



San Diego Regional Water Quality Control Board

TO: David Gibson
Executive Officer

FROM: Melissa Valdovinos
Water Resource Control Engineer
Restoration and Protection Planning Unit

DATE: January 25, 2017

SUBJECT: Review of Issues Raised During the December 2016 Hearing for the Chollas Creek Water Effect Ratios Item

The purpose of this memo is to review and provide recommendations regarding issues raised during the December 2016 Board hearing for the Chollas Creek Water Effect Ratios (WERs) item. Following the Board meeting, staff looked into the following issues raised by Board members:

1. The relative importance of permittees of the Statewide Industrial General Storm Water Permit (IGP) with respect to concentrations of dissolved copper and lead in the Chollas Creek watershed.
2. Sampling methods for determining water quality criteria and for determining compliance with the Regional Municipal Storm Water Permit (MS4 Permit) and the IGP.
3. Application of the proposed site-specific water quality objectives (WQOs) to only municipalities, or excluding industrial storm water facilities from applying the WERs.

Conclusions and Recommendation

No revisions to the Tentative Resolution are proposed for consideration in February 2017 based on the following conclusions:

1. Although individual industrial facilities could potentially discharge high concentrations of copper or zinc during storm events, based on land use modelling, industrial facilities represent less than 10 percent of the total expected loading in the watershed.
2. Water quality sampling procedures vary based on the purpose of the sampling. Flow-weighted composite methods are well suited for establishing WQOs and for monitoring at mass-loading stations, while grab-samples are well suited for assessing performance of best management practices (BMPs) in storm water runoff from industrial sites.
3. Applying the proposed WER-based WQOs in the Basin Plan solely to municipalities and/or excluding other dischargers, specifically industrial sites, would be an inappropriate application of WQOs because a safe level of pollutants in a water body is not dependent on the discharge source.

4. Compliance at industrial facilities is best addressed through implementation of the BMP technology standards of the MS4 Permit and the IGP.

Project Background

The Chollas Creek WER project is a San Diego Water Board priority. It is a community-sponsored project to find regulatory relief by incorporating updated scientific findings into an existing Total Maximum Daily Load (TMDL) and relevant sections of the Basin Plan. The City of San Diego spent three years urging the San Diego Water Board to take up its findings and consider revising the Chollas Creek Metals TMDL, but the WER project did not become a San Diego Water Board priority until the Practical Vision was completed in November 2013. Because the WER project embodies multiple fundamental objectives of the Practical Vision, the Board approved staff's recommendation to prioritize it during the 2014 Triennial Basin Plan Review. The Executive Officer then included the WER project in his February 2015 report to the Board on Practical Vision priorities. In February 2016, the Board endorsed the Executive Officer's Practical Vision Operational Plan to allocate the staff hours needed to finish the project by the end of calendar year 2016.

The Board valued the project because site-specific metals toxicity criteria would incorporate scientific findings into the Basin Plan and because the community partnership with the City of San Diego would leverage the resources necessary to complete the project in a timely manner. In this case, the collaboration with the City of San Diego enabled staff to use its limited resources to carry the project to the Board for consideration. Furthermore, Chollas Creek drains into San Diego Bay, which is recognized in the Practical Vision as a priority water body. And, finally, Chollas Creek itself lies within neighborhoods often considered priorities for the environmental justice outreach to which the Board is committed. For these reasons, staff took up the City's project in 2014.

The City of San Diego sponsored a site-specific water quality investigation in 2010 using a USEPA-approved methodology because the Chollas Creek Metals TMDL adopted in 2007 was based on federally-imposed toxicity criteria incorporated into our Basin Plan without the site-specific adjustments. The TMDL and the criteria both acknowledge that such site-specific adjustments would produce more accurate results. Upon taking up the project in 2014, staff questioned several of the City's initial findings, to which the City responded with clarification, additional field work, and a revised technical report.

Once satisfied that the technical study and report's findings were scientifically sound, conformed to USEPA methodology, and were consistent with the Basin Plan, staff began a two-year process to update the TMDL and Basin Plan. That process is rulemaking, which requires substantial public participation and communication. Indeed, throughout the project, staff implemented the Practical Vision values of transparency and communication, through actions such as disseminating information via a Lyris list; providing quarterly updates in the Executive Officer Reports; and identifying the project as a priority in USEPA TMDL work plans, State Water Board reports, and Practical Vision Operational Plan public reports.

Public Participation and Comments

The public participation process revealed a concern early on regarding stewardship of San Diego Bay; specifically, a question about whether the mouth of the Bay would suffer at the levels of copper proposed to be allowed in Chollas Creek during wet weather. Stewardship is another core value of the Practical Vision, and as such, staff had already begun assessing the issue prior to receiving the comment. Staff determined downstream waters would still be protective of all beneficial uses. For further confirmation, staff explicitly sought external peer review comments on the soundness of that conclusion. The peer reviewers agreed that there was no evidence that downstream waters would be adversely affected, thus confirming staff's conclusion that the WERs achieve the Basin Plan goal to be reasonable and protective.

San Diego Coastkeeper (Coastkeeper) and Coastal Environmental Rights Foundation (CERF) submitted joint comments on October 31, 2016. On behalf of the San Diego Water Board, I reached out to Matt O'Malley (Coastkeeper), Marco Gonzalez (CERF), and Livia Borak Beaudin (CERF) to discuss the comments by phone prior to finalizing responses. Mr. O'Malley and Ms. Borak Beaudin participated in the conference call with staff (Cynthia Gorham, Adriana Nuñez, and me). During the conversation, Mr. O'Malley expressed frustration that at a training seminar, consultants that collect storm water samples for industrial sites were given instruction to collect samples that do not accurately represent the water chemistry of runoff from the site. This comment was not included in the written comments, and staff determined the concern would be best addressed through compliance activities by storm water staff.

Ms. Gorham and I explained to Mr. O'Malley and Ms. Borak Beaudin that although the claim that some industrial site compliance monitoring samples may not be representative is concerning, it has no bearing on the calculation of the WQOs. The WQOs are simply the maximum amount of copper and zinc that can be present in Chollas Creek itself without creating acute or chronic toxic effects. We also assured them that we would share the concern with San Diego Water Board staff responsible for storm water permit implementation.

Sampling Methods – Establishing Criteria vs. Compliance Assurance

At the December 14, 2016 Board meeting, Mr. Gonzalez expressed the same concern about storm water sample collection at industrial sites and suggested that allowing industrial sites to perform grab sampling would facilitate intentional collection of non-representative samples. The Board shared his concern that samples should be representative and wondered if requiring flow-weighted composite sampling like that used to both calculate the WER, and which is used by municipalities to estimate mass loading from the watershed, would be a good solution.

The Board could seek to use its authority under Water Code sections 13267¹ and 13383 to require all enrollees of the IGP in the Chollas Creek watershed to conduct flow-weighted composite sampling. However, the general industrial storm water permit already requires facility operators to collect and report on samples "*[r]epresentative of storm water associated with industrial activities*" from defined qualified storm events.² And, grab samples are better suited to the hydrology of urban industrial sites given the generally short-term pulse of a facility's storm water discharges.

¹ Section 13267 requires the burden, including costs, monitoring reports to bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports.

² See section XI.B of Order 2014-0057-DWQ, the Industrial General Storm Water Permit

USEPA developed a National Pollutant Discharge Elimination System (NPDES) Storm Water Sampling Guidance Document³ that discusses types of sampling based on 40 Code of Federal Regulations (CFR) 122.21(g)(7). As described in the guidance, a grab sample characterizes the quality of a storm water discharge at a given time of the discharge, whereas composite samples characterize water quality over a longer period of time, such as the duration of a storm event. Composite sampling makes the most sense for a study assessing various constituents in the receiving waters. Although metal concentrations may be higher during the first flush, it is more critical during peak flow to analyze concentrations of constituents influencing bioavailability of metals. Plus, it provides a more accurate understanding of what organisms are exposed to over the course of the storm. On the other hand, the nature and intent of compliance samples from industrial sites are quite different. Representative grab samples at industrial sites indicate the metal concentrations coming off the site. Unlike the composite samples used for the study, the compliance grab samples from industrial site runoff have little relevance in determining the physiochemical factors that buffer toxicity in receiving waters or in indicating what the organisms are exposed to over the course of a storm. These compliance grab samples simply indicate the amount of metals coming off the site that end up in the receiving waters.

In terms of the San Diego Water Board's Monitoring Framework (Resolution No. R9-2012-0069), sampling performed for the WER study and at in-stream mass loading stations is considered "Conditions Monitoring and Assessment" (M1) to determine site-specific conditions. Flow-weighted composite sampling is well suited to mass-loading stations because of the characteristic variability of flows over the course of a storm; a hydrograph with a first-flush pulse, peak, and a lagging tail. On the other hand, compliance sampling required at industrial sites is considered "Stressor Identification Monitoring" (M2) and "Performance Monitoring" (M4), which can be done effectively with grab samples.

To establish more accurate water quality criteria, flow-weighted composite sampling was performed for the WER study. The data was used to incorporate site-specific values into WQOs, which is an improvement over the existing WER default value of 1.0 that is used in the absence of site-specific information. Using flow-weighted composite samples for this made the most sense for two principal reasons. First, it was the type of water quality sampling required by the MS4 Permit at the time, which allowed data collected for the study to be compared to historical mass-loading station data. Second, flow-weighted composite samples were the appropriate type of sample to use because they best represent the in-stream concentrations of metals and other relevant constituents to which aquatic life are exposed throughout the storm event. Flow-weighted composite samples are weighted towards the water quality that occurred when flow was highest (at or near its peak). Metal concentrations may be highest (most concentrated) during the first flush, depending on their sources in the watershed; however, it is during peak flow that constituents such as suspended solids and organic carbon are diluted, which increases the potential bioavailability of metals. Wet weather events are short-lived in the Chollas Creek watershed, often lasting on the order of four to eight hours. Therefore, when setting the appropriate WQO to a specific water body, it is more appropriate to collect and analyze flow-weighted composite samples rather than test particular subsamples (grab samples) that only represent instantaneous exposure.

³ U.S. EPA. 1992. NPDES stormwater sampling guidance document. Office of Water, Washington, DC. EPA# 833B92001

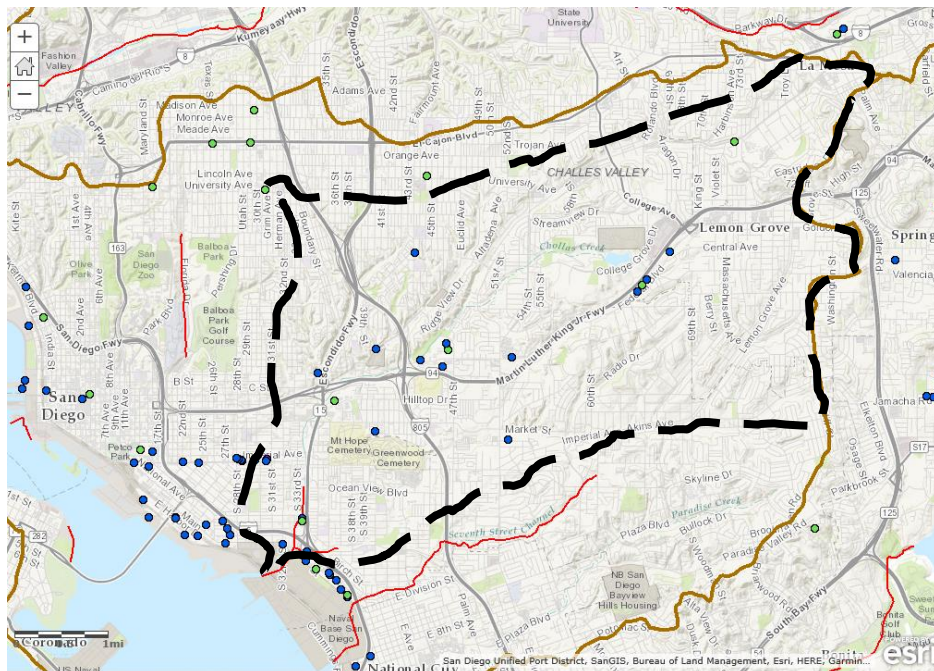
Permits require sampling to ensure compliance with water quality criteria or permit-specific effluent limitations. Generally, sampling can be done in the receiving water or in the effluent stream depending on the objective of the monitoring. In the case of the current MS4 Permit, grab or composite samples may be collected to identify conditions within Chollas Creek.

The IGP, on the other hand, requires facility effluent monitoring to verify the success of facility-specific BMPs. Because the State Water Board deemed numeric effluent limitations infeasible, IGP compliance relies primarily on implementation of BMPs, which is determined by reporting and site inspections. For performance monitoring of BMP implementation, grab samples are generally more appropriate since the intent is for industrial dischargers to collect representative runoff samples from their industrial facilities to evaluate the efficacy of a facility's pollution control measures.

Based on the 2007 Technical Report for the Chollas Creek Metals TMDL, industrial use is about 7 percent of the Chollas Creek watershed land use. The mass loading from industrial sites is estimated to be less than 4 percent for copper and less than 7 percent for zinc. Figure 1 shows locations of facilities in the watershed enrolled in the IGP. Industrial dischargers who are suspected of collecting samples that are not representative, as required by their storm water permit, (e.g., targeting times of lowest pollutant concentrations) would be in violation of the IGP and could be required (per Water Code section 13267 and 13383) to conduct additional sampling.

For the reasons described above, changes to water quality sampling design are not recommended.

Figure 1. Facilities enrolled in the Statewide General Industrial Storm Water Permit in the Chollas Creek watershed. Dots indicate enrolled facilities as of December 2016. The dashed black line is a rough approximation of the watershed.



Note that the State Water Board has not yet incorporated the requirements from the existing San Diego Water Board TMDLs into the IGP. In 2016, the San Diego Water Board staff submitted proposed TMDL implementation language for the IGP. The State Water Board intends to incorporate the TMDL language sometime in 2017. For Chollas Creek metals, the implementation language would be based on the default WERs of 1.0 for copper, lead, and zinc since the San Diego Water Board has not yet adopted site-specific WERs. The site-specific WERs could be incorporated into the IGP once the Basin Plan amendment receives final approval from the Office of Administrative Law.

Applying Site-Specific WQOs Based on Discharge Type

At the December 14, 2016 Board meeting, the Board discussed the option of excluding IGP enrollees from using the proposed WER adjustment, and revising the tentative Resolution and Basin Plan amendment to state that site-specific WQOs apply only to non-industrial discharges. As previously discussed, the site-specific WQOs are determined based on conditions of the waters, essentially independent of the discharges themselves. Thus, excluding industrial facilities from the WER-adjusted WQO is incongruous. Despite discharge type or sample type, WQOs in the Basin Plan, like the beneficial uses they protect, apply to the receiving waters themselves. In this case, they are the maximum amounts of dissolved copper and zinc that can be present in Chollas Creek without creating acute or chronic toxic effects. This establishes criteria for protecting aquatic life in Chollas Creek and downstream in San Diego Bay. How the WQOs are met is a completely different issue. Waste discharge permits are crafted for specific discharge(r) types with targeted provisions for BMPs and sampling requirements to ensure that WQOs will be met in the receiving waters. Therefore, waste discharge permits are the appropriate regulatory tool for addressing discharge-type conditions. In the case of industrial storm water, this is through the IGP, which went into effect in July 2015.

The current TMDL and the proposed amendment rely on the IGP to regulate discharges from industrial sites in the watershed. The IGP relies primarily on facility-specific BMPs for reducing pollutants in storm water runoff, requires monitoring and reporting to assess and confirm the performance of the measures, and subjects permittees to inspections by San Diego Water Board staff. The Board could amend the TMDL implementation plan to specify certain management actions, monitoring, or reporting requirements different from the IGP. However, changes to the TMDL implementation plan are beyond the scope the proposed Basin Plan amendment to adopt site-specific WERs for Chollas Creek. Any changes to the TMDL implementation plan would require additional public notice, potentially external peer review, and economic analyses. Furthermore, it is staff's position that any changes to the TMDL implementation plan that would seek to impose heightened monitoring requirements on industrial discharges because of compliance concerns would do little to advance water quality improvements.

For those reasons, excluding industrial sites from the WER-adjusted WQOs is not recommended.

Recommendation

Staff recommends adoption of the proposed Basin Plan amendment, which establishes site-specific WQOs for Chollas Creek. The WQOs are simply the maximum amount of copper and zinc that can be present in Chollas Creek without creating acute or chronic toxic effects. They were developed in accordance with USEPA-promulgated standards, and their scientific rationale has been verified by staff and external scientific peer review. This proposed amendment implements our Practical Vision and is one of our top three Triennial Basin Plan Review priorities. Concerns about industrial site compliance with the IGP is a separate issue. That is an implementation issue – not a water quality standards issue to be addressed by an update to WQOs for one watershed. We will continue to review water quality data and can revisit the TMDL and/or WQOs as science and implementation progress.