

Conclusions

12.0 CONCLUSIONS

This subsection provides a summary of what has been learned from the past five years regarding the following elements of the Permit: the eight applicable objectives listed in Section 1.3.a(6), Regional Monitoring Program goals, and the five core management questions that relate to receiving water and urban runoff.

In terms of addressing the assessment objectives, the current five-year Regional Monitoring Program has been successful in accomplishing two of the assessment objectives, and has been supportive of the remaining six objectives. These objectives are summarized in Table 1-2 of Section 1, Effectiveness Assessment Objectives. Objective (a), which requires assessment of watershed health and identification of water quality issues and concerns, has been successfully addressed. The water quality issues identified on a watershed basis in the previous permit cycle have been confirmed in the last five years of receiving water monitoring. The results of the current Regional Monitoring Program have also confirmed a few common water quality issues throughout the region. The general overall findings for regional receiving water quality priorities include:

- Wet Weather – In general, wet weather receiving water quality priorities are associated with the following issues: mobilization and migration of sediment during storm events as measured by total suspended solids (TSS) and turbidity; bacterial indicators as reflected by fecal coliform; and a growing prevalence of synthetic pyrethroid pesticides. There are also some differences in the priority of these constituents among watersheds as reflected in different land use distributions, physical conditions, and flow characteristics.
- Dry Weather – The receiving water quality priorities under ambient or dry weather conditions, based on two years of data, indicate a regional issue with bacteria indicators (largely enterococci but also fecal coliforms), nutrients, and total dissolved solids (TDS). The level of priority and the specific nutrients vary among watersheds, which is reflective of varying source contributions and the presence of flows.

Additional receiving water quality issues were noted for the Chollas Creek Watershed (Pueblo Hydrologic Unit) and the Tijuana River Watershed, which have distinct source types. Chollas Creek Watershed is a smaller watershed with a high density of industries and transportation corridors that result in specific metals issues. Tijuana Watershed has a contributing source from across the international border.

The second assessment objective that the Regional Monitoring Program has successfully addressed is the assessment of changes in discharge and receiving water quality, particularly regarding long-term wet weather trends in receiving water on a watershed scale. Changes in municipal separate storm sewer system (MS4) discharge quality will be reported as the five-year random and targeted MS4 program is completed. In the current Watershed Assessment presented in Sections 2 to 10, discharge loading characteristics are defined by comparing the percent wet weather loading estimated from the MS4 outfalls monitored to the calculated receiving water pollutant load for that drainage area. These results can be compared to information generated in the coming years to assess changes in the loads. The current assessment also presents the

Conclusions

observed dry weather discharge quality at the MS4 outfalls. These data can be used in the coming years to assess changes in flow conditions and the associated potential dry weather load reductions.

The other LTEA objectives (Permit Section 1.3.a(6)) for which the Regional Monitoring Program has been supportive are those objectives related to assessment of specific pollutant sources and management activities. In general, these assessments are conducted at a more focused scale than the current Regional Monitoring Program. The Regional Monitoring Program has been very successful in characterizing and prioritizing water quality issues in receiving waters at the watershed and in some cases down to the hydrologic area scale, which has resulted in greater focus on these issues in regional, watershed, and jurisdictional management programs. The prioritization of water quality issues facilitates the directing of resources for more effective outcomes by targeting the priority constituents. Greater focus on the MS4 and specific sources may further refine priorities and more clearly respond to the remaining objectives regarding source identification, and control and management action assessments.

One particular insight from the analysis of the receiving water data collected to date is that it will likely be difficult to assess the effectiveness of individual or combined activities using wet weather trend data at the watershed scale due to the variability of the data and the differences in scale of the potential land use and source contributions for most constituents. One exception to this is the observed continuing downward trend of Diazinon concentrations at the MLS in watersheds where this constituent had previously exceeded the benchmark. This situation is due to the ban of this pesticide in the State, which has resulted in the gradual elimination of its use and detection in storm flows. This “true source control” or essential elimination of this pesticide and ongoing public education has, therefore, been demonstrated to be highly effective. For management actions that address water quality issues through operational source controls, runoff reductions, and other non-structural and structural BMPs, additional data are used to assess effectiveness that considers the target audience, the modified behavior, and the most cost-effective method to collect and assess the data.

The Regional Monitoring Program goals (Permit Section 1A) and the five core management questions that were used by the Copermittees to design the Regional Monitoring Program for the 2005-2010 permit cycle are defined in Table 1-3, Section 1. As presented in Table 1-4 of Section 1, the Regional Monitoring Program has been successful in meeting six of the eight Regional Monitoring Program goals that primarily deal with characterization of water quality and the identification of water quality priorities. The remaining two objectives (goals 5 and 2) that the Regional Monitoring Program has been partially successful in addressing are focused on source identification and measurement and the improvement of the effectiveness of the Copermittees’ urban runoff management programs, respectively. The reason for this partial success is as previously indicated in this Conclusions section. The Regional Monitoring Program has been successful in characterizing and prioritizing receiving water issues, and while the Regional Monitoring Program has begun to address source identification and effectiveness assessment, emphasis can now be shifted from receiving water issues to improvement of urban runoff programs and to source identification and measurement to better address these objectives. In addition to water quality, program management assessment involves other methods and data sets, including observational data gathering, surveys, modeling, and tracking and reporting of

specific management action implementation, which can also be utilized moving forward with the existing receiving water knowledge base.

What has also been learned from the last five-year Regional Monitoring Program is that the TWAS monitoring has been successful in confirming and identifying water quality issues and priorities on a hydrologic area scale. The TWAS water quality issues are often similar to the MLS within the watershed and therefore have served the purpose of meeting those Permit LTEA objectives and Program Goals regarding characterization and prioritization of water quality issues. The MS4 targeted and random programs are providing data to help prioritize specific sub-drainage areas based on discharge quality that can help with source identification. The MS4 programs are in the third of a five-year program. Source characterization studies have also been completed during the past two years of the current Permit cycle and have focused on characterizing residential runoff. With the success of the MLS and TWAS receiving water program in characterization and prioritization of water quality issues, there are opportunities to refocus resources to MS4 outfalls and source identification programs. Refocusing resources to these programs will allow a more detailed assessment of issues in specific areas of watersheds.

The success of the Regional Monitoring Program in addressing the five core management questions was discussed on a watershed basis in each of the watershed assessments (Sections 2 to 10). Overall, the questions regarding receiving waters have been successfully addressed similar to the LTEA objectives and Permit Regional Monitoring Program goals. The core questions regarding the contribution of the MS4 to those receiving water priorities are being addressed with regard to identification of common priorities through the MS4 targeted and random programs. The MS4 program has shown clear linkages to several receiving water issues. Generally, the common regional linkages between receiving water quality priorities and MS4 priorities based on the assessment methodology presented in this section include:

- Wet Weather – Bacteria indicators, predominantly fecal coliforms, are common priorities in both MS4 outfall and receiving water storm flows.
- Dry Weather – Bacteria indicators (predominantly enterococci), nutrients (predominantly total nitrogen), and TDS are generally common priorities in both MS4 outfall and receiving water dry weather/ambient flows.

The linkages to receiving water issues can be used as the basis to refine the MS4 program and begin identifying sources of these common priorities. With the success of the Regional Monitoring Program in addressing the core management questions regarding the health and characterization of the receiving water, there are now opportunities for tradeoffs to focus on the source identification.

With the continuing advancement of the science that forms the basis for how water quality results are assessed, there is a need for a continually adaptive approach to monitoring. This adaptive approach to the Regional Monitoring Program needs to effectively apply new scientific developments to the accuracy and applicability of water quality objectives. Establishing accurate and applicable water quality goals also leads to more effective management actions and the assessment of the success of these activities. Several examples of advancements of the science

Conclusions

that may affect future water quality assessments that warrant further study or in many cases support for ongoing special studies by the State include:

- Nutrients – Many studies have been done regarding eutrophication of inland fresh water lakes, but the science is still developing for the type of fresh water and tidal systems in Southern California regarding more accurate measurements and levels of impact. There are studies ongoing by the State in this area.
- Bacteria Indicators – Bacteria indicators are detected in all environments. The science of microbiology is advancing with the development of rapid indicators and new methods, such as Q-PCR to identify bacteria species and help to distinguish from human fecal sources. The current water quality objectives were developed over 40 years ago and have not taken into consideration these new advances and the results of more recent epidemiological studies conducted in Mission Bay and Orange County. The results of the Mission Bay study did not indicate a strong correlation to the bacteria indicators.
- Bioindicators – The results of the Regional Monitoring Program have identified generally poor conditions throughout most of the region with the exception of higher elevation open space streams. Continued monitoring has not indicated changes in this scoring. It is understood that a potential tiered system is under development that will account for differences in elevation and substrate.