicity rate, the probability of listing a **non-toxic** water body (i.e., of observing at least two TST exceedances in 24 samples) is **89%**. At an 8% false determination of toxicity rate, the probability of listing a **non-toxic** waterbody is 58%. Even using the explicit statistical false positive error rate of 5%, 34% of California's non-toxic waterbodies would be expected to be incorrectly listed as impaired based on an assessment of 24 samples. Figure 1 summarizes the probability of listing a non-toxic receiving water as impaired due to toxicity from a range of toxicity tests (12 to 120) conducted at a 15%, 8%, and 5% false determination of toxicity rate. This problem must be address through modifications to the listing policy or adjustments in the proposed 303(d) approach.

²⁴ Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List. State Water Resources Control Board. Adopted September 2004.

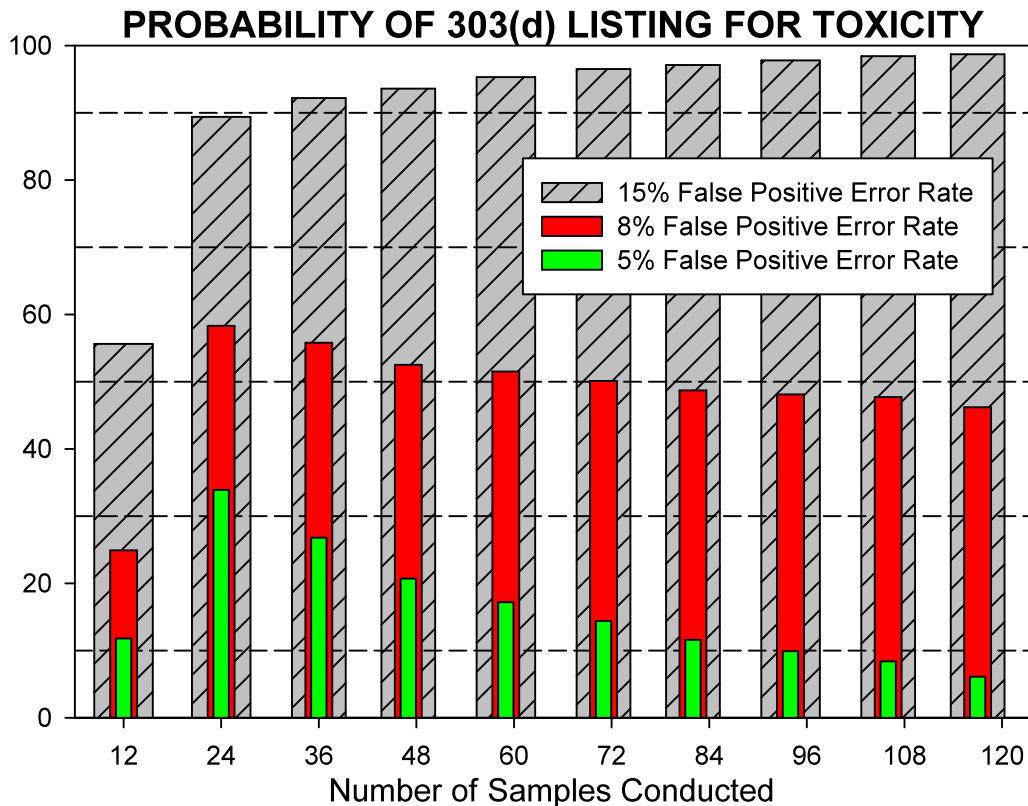


Figure 1. The probability of listing a non-toxic receiving water as impaired for toxicity based on the number tests conducted and the false determination of toxicity rate.

5. High False Determination of Toxicity Rates Would Waste State and Local Resources

The high false determination of toxicity rate associated with the Policy being proposed by the State Water Board is troublesome for a number of reasons. For the Water Boards, false violations would divert enforcement resources away from real water quality violations. Not only would a significant amount of Water Board staff resources be spent assessing and tracking false violations, but greatly increased resources would be required to respond to an increased number of appeals of enforcement actions for alleged toxicity violations, since the validity of toxicity testing results will be contested. As a result, water quality will suffer, because any real toxicity problems will be lost in all the noise and may go unresolved. If the CWA proposed approach is adopted, this issue will be largely addressed.

If the 15% false determination rate is applied statewide to all NPDES dischargers, there would be **1070 false violations each year** for the NPDES dischargers.²⁵ Even if the false determination

²⁵ Per the Water Board's 2009-2010 Web-Based Performance Report, there are 263 major NPDES dischargers, 350 minor NPDES dischargers, and 1296 general NPDES dischargers. Monthly monitoring was assumed for major

rate was only 5%, there would still be unacceptably high false violation rate of 360 per year. In comparison, in 2009-10, the State Water Board took enforcement action on 510 NPDES violations. This proposed Policy would likely double the Water Board's enforcement load with no environmental gain.

Multiple false violations raise serious concerns regarding enforcement actions, citizen lawsuits, and tarnished public perceptions. Under the proposed Policy, there is no means of avoiding this, because non-toxic water cannot be made less non-toxic to provide a margin of safety against violations. Dischargers would also be placed in the untenable position of being required to identify sources of toxicity that do not exist. In the most extreme cases, discharges could be forced to perform treatment upgrades that in the end would consume environmental resources through chemical and energy usage, cost ratepayers significant monies, but would not solve any problem, avoid false determinations of toxicity, or reduce biological community impacts.

The only defensible means of reducing the false determination of toxicity rate to acceptable levels is to abandon the proposed use of single test triggers and limits, and to adopt multiple test result accelerated testing and TRE triggers as previously described.

6. *Establishment of Monthly Mean/Median Numeric Objectives Is Not Impracticable*

Federal regulations specify that "all permit effluent limitations" for POTWs be stated as average monthly and average weekly discharge limitations "unless impracticable." (40 C.F.R. § 122.45(d)) Yet, the proposed Policy specifies that *all* effluent limitations, including those for POTWs, imposed pursuant to the proposed Policy are to be expressed as maximum daily effluent limitations. The only justification provided for this departure from the federal rule is a statement that longer-term limits would be "impractical" [sic], because "a single daily discharge of toxic effluent can exceed the water quality objectives . . . and impact aquatic life." (Proposed Policy at p. 5.) This conclusion is not supported with adequate findings and evidence, and is flawed for several reasons.

First, the State Water Board has provided no evidence that an exceedance of the proposed chronic toxicity objective in a single test would cause harm to aquatic life. As detailed above, studies have shown that no in-stream impacts are correlated with the low levels of chronic toxicity that would be regulated under the proposed Policy. Chronic toxicity testing is meant to assess long-term impacts to biological communities of organisms, not the impact of a single day's or week's discharge. Acute toxicity testing is a better measure of short-term impacts to biota. Therefore, use of a daily maximum acute WET limit to protect against a single discharge event capable exceeding the objective may be more appropriate. Any chronic WET trigger or

dischargers and quarterly monitoring for minor dischargers. Quarterly sampling was assumed for half of the general permittees.

threshold should be expressed as a monthly average or median depending upon the statistical endpoint used.

Second, the conclusion that a monthly average limit is impracticable is contradicted by current practice in California. A WET regulatory strategy that employs narrative toxicity objectives with multiple test numeric triggers has been implemented by the Los Angeles Regional Board for years and there is no evidence of receiving water toxic effects as a result. Furthermore, the Staff Report for the proposed Policy analyzes an alternative for longer-term average limits (see Staff Report at p. 54, discussing the practicability of setting monthly and weekly average limits for POTWs).

7. *Use of a Multiple Test Metric is Necessary to Address Unavoidable Variability of Toxicity Testing*

The federal courts and EPA have stated that interpretation of single test WET results can be problematic due to the unavoidable anomalies and variability in biological data. According to the U.S Court of Appeals for the District of Columbia Circuit:

There is an important distinction between the validity of a test method and the validity of a particular result from the test when it is used to determine compliance with permit conditions. Even by EPA's calculations, WET tests will be wrong some of the time, which is why EPA warned against using a single test result to institute an action for a civil penalty Nothing we have written . . . forecloses consideration of the validity of a particular test in an enforcement action. That issue is not before us. The case involves only the validity of the WET test methods . . . we are concerned here only with test methodology, not the results of particular tests in the field. Our decision does not endorse the validity of any test result in the future, nor does it foreclose a defense that the result is wrong. Those issues are simply not presented in this judicial review of rulemaking.²⁶

Similarly, the EPA promulgated method for WET warns that "the interpretation of the results of the analysis of data from any of the toxicity tests described in this manual can become problematic because of the inherent variability and sometimes unavoidable anomalies in biological data."²⁷ Furthermore, EPA guidance states, "The allowable frequency for criteria excursions should refer to true excursions of the criteria, not to spurious excursions caused by analytical variability or error."²⁸

²⁶ *Edison Electric Institute, et al v. Environmental Protection Agency*, Case No. 96-1062; Dec. 10, 2004.

²⁷ EPA. Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Water to Freshwater Organisms, Fourth Ed., EPA-821-R-02-013. October 2002. Section 9.4.1.1, p. 39.

²⁸ Technical Support Document for Water Quality-Based Toxics Control, EPA Office of Water, March 1991, EPA/505/2-90-001. See Appendix entitled "Technical Support Document for Water Quality Based

Finally, as previously described, the State Water Board's own Toxicity Task Force that included State and Regional Board representation as well as representatives from environmental groups and EPA recommended that under no circumstances should a single test result be treated as a violation.

8. *The State Water Board Failed to Evaluate All Reasonable Alternatives For Selecting the Statistical Method Proposed*

Section IV, Issue 1b of the Staff Report (starting on page 39) evaluates only three statistical approaches State Water Board staff considered when developing the proposed Policy. Although the evaluated alternatives include the approaches in the promulgated methods (NOEC and EC/IC25) as well as the TST, the State Water Board failed to consider or evaluate combined endpoints (e.g. NOEC and EC/IC25) as well as multiple test results (e.g. monthly median). All statistical analyses have inherent weaknesses and strengths, including the TST. By combining statistical approaches or evaluating results from multiple tests, many of these weaknesses can be mitigated while preserving the positive attributes. Several states including North Carolina, Colorado, and South Carolina as well as SWAMP have incorporated combined statistical approaches. These have included requiring exceedances of both the NOEC and the EC/IC25 before identifying a sample as "toxic."

It appears that one of the primary drivers for the State Water Board in proposing use of the TST is to address the issue of "false negative" determinations of toxicity that are caused by high variability within a laboratory. The associations believe that the high rate of false determination of toxicity observed with the TST would preclude its use alone to determine toxicity. However, if the State Water Board believes that it is necessary to use the TST in order to address the issue of false negatives, the State Water Board could combine the TST with another statistical endpoint with an acceptable false determination rate for toxicity, such as the EC/IC25. In order for a single sample to be identified as toxic, it would have to fail the TST AND demonstrate a minimum observed effect of 25%. In instances that the TST indicates an exceedance and a minimum effect of 25% is not observed, the results would be considered inconclusive and the test would be repeated. Such a dual metric approach would ensure that all samples having an observed effect level over 25% would be identified as toxic. It would also ensure that laboratories conduct precise tests with good test control replication, because otherwise the TST would provide inconclusive results. Additionally, the use of multiple test results, such as a monthly median, is necessary to address the concerns of dischargers relating to excessive false positive results and the potential for results with very low effects being considered toxic. Ultimately, a dual metric would provide evidence that an episodic toxic event occurred while the multiple test approach would provide necessary evidence that a persistent toxic event occurred.

10. The Arc-sine Square Root Transformed Data Contains an Apparent Bias

Although an arc-sine square root transformation is commonly performed on binomial (e.g., survival) data, the binomial “b” or bioequivalency factor is not similarly transformed in the TST procedure. It appears that failure to account for this when transforming binomial data results in significant increases in transformed variance and effect when the observed, untransformed effect is between zero and 25%. The effect of the bias is presented in Figure 2. Unless corrected, this bias will ultimately result in an increased likelihood of misidentifying tests in this range as toxic using the TST.

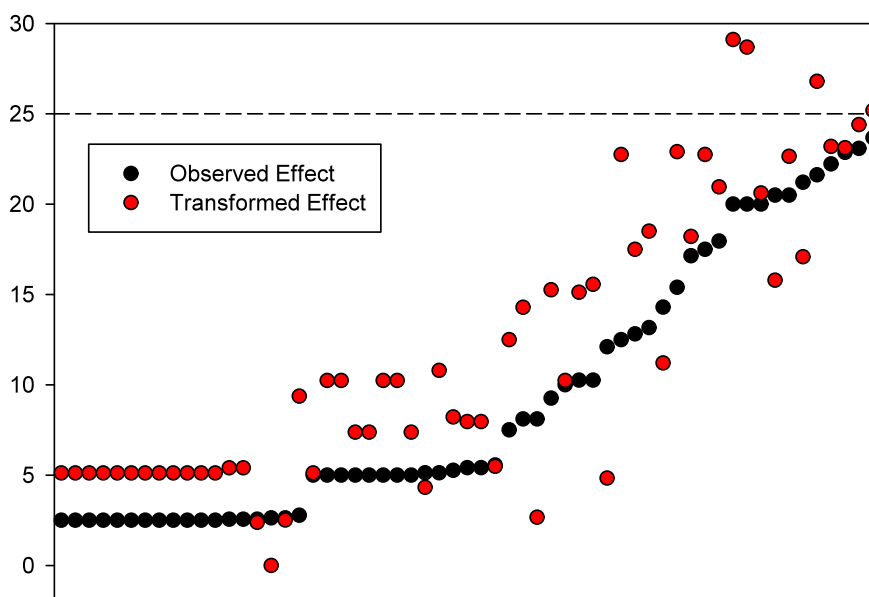


Figure 2. Fathead minnow survival effects between 0% and 25%. All tests conducted by the Districts San Jose Creek Water Quality Laboratory in 2009.

11. The TST Procedure Used In Conjunction With Single Test Triggers/Limits Should Be Formally Peer Reviewed Before Being Adopted as a Component of Board Policy

The Code of Federal Regulations approved chronic toxicity methods specify use of the NOEC and/or point estimates (i.e., EC/IC25) *exclusively*.²⁹ Furthermore, as previously discussed, these promulgated methods specifically recommend use of point estimates for NPDES compliance determination. Neither the TST method nor EPA’s TST guidance as referenced in the proposed Policy have been formally peer reviewed and the analytical procedures contained in the TST have not been promulgated under 40 CFR Part 136. Since WET is a method-dependent parameter, a change in data analysis changes the water quality criterion (particularly in this case

²⁹ 40 CFR Part 136.

where the State Water Board is proposing this method as part of the objective itself). This is most obviously demonstrated by the fact that the TST does not always produce the same toxicity determination as the promulgated NOEC or EC/IC25. State Water Board staff contend that since this proposed Policy is just a “new application of the earlier, adequately peer-reviewed work products, specifically, U.S. EPA’s TST,” no further peer review is necessary. However, it is important to note that although the basic “alternative null hypothesis” statistical procedures have been peer reviewed as part of their publication, specific details crucial to the proposed Policy, such as the 10% and 25% regulatory management decisions, have not been similarly reviewed. Also, the EPA TST guidance document was never formally peer reviewed by outside scientists and was not subject to public comment or other formal promulgation procedures.

12. The Economic Analysis in the Proposed Policy is Flawed and Under-Estimates Actual Compliance Costs

Appendix A of the Staff Report projects the incremental compliance costs for the proposed Policy using several example facilities. This analysis contains numerous and significant errors. First, the analysis incorrectly assumes that adoption of the proposed Policy will result in no acute toxicity monitoring requirements. In fact, the proposed Policy specifically provides Regional Boards with the discretion to include acute monitoring and limits in NPDES permits. Some Regional Boards currently require acute monitoring and limits even when a lack of reasonable potential would allow for removal of such limits and monitoring. Clearly, it is not reasonable to expect that Regional Boards will no longer exercise this option when the proposed Policy specifically allows for such discretion. Neither is it reasonable to take credit for the elimination of the acute toxicity testing in the economic analysis. Thus, either this discretion must be removed or these costs must be considered.

Additionally, State Board staff incorrectly assume that a responsible discharger would conduct single concentration tests during routine monitoring. The vast majority of the State Board staffs’ perceived cost savings are directly related to cost reductions associated with single concentration pass/fail testing in routine WET testing as opposed to the currently conducted multiple concentration testing. Although the proposed Policy may *allow* for testing to be conducted at a single concentration, the promulgated WET testing protocol specifically *requires* that all chronic effluent tests be conducted using a minimum of five concentrations and a control. It should be noted that both the NOEC and EC/IC25 analyses contained in the current protocol could also theoretically be conducted as a single concentration pass/fail test, but this practice was not allowed for when the WET testing protocols were adopted. The reason multiple concentration tests were required is that in the absence of an established dose response (increasing effect with increasing concentration), it is impossible to demonstrate that observed responses are indeed due to toxicity. This is a fundamental foundation of toxicology, and can only be evaluated with multiple concentration testing. Furthermore, in recognition of this fact, the proposed Policy retains the multiple concentration testing requirement during accelerated testing. Understanding that, as currently proposed in the Policy, a single test exceedance would be a numeric limit violation and that such an occurrence will result in triggering at least six additional accelerated

tests, responsible laboratories and dischargers would continue to conduct routine monitoring using multiple concentrations even though single concentration chronic WET testing may be allowed. Therefore, the savings attributed to the use of single concentration WET testing is a false presumption which leads to the cost of the proposed Policy being underestimated.

Finally, the economic analysis as conducted by State Board staff failed to include the costs associated with the impact of using single test accelerated testing triggers as required in the proposed Policy, as compared to the current multiple test compliance triggers used in some regions. For example, five single test exceedances were observed in the LACSD San Jose Creek WRP analysis. Under the Policy as proposed, these would have resulted in five numeric limit violations and at least 30 accelerated multiple concentration tests costing at least \$38,000. Under the existing monthly median accelerated testing trigger, these five exceedances resulted in no accelerated testing triggers and only ten additional multiple concentration tests being conducted to calculate a monthly median, at a cost of about \$13,000. The resulting difference of \$25,000, which reflects a direct impact of the proposed Policy for the specific case mentioned (and which can be extrapolated to all NPDES permittees affected by the proposed Policy) was not considered in the economic analysis.

Furthermore, the State's analysis failed to address the costs associated with triggering a TRE. For example, at a false positive determination rate of only 5%, it would be expected that at least one and possibly two TREs would have been triggered at the LACSD San Jose Creek WRP for the time period examined in the Staff Report, assuming a completely non-toxic effluent. The State estimated the cost associated with a TRE (excluding costs associated with treatment controls) at about \$25,000 (an estimate that is at the very low end of the TRE cost range). Therefore, adoption of this proposed Policy would have resulted, at a minimum, in an additional \$25,000 to \$50,000 in unnecessary TRE costs for each major discharger. With the documented false determination of toxicity associated with the TST in a non-toxic effluent quantified to be as high as 15%, associated unnecessary TRE costs per discharger excluding treatment controls would be well over \$100,000 for just one treatment plant. Similar costs would be expected around the state, and those costs must be considered.

A more thorough and accurate cost analysis is contained below in Table 2. This assessment uses the quantified false toxicity determination rate for *Ceriodaphnia dubia* obtained using non-toxic blank data from the EPA interlaboratory study and the single test triggers in the proposed Policy compared to the multiple test triggers contained in current NPDES permits. These costs represent the expected chronic WET monitoring, accelerated testing, and TRE costs associated with a single non-toxic POTW discharge conducting monthly testing over the course of a five-year permit.

Table 1. Valid *Ceriodaphnia dubia* reproduction “blank” data from the EPA Inter-laboratory Validation Study.

Sample Code	Mean Control Response	Mean Sample Response	% Effect	TST Results
9330	31.9	33.6	-5.5	Non-Toxic
9332	18.8	16.3	13.2	Toxic
9337	23.3	23.9	-2.6	Non-Toxic
9338	24.2	21.3	12.0	Non-Toxic
9340	16.0	19.8	-23.8	Non-Toxic
9341	30.0	27.3	9.0	Non-Toxic
9344	19.4	22.5	-16.0	Non-Toxic
9349	30.8	30.9	-0.3	Non-Toxic
9350	29.5	23.0	22.0	Toxic
9356	25.2	29.1	-15.5	Non-Toxic
9367	23.1	19.4	16.0	Toxic
9371	23.4	25.6	9.4	Non-Toxic
9376	20.4	17.8	12.7	Non-Toxic
9379	29.5	34.2	-15.9	Non-Toxic
9381	26.5	27.3	-3.0	Non-Toxic
9382	27.5	25.7	6.5	Non-Toxic
9384	17.3	18.7	-8.1	Non-Toxic
9402	16.0	16.2	-1.2	Non-Toxic
9409	32.0	34.2	-6.9	Non-Toxic
9410	33.2	32.2	3.0	Non-Toxic
9429	31.6	32.7	-3.5	Non-Toxic
9432	18.8	19.1	-1.6	Non-Toxic
9436	30.0	31.8	-6.0	Non-Toxic
9439	18.9	19.1	-1.1	Non-Toxic
9445	23.6	23.4	0.8	Non-Toxic
9446	28.0	28.3	-1.1	Non-Toxic
9450	19.4	4.1	78.9	Toxic

Table 2. Cost comparison of the proposed WET Policy and current WET approaches using monthly median triggers.

USING ACTUAL FALSE DETERMINATION OF TOXICITY ERROR RATES FOR THE NOEC AND TST¹				
	PROPOSED WET POLICY²		CURRENT NPDES PERMIT REQUIREMENTS³	
	Additional Testing	Cost Associated	Additional Testing	Cost Associated
Monthly Routine Monitoring During a Permit Cycle	60 tests	\$38,340 ⁴ to \$95,220 ⁵	60 tests	\$73,260 ⁶
Monthly Median Testing Trigger	NA	NA	6 tests	\$7326 ⁶
Accelerated Testing Triggers During a Permit Cycle	53.4 Tests (8.9 Trigger Exceedances)	\$65,201 ⁶ to \$84,746 ⁵	1.76 Tests (0.29 Trigger Exceedances)	\$2,149 ⁶
TRE Triggers During a Permit Cycle	5.5 TREs	\$55,000 ⁷	0.0095 TREs	\$95 ⁷
Total Costs Including Routine Monitoring		\$158,541 to \$234,966		\$82,830

¹ 14.8% for the TST and 3.7% for the NOEC with *Ceriodaphnia dubia* using EPA blank results from the Interlaboratory study.

² Accelerated testing trigger of any single test exhibiting a “fail” using the TST with a TRE trigger of a “fail” result in one of six accelerated tests using the TST.

³ Monthly median 1.0 TUc accelerated testing trigger with a TRE trigger of two of six accelerated tests exceeding 1.0 TUc – both calculated using the NOEC (Region 4).

⁴ Single concentration test with 20 replicates each (\$639.00 per test).

⁵ Multiple concentration *Ceriodaphnia* test, 20 replicates at the control and IWC concentrations (\$1,587.00 per test).

⁶ Multiple concentration *Ceriodaphnia* test, 10 replicates at each concentration (\$1,221.00 per test).

⁷ Assumed a \$10,000 per TRE unit cost. Actual TRE costs can be orders of magnitude higher.

ATTACHMENT B

CLEAN WATER ASSOCIATION LEGAL COMMENTS PROPOSED POLICY FOR TOXICITY ASSESSMENT AND CONTROL

1. The Proposed Policy and Associated Analytical Tools Were Not Promulgated or Established Through Formal Rulemaking

To assure compliance with permit limitations, each NPDES permit must include requirements to monitor “[a]ccording to test procedures approved under 40 CFR Part 136 for the analyses of pollutants or another method is required under 40 CFR subchapters N or O. In the case of pollutants for which there are no approved methods under 40 CFR Part 136 or otherwise required under 40 CFR subchapters N or O, monitoring must be conducted according to a test procedure specified in the permit for such pollutants.” (40 C.F.R. § 122.44(i)(1)(iv).)

The federal regulations specify approved methods for toxicity. (Table IA of 40 C.F.R. § 136.3.) “Parameters or pollutants, for which methods are approved, are listed together with test procedure descriptions and references in Tables IA, IB, IC, ID, IE, IF, IG, and IH. In the event of a conflict between the reporting requirements of 40 CFR Parts 122 and 125 and any reporting requirements associated with the methods listed in these tables, the provisions of 40 CFR Parts 122 and 125 are controlling and will determine a permittee’s reporting requirements.” Three method manuals (WET method manuals) were incorporated by reference into 40 CFR part 136 in the 1995 federal rule. These methods do not include the TST. “As regulations, use of these methods and adherence to the specific test procedures outlined in the WET method manuals is required when monitoring WET under the National Pollutant Discharge Elimination System (NPDES).” (*Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)*, EPA 821-B-00-004 at p. 1-1, emphasis added.)

Here, the Staff Report concedes that the numeric objectives and the test methods upon which they rely are “simply a concise statement of several elements in EPA’s test of significant toxicity (TST) document.” (See Staff Report at 65.) No EPA Region or other State requires the TST method for WET. The TST procedures are set forth in a recent EPA guidance document that was never released for public comment. EPA has not approved the TST as an Alternate Test Procedure (ATP) as required by 40 CFR 136.5. Thus, the proposed Policy should not require the use of the TST unless and until such method is approved and promulgated by EPA, or until California undertakes a rulemaking and peer review of this method.

2. The Need for the Proposed Policy Has Not Been Demonstrated

The Staff report fails to set forth an articulation of why the proposed Policy is necessary, or the alternative approaches cannot be considered. The existing policy of deferring to the regional water boards to implement the narrative objectives contained in the basin plans using the

approach contained in the SIP, is working to identify and address instances of suspected toxicity in POTWs throughout California. As detailed in Appendix 1, in 2009, the head of EPA's Water Permits Division confirmed that California is "fully implementing" the NPDES WET Program. (See slides 6 and 7 of Appendix 1.)³⁰

Nonetheless, the Staff report rejects use of narrative objectives because "[n]arrative objectives, however, do not provide a clear measurement of compliance and thus represent resources that would be required to ensure water quality objectives are met under such a policy would deplete the Regional Water Boards' resources, and the potential for ecological harm would likely increase as a result of these vague objectives." (Staff Report at p. 44.) This analysis ignores the fact that the State Water Board recently developed, through a scientifically valid process, and adopted narrative sediment quality objectives to address sediment toxicity. According to the SQO staff report, "narrative objective can be proposed that can be implemented with a high degree of confidence using a robust suite of tools." (SQO Staff Report at pp. 5-11.) There is no evidence or rationale for concluding that a similar approach would not work for controlling water column toxicity. Moreover, EPA has recently reaffirmed the use of narrative effluent limitations for toxicity in NPDES permits. (EPA, NPDES Permit Writer's Manual, EPA 833-K-10-001 (Sept. 2010) at pp. 6-40.)

In addition, the statements in the Staff Report regarding toxicity in waterbodies and effects of the same are qualified with phrases such as "may be," "might be," or "could be." No specific examples of water quality benefits are provided; the Staff Report includes only conclusory statements, that are not supported by references to any evidence in the record, that "the potential for ecological harm would likely increase" without the proposed Policy. (Staff Report at p. 45.) Our expert consultant, Dr. Peter Chapman, has reviewed the studies cited in the staff report, and concluded that there does not appear to be evidence of toxicity-related adverse environmental impacts due to POTW discharges in California. This conclusion is supported by studies referenced in Attachment A. We raise this point to emphasize that the conservative nature of WET tests assures that failure of a single WET test does not translate into immediate adverse environment effects. The toxicity tests provide an early warning system which allows for resolution through an iterative approach as recommended by the associations.

3. *The Proposed Policy Does Not Include a Schedule of Compliance for Dischargers to Identify and Address Toxicity.*

Federal and state law allow for the use of compliance schedules where immediate compliance with newly established water quality objectives is not feasible. The State Water Board recently enacted a Compliance Schedule Policy that allows up to 10 years to come into compliance with new more stringent effluent limitations where there is a showing that the discharger needs time to implement improvements. (Resolution WQ 2008-0025.) The proposed Policy:

³⁰ September 29, 2009 EPA Headquarters EPA NPDES WET Program presentation provided by Linda Boornazian, Director of Water Permits Division, Laura Phillips (EPA WPD/OWM), and Debra Denton (EPA Region 9).

- (1) Requires that every POTW with a permitted capacity over one million gallons per day (mgd) have a chronic toxicity effluent limitation;
- (2) Establishes a numeric effluent limitation by which a *single* toxicity test failure would constitute a violation;
- (3) Requires use of a toxicity test method with a false determination rate of between 5% and 15%.

Therefore, the chance of a single discharger with a monthly monitoring requirement being charged with three or more false violations over a permit cycle is at least 58% (5% false determination of toxicity rate) and as much as 99% (15% false determination of toxicity rate). Between 360 and 1070 false violations will be attributed each year to NPDES dischargers³¹.

Apart from the potential for false violations, if real toxicity violations occur, even the proposed Policy requires a process to determine if the toxicity is recurring through the accelerated monitoring program, and then to implement a Toxicity Reduction Evaluation, which may take many months. If an unknown toxicant is causing the toxicity test failures, then the permittee would be in ongoing violation throughout that investigatory period, even if it were fully complying with all of the required toxicity testing and investigation procedures specified in the proposed Policy (and the permit).

Yet the proposed Policy provides no possibility for a permittee to be granted a compliance schedule for exceedances of the proposed effluent limitations, placing all of these dischargers in immediate noncompliance once an exceedance occurs. The “compliance schedules” in the proposed Policy are limited to two years and apply only to allow time to establish the toxicity monitoring program, not to attain compliance with the objectives or limits. Dischargers that already monitor and/or have narrative effluent limitations will not be eligible for these “compliance schedules.”

This is unreasonably punitive for several reasons. First, and most obviously, dischargers will be tagged with multiple violations based on false determinations where no actual toxicity exists. Given the episodic nature of some false determinations, where accelerated testing shows no further test failures, the discharger may not be able to prove that no true “violation” occurred. While the State Water Board may choose not to enforce single violations, these instances will, over time, accumulate to multiple violations be posted on CIWQS for the public to see, recited in the compliance history set forth in permits, and subject to third party enforcement.

Secondly, toxicity is not a pollutant, but an effect. Toxicity tests are merely diagnostic tools designed to identify toxicity and allow a discharger to investigate and, in the best case, ultimately identify the toxicant. Under the proposed Policy, if a discharger conducts the TIE/TRE process and identifies the pollutant responsible for the toxicity, the discharger may be able to get a

³¹ 263 major dischargers with monthly testing, 350 minor dischargers with quarterly testing, and 1296 general NPDES dischargers assuming half with quarterly testing and half with no testing.

compliance schedule to address the specific pollutant under the 2008 Compliance Schedule Policy. However, as noted above, each single toxicity test failure that occurs during the period of time that the TIE/TRE process is going on and while improvements are being implemented would continue to constitute a violation. The discharger will continue to accrue a record of chronic noncompliance even though it is doing everything required to identify and eliminate the toxicity in the shortest possible period of time. For these reasons, the proposed Policy is unduly punitive, with no demonstrated corresponding water quality benefits.

Therefore, at a minimum, the proposed Policy should specify that the Policy for Compliance Schedules in NPDES Permits (Resolution WQ 2008-0025) applies to all instances where a toxicity testing violation occurs and the discharger may need time to come into compliance.

4. The Proposed Policy Conflicts With and Is More Stringent Than Federal Law

A. Reasonable Potential

Federal regulations specify that an effluent limit for toxicity is required where there is “the reasonable potential to cause, or contribute to an in-stream excursion above the numeric criterion for whole effluent toxicity.” (40 C.F.R. §122.44(d)(1)(iv).) As noted above, the record is devoid of any evidence demonstrating the linkage between a test failure and in-stream effects. Yet the proposed Policy automatically assumes reasonable potential for toxicity for major (greater than 1 mgd) POTWs and requires numeric effluent limitations for all major POTWs. The stated justification for this requirement is wholly inadequate: “Because POTWs accept a steady voluminous flow” containing “unknown constituents,” these facilities “harbor the potential to adversely affect aquatic biota.” (Staff Report at p. 53.) Such a sweeping generalization applies equally to pollutant specific parameters, as the very nature of public sewer systems is that it is not possible to control every input to the system, as well as to other categories of discharges, including stormwater. This simplistic statement fails to take into account the history of toxicity testing, differences in the types of users served by a POTW, whether the POTW has implemented a pretreatment program, and whether the POTW has a robust source control and pollution prevention program.

The proposed Policy would arbitrarily impose numeric effluent limitations on major POTWs without following the federal rules. The federal regulations do not use the nature of POTW influents as a basis to exclude POTWs from the reasonable potential regulations that apply to all other dischargers. The Staff Report does not adequately analyze application of reasonable potential methods for POTWs, acknowledging that the methods contained in the EPA’s Technical Support Document for Water Quality-Based Toxics Control (TSD) as “accurate and comprehensive” but dismissing them because they would require “a substantial amount of time and resources” for Water Board staff. (Staff Report at p. 53.) Similarly, the TST method for determining reasonable potential, which relies on initial toxicity testing to determine the need for limits is described as “highly accurate,” yet major POTWs are categorically excluded from this initial screening step.

B. Numeric Effluent Limitations

The proposed Policy is more stringent than required by federal law since it requires numeric effluent limits when not required by federal or state law. (See *Communities for a Better Environment (CBE) v. State Board/Tesoro*, 109 Cal.App.4th 1089, 1103–07 (2003); State Board Order No. WQ 91-03, 1991 WL 135460, at 12; 40 C.F.R. § 122.44(k).) As the State Water Board itself has acknowledged in the context of sediment toxicity, “[a] narrative objective coupled with indicators to interpret the narrative objectives represents a logical means to assess sediment quality.” *Staff Report and Draft Water Quality Control Plan for Enclosed Bays and Estuaries - Part 1 Sediment Quality (July 18, 2008), Appendix E*, at p. 68.) Thus, the narrative approach recommended by the associations is appropriate and legally sound.

C. Maximum Daily Effluent Limitations

Federal regulations specify that “all permit effluent limitations” for POTWs shall be stated as average monthly and average weekly limitations unless impracticable.” (40 C.F.R. § 122.45(d)(2).) Yet, the proposed Policy specifies that *all* effluent limitations, including those for POTWs, imposed pursuant to the Policy are to be expressed as maximum daily effluent limitations. The only justification for this departure from the federal rule is that longer-term limits would be “impractical” [sic], apparently because a single discharge of toxic effluent can exceed the water quality objective and impact aquatic life. (Proposed Policy at p. 5.) This mere conclusion is not supported with adequate findings and evidence, and is flawed for several reasons. First, as noted above, there is no evidence linking a failure of a toxicity test with in-stream effects. Second, this conclusion is contradicted by current practice among the regional water boards. Effluent limitations for toxicity based on the Basin Plan narrative toxicity objectives have routinely been implemented as monthly medians and there is no evidence of receiving water toxic effects as a result. Indeed, the Staff Report analyzes an alternative for longer term average limits. (See Attachment A, *supra*, at p. 20; Staff Report at p. 54 (showing monthly and weekly average limits for POTWs).)

As noted above, the federal courts and EPA have acknowledged that interpretation of single test WET results can be problematic due to the unavoidable anomalies and variability in biological data.³²

5. *The Proposed Policy Places Greater Importance on Ease of Enforcement Than Water Quality Protection*

A key difference between the proposed Policy and the current regulatory approach for toxicity in California is that now, once identified, instances of toxicity require the discharger to proceed to a TIE/TRE. Failure to conduct initial monitoring, the accelerated testing, and/or in-depth

³² Attachment A, *supra*, at p. 20.

investigation subjects the discharger to enforcement. Under the proposed Policy, isolated single sample instances of “toxicity,” including false determinations of toxicity, will constitute violations subject to administrative civil and even criminal enforcement.

The Staff Report contends that the proposed Policy’s approach is somehow better for the environment—or at least may be. However, we believe the current approach, where effluent limitations are prescribed for specific toxicants once they are identified as causing the test failures, will result in greater water quality improvement than will the proposed Policy. The proposed Policy merely transforms exceedances of highly unreliable tests into violations without changing anything in the effluent, or in the environment, and without providing any new or different course available to the discharger to reduce toxicity and avoid future test failures. This not only diverts resources from the identification and reduction of the toxicity, but also penalizes and creates disincentives for dischargers “genuinely attempting to reduce toxicity through an aggressive TRE process.” (See Staff Report at p. 44).

6. *The Proposed Policy Will Not Address Regional Inconsistencies*

The proposed Policy cannot possibly achieve consistency unless the proposed objectives and implementation **expressly supersede existing narrative objectives** in the individual basin plans, and preclude regional water boards from “translating” the narratives into additional or different testing procedures or limitations. In contrast to other major policies recently adopted by the State Water Board, the proposed Policy would allow regional water boards to depart from its provisions at their sole discretion. (As examples of policies expressly superseding Basin Plan provisions governing the same subject, see Policy for Compliance Schedules in NPDES Permits, Resolution 2008-0025 (2008) at p. 7; Water Quality Control Plan for Enclosed Bays and Estuaries—Sediment Quality Objectives, August 25, 2009 at p. 1; see also Water Code § 13170.) In addition, the policy should specify that Regional Water Boards are to apply appropriate dilution credits to the establishment of acute and chronic toxicity triggers.

7. *The CEQA Checklist Is Inaccurate*

The proposed Policy is founded on perceived water quality benefits from assessing and controlling toxicity, though there is no evidence in the record to substantiate these claimed benefits. It is likely that in some cases, the only available alternative for compliance will be construction of additional advanced treatment facilities such as reverse osmosis. This is acknowledged in the economic analysis, which states that reverse osmosis or other control technologies may be required for some pollutants causing toxicity (see SAIC Economic Analysis at 5-7.) Yet, the checklist concludes there is “no impact” from the construction of new wastewater or stormwater treatment facilities. See Staff Report at p. 78.) This must be revised to address the environmental impacts of construction as well as the significant adverse environmental impacts that arise from the operation of these treatment technologies, including higher energy consumption, greenhouse gas generation, and the potential need to dispose of highly concentrated residual brines.

8. *The Water Code Section 13241 and Economic Analyses Are Inadequate*

The proposed Policy includes new numeric water quality objectives for toxicity. The Water Boards are “under an affirmative duty to consider economic when adopting water quality objectives.” (Memorandum to Regional Water Board Executive Officers from William R. Attwater, Chief Counsel, Jan. 4, 1994 at p. 1.) The Water Code requires that objectives be reasonable; “economic considerations are a necessary part of the determination of reasonableness.” (*Id.* at p. 3.) The economic assessment requires a determination of the following factors:

- Whether the objective is currently being attained;
- What methods are available to achieve compliance with the objective, if it is not currently being attained;
- The costs of those methods. (*Id.* at p. 1.)

The analysis in support of the proposed Policy does not satisfy the Water Code section 13241 requirements. For one thing, the analysis lacks citations to facts or evidence to support the conclusions. (See Staff Report at pp. 63-64). The law requires adequate consideration of *all* factors; the decision must demonstrate a rational connection between those factors, the choice made, and the purposes of the Porter Cologne Water Quality Control Act. (*Id.* at p. 5; see also *California Hotel & Motel Assn v Industrial Welfare Commission*, 25 Cal 3rd 200, 212 (1979).

Further, the economic analysis that is relied upon in the Staff Report is obsolete, as the analysis was conducted on a *prior draft version* of the proposed Policy, which was quite different in terms of the role and compliance status of individual test exceedances. Further, the economic analysis significantly underestimates the cost impacts of the proposed Policy as described in Attachment A. The only costs considered are those for monitoring (which are incomplete); the economic analysis fails to consider costs of compliance, including treatment, or the costs associated with unnecessary enforcement, or citizen suit penalties. All of these costs need to be considered as they are all above the current baseline condition.

While it is true in the most general sense that “pretreatment modifications, source controls and process optimization are less costly to implement than end-of-pipe treatment,” there is no evidence that these types of improvements will be sufficient to comply with the proposed objectives given the inherent 5-15% false determination percentage. The Water Board must consider the costs of all compliance methods available.

An assessment of treatment technologies was not undertaken because the treatment needed is “highly site-specific.” (Economic Analysis at 7.) While it may be difficult to identify treatment needs and therefore the costs, there are methods for estimating and evaluating the potential costs that should at least be discussed and considered. It is not sufficient to summarily dismiss the possibility of additional treatment costs due to the site-specific nature of toxicity. For example, during the Water Board’s evidentiary hearing regarding the City of Vacaville’s permit, CASA

presented expert testimony regarding the unit cost and unit energy requirements for the use of advanced wastewater treatment facilities to address specific pollutants that might pose compliance issues for POTWs discharging to inland surface waters in California. At a minimum, the economic analysis should discuss the costs and energy demands of the most likely treatment technologies to be employed to address toxicity and estimate the percentage of facilities that will be required to implement these technologies statewide.

9. *The Proposed Policy May Adversely Affect Water Reuse*

Under the proposed Policy, all water will be found to exhibit chronic toxicity 5-15% of the time, without regard to any environmental impact. The markets for recycled or even raw water may be inhibited when water is labeled as “toxic.” The State Water Board should consider the adverse consequences that the TST method’s toxic until proven otherwise approach will have on water and recycled water resources.