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13.0 CONCLUSIONS AND RECOMMENDATIONS

13.1 Conclusions

This report provides a summary of the 2008–2009 Receiving Waters Monitoring Program for the Copermittees identified as dischargers of urban runoff in the San Diego Regional Water Quality Control Board (RWQCB) Order No. 2007-0001 (Permit). This report marks the second year of monitoring and reporting under the Permit. The following monitoring activities were conducted by the Copermittees during the 2008–2009 Monitoring Season and were described in detail in each watershed section of the report:

- Mass loading station (MLS) monitoring.
- Toxicity identification evaluations (TIEs) (Southern California Bight 2008 Regional Monitoring (Bight '08) only).
- Rapid stream bioassessment monitoring and Stormwater Monitoring Coalition (SMC) regional monitoring.
- Bight '08 coastal ecology monitoring.
- Coastal storm drain monitoring (CSDM).
- Jurisdictional dry weather monitoring (DWM).
- Synthetic pyrethroid monitoring.
- Municipal separate storm sewer system (MS4) outfall monitoring.
- Source identification monitoring.

Receiving water monitoring at MLS was conducted during ambient weather monitoring (may include more than one site in some WMAs) as part of the SMC Program, and one wet weather event at the MLS. Each element of monitoring is designed to answer the five core management questions. The core management questions, as listed in the Permit, are presented as follows:

1. **Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?**
2. **What is the extent and magnitude of the current or potential receiving water problems?**
3. **What is the relative urban runoff contribution to the receiving water problem(s)?**
4. **What are the sources of urban runoff that contribute to receiving water problem(s)?**
5. **Are conditions in receiving waters getting better or worse?**

The current monitoring program has allowed the San Diego County Copermittees to gain an understanding of ambient weather and wet weather conditions in the region's watersheds. Watershed water quality monitoring is performed by the Copermittees during wet weather events, ambient weather monitoring events, dry weather field screening. Additionally, illegal connection and illicit discharge (ICID) investigations are performed, CSDM is performed, and limited third-party data are included. These water quality data results are incorporated with

annual stream bioassessment data to provide a holistic approach to assessing each watershed and the San Diego County region. Watershed assessments were performed following the Watershed Data Assessment Framework (WESTON, 2004) modified to assess both ambient weather conditions and wet weather conditions separately. Watershed area assessments are prepared on an annual basis and are compared to the baseline water quality priority ratings that assist in guiding watershed management activities. The monitoring program has provided assessments of long-term trends at historic stations and continues to build the foundation for long-term trends. Additionally, programmatic changes with the implementation of the new Permit cycle provides additional spatial data, assessment of emerging compounds (e.g., synthetic pyrethroids), assessment of trash, and focused programs to address pollutant sources and MS4 outfalls. The Copermittees participation in the Southern California Bight Monitoring Program during the 2008–2009 Monitoring Season provides valuable insight into the conditions of San Diego estuaries and the regional marine environment. These data were paired with the Regional Harbor Monitoring Program (RHMP)'s monitoring data collected in Oceanside Harbor, Mission Bay, and San Diego Bay. The results were compared to the recently adopted Sediment Quality Guidelines (SQOs) for Enclosed Bays and Estuaries.

13.2 Watershed Water Quality Monitoring Conclusions

Watershed water quality monitoring conclusions are presented in the individual WMA Sections. The reader is referred to the individual WMA sections. A summary of the triad results and recommended actions is presented in Section 13.3.

13.3 Recommendations

13.3.1 2008–2009 Recommendations

The recommended actions from the triad assessments are summarized in Table 13-1 and include continuing water quality monitoring in all watersheds to gather long-term trend information and investigating upstream sources of contaminants. While several recommended actions are to conduct TIEs for persistent toxicity to *H. azteca* during wet weather conditions, the Copermittees have demonstrated that toxicity to this organism is most likely associated with the presence of the synthetic pyrethroid Bifenthrin in storm water runoff. Pyrethroids were detected in many of the sediments collected in urban areas during the post-storm sediment sampling. However, the following sites did have detections above the sediment benchmark:

- Rose Creek TWAS-1.
- Chollas Creek MLS.
- Tijuana River MLS.

Further studies using sediment exposures with *H. azteca* are recommended to deteremine if sediment samples are impacting test organisms. As previosly mentioned, toxicity to *H. azteca* as a result of synthetic pyrethroids is a region-wide and state-wide problem, and is currently being addressed by the DPR. The CASQA Pesticide Subcommittee is actively working with DPR

during the re-registration period for these compounds. The CASQA Pesticide Subcommittee is also a valuable resource for information sharing on synthetic pyrethroids and other pesticides, and these studies will further the information needed to influence DPRs decision-making process during the re-registration period.

Based on the results of ambient weather monitoring during the 2007–2008 Monitoring Season, a TIE was recommended for ambient weather toxicity to *C. dubia* reproduction in the Los Peñasquitos WMA at Site LPC-TWAS-1 (Carroll Canyon). However, toxicity results were below the threshold recommended for a TIE during the two events monitored in 2007–2008. In the event that persistent low level toxicity is observed during the next ambient weather monitoring cycle in north San Diego County, additional dilution series to refine *C. dubia* toxic endpoints and/or implementation of additional highly sensitive tests are recommended.

Since the USEPA has banned the retail sale of Diazinon and Chlorpyrifos and with the increased public outreach and education regarding the handling of pesticides in general, a decreasing trend for the organophosphate pesticide compounds is evident and should continue. Continued monitoring of the organophosphate compounds in receiving water samples should show an overall decrease in the number of benchmark exceedances and concentrations over time with the expectation that residual public supply and use will eventually be exhausted. However, based on the DWM data collected for these compounds and the less than 1% exceedance rate over the past four years of monitoring, this analysis could be justifiably removed from the monitoring program requirements during the scheduled report of waste discharge. This would result in potential cost savings to the Copermittees on a region-wide basis and is consistent with the intentions of the SMC concept of adaptive management.

Table 13-1. Recommended Actions From the Triad Assessment

Watershed	Condition	Chemistry	Toxicity	Bioassessment	Action
Santa Margarita River[1]	Wet Weather	No persistent exceedances of water quality objectives.	No evidence of persistent toxicity.	Indications of alteration.	No action necessary to address toxic chemicals. Address potential role of urban runoff in causing physical habitat disturbance.
San Luis Rey River	Wet Weather	No persistent exceedances of water quality objectives.	No evidence of persistent toxicity.	Indications of alteration.	No action necessary to address toxic chemicals. Address potential role of urban runoff in causing physical habitat disturbance.
Loma Alta	Wet Weather	Persistent exceedance of Water quality objectives (high frequency constituent of concern identified). **TSS, Turbidity**	Evidence of persistent toxicity. ***Hyalella***	Indications of alteration.	Conduct TIE to identify contaminant of concern once chemistry results show a change in conditions in terms of Pyrethroids.* Address upstream sources as a high priority.
Buena Vista	Wet Weather	Persistent exceedance of Water quality objectives (high frequency constituent of concern identified). **TSS, Turbidity**	Evidence of persistent toxicity. ***Hyalella***	Indications of alteration.	Conduct TIE to identify contaminant of concern once chemistry results show a change in conditions in terms of Pyrethroids.* Address upstream sources as a high priority.

Table 13-1. Recommended Actions From the Triad Assessment

Watershed	Condition	Chemistry	Toxicity	Bioassessment	Action
Agua Hedionda	Wet Weather	Persistent exceedance of Water quality objectives (high frequency constituent of concern identified). **TSS, Turbidity**	Evidence of persistent toxicity. ***Hyalella***	Indications of alteration.	Conduct TIE to identify contaminant of concern once chemistry results show a change in conditions in terms of Pyrethroids.* Address upstream sources as a high priority.
Escondido Creek	Wet Weather	Persistent exceedance of Water quality objectives (high frequency constituent of concern identified). **Turbidity**	No evidence of persistent toxicity.	Indications of alteration.	Address upstream sources as a high priority.
San Dieguito River	Wet Weather	No persistent exceedances of water quality objectives.	No evidence of persistent toxicity	Indications of alteration.	No action necessary to address toxic chemicals. Address potential role of urban runoff in causing physical habitat disturbance.
Los Peñasquitos Creek	Wet Weather	No persistent exceedances of water quality objectives.	No evidence of persistent toxicity.	Indications of alteration.	No action necessary to address toxic chemicals. Address potential role of urban runoff in causing physical habitat disturbance
Tecolote Creek	Wet Weather	Persistent exceedance of Water quality objectives (high frequency constituent of concern identified). **Turbidity**	No evidence of persistent toxicity.	Indications of alteration.	Address upstream source as a high priority.
San Diego River	Wet Weather	Persistent exceedance of Water quality objectives (high frequency constituent of concern identified). **Turbidity**	No evidence of persistent toxicity.	Indications of alteration.	Address upstream source as a high priority.
Chollas Creek	Wet Weather	Persistent exceedance of Water quality objectives (high frequency constituent o concern identified). **TSS, Turbidity**	Evidence of persistent toxicity. ***Hyalella***	Indications of alteration.	Conduct TIE to identify contaminant of concern once chemistry results show a change in conditions in terms of Pyrethroids.* Address upstream sources as a high priority.
Sweetwater River	Wet Weather	No persistent exceedances of water quality objectives.	No evidence of persistent toxicity.	Indications of alteration.	No action necessary to address toxic chemicals. Address potential role of urban runoff in causing physical habitat disturbance.
Tijuana River	Wet Weather	Persistent exceedance of Water quality objectives (high frequency constituent of concern identified). **TSS, Turbidity, Diazinon**	Evidence of persistent toxicity. ***(C. dubia acute, chronic, and reproductive endpoints)***	Indications of alteration.	Conduct TIE to identify contaminant of concern once chemistry results show a change in conditions in terms of Diazinon and Pyrethroids.* Address upstream sources as a high priority.

Note: Insufficient data to assess ambient results due to Bight '08 monitoring year.

[1] The Santa Margarita MLS was relocated to the County of San Diego's Jurisdiction during 2008–2009. Changes in assessment findings may be reflective of the change in MLS location.

* Toxicity to *H. azteca* has been linked to detections of synthetic pyrethroids (primarily Bifenthrin) in storm water runoff at these sites.