Santa Ana Regional Water Quality Control Board

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LAKE ELSINORE/CANYON LAKE NUTRIENT TMDL COMPREHENSIVE NUTRIENT REDUCTION PLAN - REGIONAL WATER BOARD STAFF COMMENTS

Dear Mr. Uhley:

We received your letter dated January 3, 2012, transmitting the Draft Comprehensive Nutrient Reduction Plan (draft CNRP). The draft CNRP was submitted in accordance with Section VI.D.2.d. of Santa Ana Water Board Order No. RS-2010-0033, NPDES No. CAS818033 (MS4 permit).

We have reviewed the draft CNRP and have the following comments and questions. These comments and questions will need to be addressed to Water Board staff's satisfaction prior to Regional Board consideration of approval of the CNRP.

General Comments

We note that Certification Statements for some of the permittees were not included in the submittal. Specifically, there were no Certification Statements from the cities of Menifee, Wildomar or Beaumont. Water Board staff needs to have assurances that those cities are supportive of the proposed approach proposed in the draft CNRP.

Overall and as indicated in our September 2, 2011 letter to Mr. Norton, Lake Elsinore/Canyon Lake TMDL Administrator, Water Board staff is supportive of the proposed approach discussed in the draft CNRP to utilize the Canyon Lake Hypolimnetic Oxygen System (HOS) to meet the urban WLA. We recognize that the HOS will provide both an alternative approach for the urban dischargers to meet the specified nutrient WLA as well as providing direct in-lake water quality benefits. We also recognize that the permittees propose not to rely solely on implementation of the HOS, but to continue implementation of existing watershed BMPs pursuant to the MS4 permit to address nutrient discharges from urban land uses.

We are concerned, however that the draft CNRP indicates that the HOS is "preliminarily being proposed" and that actual implementation is contingent on a number of factors (draft CNRP Section 2). Given that the CNRP, if approved, will serve as the final water quality based effluent effluent...
limit (WQBEL) for the Lake Elsinore/Canyon Lake Nutrient TMDL, Water Board staff are concerned that these statements do not provide sufficient assurance with regard to the implementation of the HOS. What are the factors that affect the viability of implementing the HOS? Further, if the HOS is not to be the planned project, then the CNRP needs to contain the same level of compliance analysis for any other planned strategy as was completed for the HOS in Section 3. While we note that the Phoslock™ and/or Zeolite addition is being considered, an analysis of their effectiveness is not presented in Section 3.

The draft CNRP also relies upon implementation of a number of BMPs that are currently being implemented pursuant to the MS4 permit. The effectiveness of some of these BMPs in reducing nutrients can be quantified, and that analysis is presented in Section 3 of the draft CNRP. However, for specific ordinances (Pet Waste, Fertilizer Waste Management and Yard Waste), because the expected water quality benefit could not be quantified and their respective effectiveness is unknown, the draft CNRP specifies that these programs will serve as a "margin of safety". We encourage the permittees to evaluate the efficacy of these programs such that the margin of safety can be quantified, and to identify minimum implementation procedures necessary to assure that level of effectiveness.

Section 2 – CNRP Implementation Program – Comments

Section 2.2.1: Watershed-Based BMPs

The draft CNRP indicates that implementation of the Water Quality Management Plan (WQMP) will occur "over time". Obviously, this is a very general statement. To the extent that the CNRP relies on WQMP strategies, a specific schedule for the timing of WQMP actions needs to be provided.

The draft CNRP indicates that the decision with respect to enacting ordinances will be made by the local agencies. The CNRP should specify what type of criteria will be used to determine whether a municipality will or will not develop and will or will not implement an ordinance that is part of the CNRP implementation strategy. As noted above, we believe that all ordinances that are referenced as part of the CNRP compliance strategy need to be implemented and enforced in a consistent manner by all watershed permittees.

The draft CNRP indicates that the permittees will evaluate pet waste ordinances and enact them if appropriate. However the MS4 permit (Section VIII.C) requires the adoption of pet waste ordinances for the control of pathogen or bacterial indicator sources. The CNRP should acknowledge the MS4 permit requirements. The adoption and enforcement of pet waste ordinances is expected to help control nutrients as well as pathogen indicators.

We note that the City of Norco has an aggressive pet waste management program that could serve as a model program for the San Jacinto watershed cities as well.

Under the septic system management overview discussion, why is no mention made of the septic systems adjacent to Lake Elsinore? Given their proximity to an impaired waterbody,

\[1\] We note that Section 2 does not specifically mention Zeolite addition as an option, but is briefly discussed in Section 3.
the known and potential impacts of these septic systems on lake water quality is an important element to address.

**Section 2.2.2: In-lake Remediation Activities**

The draft CNRP indicates that continued implementation of the Lake Elsinore aeration/mixing system and the planned Canyon Lake HOS will serve as regional treatment facilities. As noted above, we do have concerns with the characterization of the HOS as "preliminarily proposed" because of the level of uncertainty this raises. This is particularly critical considering that the HOS is proposed to serve as the primary approach for meeting the Canyon Lake urban/septic WLA, as detailed in Section 3 - compliance analysis.

We note that the permittees plan to utilize the HOS to demonstrate compliance with the urban/septic WLA and that the HOS will also provide water quality benefits with respect to dissolved oxygen and reducing nutrient flux from the lake sediment. In fact, we believe that implementation of the HOS may achieve the Canyon Lake in-lake numeric TMDL targets for most of the lake (see comments on Section 3.4.2).

For Lake Elsinore, the CNRP proposes that the permittees participate in the operation of the existing aeration/mixing system to offset urban nutrient discharges and that if additional offset credits are needed, the agencies would evaluate fishery management activities or other appropriate BMPs. We are concerned, that unlike the Canyon Lake HOS, the Lake Elsinore aeration/mixing system may not support achievement of the in-lake TMDL numeric targets. The CNRP should include an evaluation of the potential for the aeration/mixing system to achieve the numeric targets. Further, please be advised that even if the Lake Elsinore wasteload allocations (WLAs), load allocations (LAs) and TMDLs are achieved, but the numeric targets are not achieved, then it may be necessary to revise the TMDL to include stricter allocations and/or implementation requirements.

**Section 2.2.3: Monitoring Program**

The draft CNRP indicates that the San Jacinto River Watershed monitoring plan provides data to assess compliance with the TMDLs, WLAs and LAs. This is not the case. Because there are too few watershed monitoring locations that are land-use specific, the existing monitoring program does not provide the data necessary to assess nutrient inputs from different land use sources and thus the WLAs and LAs assigned to these sources. At most, the existing monitoring program only provides data and information for the assessment of compliance with the TMDLs. It may be that a combination of monitoring data and modeling should be used to determine land-use specific nutrient loads. As indicated in our September 2, 2011 letter to Mr. Norton, Water Board staff remains concerned that there may not be adequate watershed data collected to access compliance with the 10-year running average WLAs and LAs. To that end, we believe that a specific discussion of how the permittees intend to demonstrate that implementation of the CNRP will fulfill its intended purpose to meet the WLAs should be included in the CNRP. We believe that this needs to include tracking of urban + septic loads over the CNRP implementation period.

We do want to make it clear that Water Board staff is supportive of reducing the routine in-lake monitoring program and will work with the Task Force to develop an appropriate approvable program (as is reflected in the draft CNRP). However, we should emphasize
that, as indicated in our September 2, 2011 letter, our support of such monitoring reductions is contingent on the demonstrations that the reductions are justified and that the resource savings will be used to implement specific in-lake and/or watershed projects. Accordingly, any proposed monitoring reductions must be accompanied by specific information about the amount of cost savings and where the monies will be used to support CNRP implementation.

For Lake Elsinore, the Elsinore Valley Municipal Water District (EVMWD) has in-lake monitoring requirements pursuant to their NPDES permit. Any reduction in the Lake Elsinore in-lake monitoring program would need to be coordinated with EVMWD monitoring requirements.

Section 2.3: Adaptive Implementation Schedule

The draft CNRP indicates that as part of the MS4 Permit, the permittees will report annually on CNRP implementation and the effectiveness of CNRP implementation. What is meant by effectiveness? Would it be the degree to which all CNRP components are implemented per the approved schedule, or the actual reductions in nutrient loads and improvements in lake water quality? Board staff believe that "effectiveness" should be better defined and delineated so that all parties are clear on how CNRP implementation will be judged. This may be the appropriate section to discuss tracking of urban + septic loads (see comment under Section 2.2 Monitoring Program).

Section 2.4: Implementation Schedule

The draft CNRP indicates that the schedule for the HOS, the preferred alternative, is dependent on obtaining regulatory approvals. As noted above, elsewhere in the draft CNRP, there are statements that other factors may affect HOS implementation. Since this does not give Board staff the necessary level of certainty for HOS implementation, the CNRP should include an analysis of the factors and their hierarchy, or a critical path analysis for implementation of the HOS.

Section 2.5: Water Quality Standards Attainment

The discussion in this section is confusing. Is the intent to indicate that because of asymmetric hydrological conditions and nutrient loadings, the urban WLA may not be met during heavy periods of wet weather and that, because of this, there may be periods of non-attainment during a 10 year period? Or is the intent to indicate that the extreme wet weather conditions and the discharge of nutrients to Canyon Lake and/or Lake Elsinore would result in not achieving water quality standards in the lakes on a temporary basis? To Board staff, these are two different scenarios. The TMDL numeric targets for both lakes are specified as annual or seasonal averages and were developed using water quality modeling, taking into consideration the extreme hydrological conditions that could occur in the watershed.

If the intent is to indicate that meeting the WLA as a 10 year average may not be feasible, it is important to keep in mind that the WLA is not a water quality standard. If, as a result of the implementation of the various watershed and in-lake projects, it is demonstrated over time that the WLA cannot be met, but in lake numeric targets are being met, it would be appropriate to ask the Regional Board to consider appropriate modifications to the
TMDLs/WLAs and/or LAs. However, at this time, there is no water quality monitoring or modeling program in place to determine land use nutrient loads and to assess compliance with the 10-year running average WLAs and/or LAs. Therefore, in the absence of any water quality data or modeling, Board staff would be hard pressed to agree with a finding that the urban WLA cannot be achieved. We recommend the MS4 agencies keep this in mind when developing the revised monitoring program.

Finally, clarification of the definitions of "short-term" and "temporary" conditions in terms of the TMDLs/WLAs/LAs and in-lake numeric targets should be provided.

Section 3 – Compliance Analysis – Comments

In general, we believe that the compliance analysis for the various watershed based BMPs that are currently being implemented and the in-lake projects provides a thorough assessment of expected nutrient reduction and resulting water quality benefits. There are some elements of the discussion and data presentation that warrant questions and comments that need to be addressed in the revised CNRP.

1. Page 3-1 – We note that the Compliance Analysis section tends to mix TMDL terminology. As we are sure you are aware, non-point source discharges, including agriculture, septic systems and open space are given load allocations (LAs) while point source discharges including urban stormwater and dairy operations are given wasteload allocations (WLAs). We understand that for the sake of streamlining the draft CNRP, the urban stormwater and septic systems are grouped together as an urban load and are considered under the WLA category. However, it would be useful to clearly acknowledge the typical non-point source categorization of septic systems at the beginning of this section.

2. Page 3-2 – in reference to studies completed to support TMDL development and the 2003 Technical Staff Report, the draft CNRP indicates that these studies were flawed and contained errors. We would not necessarily characterize these studies as flawed, but as expected, our knowledge of the watershed and nutrient related science is better than when the TMDL was developed.

3. Table 3-2 presents frequency weighted urban (combined urban stormwater + septic) loads based on 2010 model analysis for each municipality. For each permittee, the breakdown between urban stormwater and septic systems should be provided.

4. Page 3-4 – for the washoff decay rates cited, how were the decay rates derived? The CNRP indicates the decay rates are the ratio of

\[
\text{Lake loading to watershed runoff}
\]

Did these ratios come from model analysis?

5. Page 3-5 – indicates loading to Canyon Lake from land uses upstream of Mystic Lake is "extremely rare". We are unsure what is meant by "extremely rare". In the TMDL, we assumed Mystic Lake overflow occurred every 20 years. Is "extremely rare" > 20 years?
6. Page 3-5 - The paragraph starting with "The decay factors....". We are not sure what is being described in this paragraph.

7. Table 3-4 – this Table includes the existing TN and TP loads, the urban + septic TN and TP allocations and the needed TN and TP reduction requirements. For Lake Elsinore, why is not the Canyon Lake overflow load attributable to urban and septic sources not added to the Lake Elsinore load? Since it is not included in the accounting, how will those Canyon Lake overflow loads be addressed?

8. Page 3-7 – one of the strategies mentioned if the allocations cannot be feasibly met would be for the MS4 agencies to recommend a revision to the TMDL/WLA/LAs that specify "achievable washoff rates". First, we are unsure what is meant by "achievable" and second, if such a recommendation is made, Board staff would need to ensure that any restructuring of the TMDL/WLA/LAs takes into account the resulting water quality for both Lake Elsinore and Canyon Lake. Simply modifying the allocations without conducting the requisite linkage analyses would not suffice.

9. Section 3.3.1 – Street Sweeping and MS4 Debris Removal
   a. We understand that the street sweeping information provided in the storm water annual reports for most of the baseline period 2005-2010 are estimates and approximations, so the reduction numbers presented in Table 3-5 are estimates of estimates. We agree with the 2nd note in this table that future uncertainties and errors in the estimates can be reduced if permittees start logging their actual data. These estimates should be revisited when actual data are available. We understand that typically TP and TN removals from debris/street sweeping are not reported in the storm water annual reports submitted to the Regional Board pursuant to the MS4 permit. Since street sweeping is one of the primary watershed BMPs that will be utilized as part of CNRP implementation, then these data need to be collected for all watershed permittees in order to provide Board staff assurance that these estimates are reflective of watershed specific street-sweeping TN and TP removal effectiveness. The specific metrics as to how this loading is currently monitored and how it will be monitored and reported in the future should be detailed in the CNRP.
   
b. Our understanding from this table and section is that the draft CNRP proposes that current street sweeping activities will be maintained. There is no specific plan to increase street sweeping in the watershed. Consequently, as part of the annual report, we would need to ensure that the minimum amount of street sweeping as cited in the CNRP is consistently performed to achieve the (estimated) nutrient load reductions.
   
c. Table 3-5 should be broken up into Canyon Lake and Lake Elsinore to be able to see the estimated nutrient reduction relative to loading for each lake and to be able to compare loading values in Table 3-4.
   
d. Table 3-5 – are these the average of yearly debris removal for the period of 2005-2010, or do the values represent the total tonnage removed for the entire 2005-2010 period?
e. Table 3-5 – does footnote 2 apply only to the city of Perris? In addition, it is unclear why some permittees have “0” for the amount of debris removal. Do not these cities do street sweeping as required by the MS4 permit? Some explanatory notation to the information in this table should be provided.

10. Section 3.3.2 Structural BMPs in Constructed WQMP

a. For the equation for washoff reduction, please include the units for each variable in the equation. There seems to be missing information to show how the washoff reduction numbers in Table 3-6 were derived.

b. Table 3-6 – identifies 511 acres under the City of Riverside with projects constructed under Regional Board Order No. 01-34. We have knowledge of some projects in Riverside, and March ARB, but the total project size would be much less than 511 acres. Please include more information about how the acreages were calculated.

11. Section 3.3.3 Septic System Management

a. The draft septic systems analysis assumes a 10% non-occupancy rate and a 30% failure rate. What is the basis for these rates? Further, the analysis assumes that 25% of failing septic systems will be repaired. Again, the basis for this assumption needs to be provided.

b. Table 3-7 presents an estimation of failing septic systems washoff rates. It is unclear to Board staff how the ‘at risk’ properties’ loading/washoff rates are taken into account to determine the respective rates.

c. The septic system analysis recognizes the significance of potential load reduction if the septic systems in Quail Valley were addressed through sewering. However, the benefits of sewering this area were not taken into account and no mention of why this is the case is provided. We assume the nutrient reduction benefits were not identified due to the uncertainty of projects moving forward to sewer Quail Valley. We agree that the analysis should take a conservative approach given the uncertainty, but we believe that this warrants discussion in the CNRP.

d. Table 3-8. It is unclear how the TP and TN washoff reductions were calculated.

e. The septic system analysis indicates that sewering the Enchanted Heights area of Perris would provide 6 kg/yr of TP and 88 kg/yr of TN reduction. How were these reductions determined?

12. Section 3.3.4 Future Low Impact Urban Development

a. Based on the analyses presented, it is our understanding that the effect of future land transition from agriculture and/or open space to urbanization will result in a decrease in the urban TP loads and an increase in the urban TN loads. The build-out (year 2020) analysis is presented in Table 3-9. To aid in the interpretation of the
data and information presented in this table, existing and build-out acreages should be provided.

b. Figures 3-5 and 3-6 depict the change in TP load and TN resulting load, respectively as the Canyon Lake watershed is urbanized (through 2020). It is unclear to us why these same types of graphs were not provided for the Lake Elsinore watershed.

13. Section 3.3.5 Watershed BMP Summary

a. Table 3-10 synthesizes all of the proposed watershed BMPs that are currently being implemented or are planned to be implemented and brings forward the TP and TN reduction summary into this Table. However the nutrient reduction amounts for street sweeping from Table 3-5, septic systems from Table 3-8 and LID from Table 3-9 don't match the respective tabulation listed in Table 3-10.

b. Table 3-10 relies on the build-out forecast for 2015; however as discussed in the LID analysis section (Section 3.3.4), urbanization and changes in TP and TN loads are projected to 2020. We are unclear about why the projection in the BMP Summary section utilizes a 2015 projection. Further, since the TMDL/WLA and LAs need to be met by 2020, Board staff believe that it may be more appropriate to utilize the 2020 urbanization projections to plan effectively for the nutrient changes with urbanization. We also note that the final required load reductions delineated in Table 3-11 also use 2015 urbanization projection and not 2020, again with no explanation provided.

c. Table 3-10. Since these are watershed based stormwater BMPs, please indicate if the procedures to validate these numbers will be incorporated in the Consolidated Monitoring Program (CMP), implemented as described in individual Local Implementation Plans and individually reported in the annual reports.

d. Figure 3-8 provides a projection of the TP and TN reduction needed for both Lake Elsinore and Canyon Lake. We note that for both lakes, additional TN reduction will be needed in the future, and for Canyon Lake less TP reduction will be needed. We also note that the needed TP reduction for Lake Elsinore remains constant through 2020. We are unclear why this is the case. Some explanatory note should be provided.

14. Section 3.4 In-lake Remediation projects

In the introduction to this section, it is noted that treating to meet the WLA could potentially be very costly to the permittees and potential costs are compared to the City of Los Angeles' compliance cost to meet the Ballona Creek Bacteria TMDL/WLA. We certainly understand the point being made here about potential costs; however we don't believe it is appropriate to cite costs for compliance with a bacterial indicator TMDL to the costs for compliance with a nutrient TMDL. Consistent control and reduction of bacterial loads is much more complicated than controlling nutrients. Surely other municipalities have implemented nutrient control BMPs for TMDL compliance for which compliance costs could more appropriately be cited.
15. Section 3.4.1 Lake Elsinore (in-lake projects)

a. The draft CNRP intends to rely on the existing in-lake aeration/mixing system for meeting the urban + septic required nutrient load reduction. Board staff supports this approach with the caveats discussed below. Based on the analysis provided, there appear to be sufficient TN and TP reduction credits available from the aeration/mixing system to address current and future discharges. However, we do have some comments and concerns.

The draft CNRP does not identify the assumed operation of the aeration/mixing system. The basis for the expected TN and TP reduction is from studies conducted by Dr. Alex Horne where the aeration/mixing system was in continual operation. We understand that this is not the current operation of the system – the mixers run approximately 6 hours/day and the aerators approximately 2-4 hours/day. Thus, we are uncertain if the actual nutrient reduction values are consistent with those cited in the Horne study. In order to validate the actual nutrient reduction achieved with this modification of the operational time, additional studies need to be done to correlate the run times to the actual nutrient reductions achieved. This needs to be addressed in the CNRP.

The aeration/mixing system is the primary tool used to offset recycled water discharges from Elsinore Valley Municipal Water District (EVMWD). We understand that EVMWD is currently meeting their TP discharge limit and therefore does not need a TP offset; however, EVMWD is not meeting the TN discharge limit and therefore a TN offset is needed. Because the aeration/mixing system will serve to offset more than just the urban + septic loads, the draft CNRP should discuss the offset requirement for the EVMWD discharge in the context of the availability of offset credits. Otherwise, Board staff is uncertain whether the current operation of the aeration system could successfully offset both nutrient sources.

b. In Table 3-12, the calculations and the values cited in the footnotes appear to be incorrect. Further, it is not clear from the discussion how the percentages of the total WLA are determined for both the urban and septic sources.

c. Table 3-12 only shows the TP reduction requirements. We recommend revising the Table title. Also, we recommend including a similar table for TN.

d. The discussion in this section indicates that compliance with the response variables (chlorophyll a and dissolved oxygen) is an alternate approach to meeting the WLA. As noted previously (see Section 2 comments), there is no discussion or demonstration provided that shows that the Lake Elsinore aeration/mixing system will achieve the in-lake response targets. Given that, Board staff would be expecting demonstration of WLA achievement first and foremost with (as the draft CNRP indicates) an adaptive management approach to address either the WLA or the numeric targets. It may be that continued in-lake monitoring will allow a demonstration of the degree to which the aeration/mixing system achieves the numeric targets.
16. Section 3.4.2 – Canyon Lake (in-lake project)

a. For Canyon Lake the draft CNRP identifies the HOS as the primary means to achieve the urban + septic WLA based on extensive studies conducted by PACE Engineering.

b. Based upon the analysis presented in the draft CNRP, for Canyon Lake, the HOS would effectively offset urban + septic system discharges.

c. The studies conducted indicate that if the HOS is implemented, water quality in the main Canyon Lake basin will improve and the TMDL numeric targets would be met. Therefore, Water Board staff supports the implementation of the HOS with the caveats noted below.

d. The permittees have also identified the addition of Phoslock™ and/or Zeolites as alternatives if implementation of the HOS is infeasible. As noted in our Section 2 comments, the CNRP needs to include an evaluation of TN and TP reduction effectiveness for Phoslock™ and Zeolites as was completed for the HOS. Because the draft CNRP does not contain this analysis, Water Board staff cannot indicate support of those options at this time.

e. Even with the implementation of the HOS, it must be recognized that East Bay water quality may not improve such that the numeric targets would be met in that portion of Canyon Lake. The draft CNRP needs to identify a strategy to address this section of the Canyon Lake. As you are aware, the TMDL specifies numeric targets for the lake as a whole and does not take into account the volume or areal representation of each monitoring location. Since East Bay is a smaller area of the entire Canyon Lake, it may be that the water quality data collected from the East Bay station should not just be averaged with other station data but factored into the overall assessment of lake water quality based on volume or other metrics. Board staff would be willing to work with stakeholders to develop an appropriate methodology for assessing compliance with the Canyon Lake numeric targets based on volume or areal extent (or some other appropriate metric).

17. Section 3.5 Compliance Summary

a. The discussion in this section indicates that the Lake Elsinore in-lake aeration/mixing system and the Canyon Lake HOS have sufficient capacity to offset urban nutrient loads. We agree that the data and analysis presented indicates this is the case for Canyon Lake loads, however, as noted above, the draft CNRP does not address the extent to which other nutrient loads, in particular the EVMWD loads, would need to use any available nutrient reduction capacity of the Lake Elsinore aeration/mixing system.

b. The discussion indicates that the Lake Elsinore aeration/mixing system would be operated at "...optimal capacity". Again, as noted above, this has not been defined and if the definition of "optimal capacity" is as reflected in Dr. Horne's studies, then additional studies need to be conducted to assure Board staff that operation at reduced levels still results in nutrient reductions as determined by Dr. Horne.
c. The actual nutrient benefits from the BMPs implemented in the watershed need to be confirmed and reported.

d. Table 3-16, It is not clear from what these numbers were derived. Further, there is no comparable summary table for Lake Elsinore.

A final version of the CNRP addressing the questions and comments described in this letter must be submitted to the Regional Board. Per the requirements of the MS4 permit (Sec. VI.D.2.d.), the final version CNRP must be submitted no more than 90 days after receiving these comments. We look forward to working with the permittees in developing a final draft of the CNRP. In the meantime, if you have any questions, please feel free to contact Hope Smythe at (951)782-4493, hsmythe@waterboards.ca.gov.

Sincerely,

Kurt V. Berchtold
Executive Officer

cc: David Rice, State Water Resources Control Board, DavidRice@waterboards.ca.gov
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