THE CITY OF SAN DIEGO

January 21, 2011

VIA EMAIL TO: commentletters@waterboards.ca.gov

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

Dear Ms. Townsend:

Subject: Comment Letter – Draft Policy for Toxicity Assessment and Control

Thank you for the opportunity to comment on the State Water Resources Control Board's (State Board) Draft Policy for Toxicity Assessment and Control (Draft Policy). The City of San Diego, Transportation & Storm Water Department is committed to protecting and improving water quality in our region.

Our comments can be generally summarized as supporting improved toxicity requirements for receiving waters during storm water conditions, while cautioning the application of effluent limitations and chronic toxicity assessments for storm water conditions. While the Draft Policy states that the applicable Regional Board has the discretion to apply numeric effluent limitations, it would be advisable to set forth the criteria guiding individual Regional Boards in regarding the application of such effluent limitations. This would ensure consistent application of the Draft Policy across the state.

Key Comments

This Draft Policy is based on discharge conditions associated with publicly owned treatment works (POTWs) and does not distinguish discharges from municipal separate storm sewer system (MS4) as episodic events distinct from continuous POTW discharges. The Draft Policy should therefore be modified using best available science and understanding of storm water discharges.

Sampling, testing, data management and interpretation methodologies should be developed for storm water discharges independently of POTW national pollutant elimination discharge system (NPDES) dischargers. As currently proposed, the methods for sampling, testing, data management, and data interpretation are comparable for all discharge types. Though these methods were developed based on the knowledge gained from POTW discharges, the proposed Draft Policy applies these same methods to other discharges, including storm water and other non-point source dischargers. It is important to note that storm water discharges are different from POTW discharges in many respects, most significantly is the extreme hydrodynamic variability of storm water discharges. The use of chronic toxicity testing during episodic storm events, while protective of water quality, may not be the best use of available science. Such differences demand the need to develop monitoring and analysis methods specifically applicable to each discharge type. The Draft Policy should be updated to include methodology applicable to storm water discharges, and should be modified using best available science and understanding of storm water discharges.

As currently defined in the Draft Policy, chronic toxicity testing should not be applied to storm water discharges during wet weather events. The proposed Draft Policy requires that chronic toxicity testing for reasonable potential analysis shall be conducted for both wet and dry weather events. Because of the natural variability of storm water and the difficulty in the collection of a representative sample, the applicability of chronic testing of wet weather samples is not advisable. Chronic tests require an exposure of test organisms to water samples for a period of up to seven days, typically with three renewals. Conversely, storm events typically last only a few hours, and the exposure duration required for chronic testing is not representative of the actual duration of storm event discharges. This assumption results in a potential over-estimation of toxicity of storm water.

Also, the need for renewal of chronic toxicity tests over a seven-day exposure typically requires additional sample collections within 24-hours of the renewal. These subsequent samples will not be collected during the storm event; therefore, they will not be representative of the initial test conditions. The test also does not take into consideration the inherent variability of flows, first-flush hydrodynamics, and inherent variability during storm events. Therefore, chronic toxicity tests and objectives should not apply to wet weather. We recommend the use of acute toxicity tests and objectives should be used for wet weather storm water discharges.

The Draft Policy includes revised criteria that cause a discrepancy between statistical evaluation of toxicity sample results and the concept of reasonable potential. For reasonable potential evaluation, a 10-percent mean effect threshold is more conservative than what is presently used (20-percent). A NPDES discharge that has no history of acute and/or chronic toxicity, but measures an 11-percent mean effect at the instream waste concentration (IWC) for one of four single-concentration toxicity tests in one of three test species (i.e., one of twelve tests or 8-percent failure rate) is defined as a "fail". A "fail" results in the applicable Water Board including numeric effluent limitations for chronic toxicity in the dischargers' permit. In US Environmental Protection Agency's (EPA) 2010 *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document*, the Example B discharge (below)

passes its chronic toxicity test based on TST analysis, but fails for reasonable potential because the IWC organisms reproduce 0.3 neonates per test organism less than control organisms or three neonates less per 10 test organisms. In this example, the use of a 10-percent threshold facilitates a numeric toxicity objective, but contradicts the results of statistical evaluation of toxicity tests.

Table E-1. Examples illustrating the reasonable potential approach using TST and data from *Ceriodaphnia* chronic survival and reproduction WET tests

Example	Pass/Fail based on TST analysis	Mean control response	Mean response @ IWC	% effect at IWC	Reasonable potential?
A	Fail	26.3	17.0	35.4%	Yes
B	Pass	26.3	23.4	11.0%	Yes
C	Pass	28.6	22.0	23.1%	Yes
D	Pass	22.4	20.9	6.7%	No

Application of the reasonable potential evaluation to a single sample, without consideration of an entire dataset, may lead to development of numeric effluent limits as stated above. However, the development of numeric effluent limits without consideration of historical water quality may be over protective of water quality, and does not consider the cost-benefit of implementation of numeric effluent limits. It is recommended that the Draft Policy be revised to include a review and analysis of historical data as part of the reasonable potential decision criteria process and consideration for future compliance monitoring implementation by a permittee.

The Draft Policy should be revised to include defined procedures that would result in greater standardization of the toxicity testing and statistical methodology in accordance with the State Board's Strategic Plan. The Staff Report for Policy for Toxicity Assessment and Control Introduction Section states:

> "...*Policy for Toxicity Assessment and Control* (Policy) include a new method to determine the toxicity of discharges, statewide numeric objectives, and further standardization of toxicity provisions for National Pollutant Discharge Elimination System (NPDES) dischargers and facilities subject to Waste Discharge Requirements (WDR) and conditional waivers."

If the purpose of this new Draft Policy is to increase permit processing and implementation continuity across the Regional Boards, the State Board should standardize toxicity testing procedures and statistical analyses and provide consistent provisions to protect aquatic life beneficial uses throughout the State's surface waters. In order to accomplish these goals, the State Water Board should also provide statistical standard operating procedures (SOPs), recommendations, and guidance for conducting reasonable potential testing comparable to the USEPA's TST implementation document (2010) in order to facilitate continuity among Basin Plans across California.

In order to provide continuity between Basin Plans, the State Board should also operationally define "first storm event of the wet season" and define alternatives if a storm water sample is not collected during the first storm event of the season due to impractical and unpredictable circumstances (e.g., weather related risks). A definition should include references to flow, time of year, and/or relationship to the discharge hydrodynamics in order to increase reliable

representative storm water sample collection. The definition of a rain event of 0.25 inch in the Draft Policy is different than the definition in many MS4 Permits, and should be standardized across the state. All parties will benefit from reliable data, protection of aquatic life, decrease in health and safety concerns during sample collection, and overall risk reduction with this increase in sample collection quality.

Additionally, the Draft Policy contains statements that are not consistent with the State Board's Strategic Plan, and the Draft Policy goals to provide greater standardization of the toxicity testing protocols and criteria. For example,

> A2 (page 5): The applicable Water Board has the discretion to include a numeric effluent limitation for acute toxicity.
>
> A4 (page 6): Regardless of the outcome of a reasonable potential analysis, the applicable Water Board has the discretion to require NPDES wastewater and point source WDR dischargers to conduct periodic monitoring for chronic or acute toxicity.
>
> At the discretion of the applicable Water Board, the provisions established in Section B may also be applied to construction and industrial storm water dischargers regulated pursuant to general NPDES permits.
>
> B1. This policy is not intended to require the establishment of numeric effluent limitations for toxicity in permits for Phase I and Phase II MS4s and individual industrial storm water dischargers. However, the applicable Water Board has the discretion to apply numeric effluent limitations for toxicity in these permits.

The State Board and EPA have reversed the assumption that a discharge is "bioequivalent" (i.e., not toxic) to "not bioequivalent" (i.e., toxic) compared to the control prior to testing by inverting the null hypothesis and comparable α (Type I) and β (Type II) errors. By inverting the null hypothesis, a discharge is assumed to be toxic prior to testing and that the discharger has the burden of "proving" through toxicity testing that their discharge is not toxic. This new Draft Policy assumption was implemented to establish a fixed false positive (β) of 0.05, ensuring adequate statistical power and limiting the number of samples identified as toxic but that are not toxic. Although the new Draft Policy's intent is to provide a greater level of statistical power to the data, the result is actually a generation of greater false positives. Such false positives could lead to inappropriate impairment listings of waterbodies, which ultimately leads to unjustifiable TMDLs and/or violations.

+Thank you for the opportunity to comment on this Draft Policy. Please feel free to contact Ruth Kolb at (858) 541-4328 or at rkolb@sandiego.gov if you have any questions or would like to discuss this further.

Sincerely,

Kris McFadden
Deputy Director

KM:rk

cc: Chron File
Mario Sierra
Ruth Kolb