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January 25, 2013

Ms. Cindy Lin, D.Env.
U.S. Environmental Protection Agency, Region 9
600 Wilshire Boulevard, Suite 1460
Los Angeles, CA 90017

Sent via e-mail to lin.cindy@epa.gov

Subject: U.S. EPA Malibu Creek and Lagoon Draft Total Maximum Daily Load for Sedimentation and Nutrients to Address Benthic Community Impairments – JPA Review and Comments

Dear Dr. Lin:

On behalf of the Joint Powers Authority (JPA) comprised of Las Virgenes Municipal Water District and Triunfo Sanitation District, we appreciate the opportunity to submit comments on the U.S. Environmental Protection Agency (EPA) draft Total Maximum Daily Load (TMDL) for sedimentation and nutrients to address benthic community impacts in Malibu Creek. While not a party to the lawsuit and Consent Decree that resulted in the requirement to establish this TMDL[1], the JPA nonetheless has a substantial interest in the proposed regulation because of its potential impacts on the recycled water, composting and sanitation services that the JPA provides to approximately 80,000 residents of Agoura Hills, Calabasas, Thousand Oaks, Westlake Village, Oak Park, Hidden Hills and unincorporated areas of Los Angeles and Ventura County within the Malibu Creek watershed.

Due to the extensive concerns with the TMDL as currently proposed, the JPA requests that the EPA petition the court to extend the deadline stipulated in the Consent Decree to provide the necessary time to ensure the adequacy of the TMDL's findings and methods. Alternatively, we propose that the EPA employ a phased TMDL approach to meet the March 24, 2013 deadline stipulated by the Consent Decree. We believe that either approach can fulfill the EPA's obligations under the Consent Decree, while ensuring that the TMDL's targets are supported by adequate science.

Following is a description of the JPA's major concerns with the proposed TMDL.

[1] Heal the Bay et al. v. Browner, No. C98-4825 SBA. (N.D. Cal.).

1. **The JPA's ratepayers cannot afford another TMDL based on inadequate science.**

Recycled water in our service area is produced at the JPA's Tapia Water Reclamation Facility (WRF) in compliance with permits issued by the State of California in accordance with the federal Clean Water Act National Pollutant Discharge Elimination System (NPDES) Program. The nutrient limits in our current NPDES permit for the Tapia WRF were established by the EPA in 2003 specifically to reduce algal growth in Malibu Creek and its tributary streams. To date, the JPA has spent over $10 million dollars in new facilities in addition to funding operational requirements to meet these targets. Discharges of *any* effluent from the Tapia WRF have been terminated for seven months of the year, spring through fall, for the last 14 years, aside from rare exceptions when some flow was needed to preserve downstream habitat for endangered steelhead trout. Nutrient levels in Malibu Creek have decreased in response to these efforts to levels that rarely exceed the 2003 TMDL targets, yet algal growth in Malibu Creek remains largely unchanged.

In 2003, the JPA submitted comments on the EPA Nutrient TMDL for Malibu Creek expressing concerns about the science, need, efficacy and cost of the nutrient targets proposed. In particular, we provided substantial scientific evidence that the algal species responsible for nuisance algal growth in Malibu Creek grew in equal amounts both below and above the Tapia WRF outfall, and that other factor(s) appeared to be responsible for nuisance algal growth in Malibu Creek, beyond Tapia WRF's winter-time discharge of recycled water. The final TMDL established by the EPA in 2003 concluded that runoff from urban development above the Tapia WRF was the primary cause of this algal growth, and established nutrient load allocations for non-point sources in the upper watershed on the basis of its nutrient modeling results.

Today, we are told by the EPA in the current draft TMDL that the nutrient targets established in the previous TMDL were not low enough to reduce algal growth to acceptable levels, and that winter-time algal nutrient targets based on earlier science must be reduced approximately eight-fold. In fairness to the JPA's ratepayers and in light of the previous TMDL not having reached its stated objectives, we hope the EPA will understand if we ask: "Will it work this time?" and "How good is the EPA's science behind this proposed TMDL?" Our review of the draft TMDL found ample grounds to conclude that the science behind the current draft is even less certain than its predecessor. The proposed TMDL relies on methods that have been found by their own authors to be inappropriate for the unique characteristics of Malibu Creek.

2. **The implementation of this TMDL will be a severe financial burden to ratepayers, *with no better guarantee of success than its predecessor.***

If the draft TMDL is right in its finding that the EPA's earlier nutrient targets will not achieve their intended goal, then ineffective TMDL rule-making will have cost the JPA's ratepayers over $10 million dollars without any discernible decrease in algae, the impairment the 2003 Nutrient TMDL was meant to address. The JPA estimates that the nutrient targets proposed in this new TMDL would cost over $160 million dollars to achieve if implemented as end-of-pipe limits on recycled water produced at the Tapia WRF.

To meet the draft TMDL's proposed nutrient targets as end-of-pipe limits would require a complete retrofit of the Tapia WRF, with additional impacts to the Rancho Las Virgenes Composting Facility and the need to construct a second treatment plant to further treat recycled water. The potential costs of these efforts to our ratepayers surely deserves sufficient time to ensure that the science behind the TMDL is fully vetted, providing greater scientific certainty than the previous TMDL in addressing the problem it is intended to address.

Instead, the JPA has been given just over 30 business days to review and comment on what is arguably one of the most technically-complicated and novel TMDLs ever released by the EPA Region 9 staff. Our technical comments on the draft TMDL are substantial, and we could not review some of the TMDL technical appendices before the comment deadline given the number of problems and errors uncovered in the main body of the TMDL document. Our review of the EPA's evidence was further hindered because the EPA could not provide reports[2] and data it relied upon in reaching its conclusions. Key data used to establish the TMDL's proposed targets was unavailable for our review, including data used to establish the original listing impairment, data necessary to fully verify the validity of the TMDL's evaluation of SC-IBI scores in Malibu Creek, and still other data necessary to verify the TMDL's assertion that its reference sites in other coastal streams are truly comparable to natural conditions in Malibu Creek.

3. **The TMDL schedule is unreasonable, both for the EPA and affected stakeholders.**

The time available to produce and review the draft TMDL was insufficient given its inherent technical complexity and the need, driven by a legal deadline, for the EPA to use methods never vetted by either the EPA or the state of California for

[2] The EPA relies on one report attributed to Sikich (2012) cited 22 times in the TMDL, yet that report has not yet been released as of today for public review by either the EPA or the organization EPA says supplied it.

Malibu Creek[3]. The need for sufficient time to validate these methods is acute not only from the perspective of sound science, but also given the magnitude of the TMDL's potential economic consequences for the region's ratepayers, who will ultimately bear the costs for compliance with the new targets.

This is the first benthic macroinvertebrate TMDL ever drafted by EPA Region 9. Its inherent complexity follows from its distinction as the first TMDL in the state to attempt to quantitatively link low aquatic insect scores with potential human stressors. This link would be technically challenging under the best of circumstances, but the EPA's production schedule required completion of the draft TMDL while the state is still attempting to develop the scientific standards necessary to establish the use of benthic macroinvertebrates as biological indicators in freshwater streams. Complicating matters further, Malibu Creek is perhaps the most technically-challenging stream to apply these methods, in that Malibu Creek is not a freshwater stream, being naturally very brackish over its entire length. The state science team developing these methods is currently trying to adapt them for streams as naturally salty as Malibu Creek, but that work is not yet complete. The TMDL is proceeding in advance of these efforts. This is not the science-based, stakeholder approach to TMDL rulemaking that the EPA promised in 2010 when it added this TMDL to the list of items originally covered under the Consent Decree.

The EPA's schedule for establishing this TMDL also precludes the consideration of important efforts by the state to develop policies on the use of benthic macroinvertebrate metrics as indicators of aquatic health. The result of this TMDL, if not substantially changed, would be the Federal Register publication of a TMDL with biological response targets using tools already determined by scientists to be inadequate and inappropriate for use. These same scientists have publicly stated that even a later modification of these particular tools should specifically <u>not</u> be used in Malibu Creek, because its naturally high salt levels[4] put the stream beyond the experience of their models. The technical team has since added high conductivity reference sites and made additional changes to the assessment tool, and we believe they will release their findings shortly after the EPA publishes its findings in the Federal Register.

[3] The TMDL relies on an assessment method developed for freshwater streams, which have never been validated for non-freshwater streams such as Malibu Creek, which is naturally very brackish throughout its length.

[4] See our general and specific technical comments on the ionic strength of Malibu Creek and its ramifications for EPA's assessment methods, specifically the use of the Southern California Index of Biotic Integrity (SoCal IBI) for benthic macroinvertebrates in very brackish streams.

4. The TMDL's science is rushed and seriously flawed.

This is not a case of a TMDL based on the best available science. Our review reached the same conclusion of the scientists who developed the methods used in the draft TMDL. They cannot be applied to Malibu Creek absent modification(s) to account for the creek's atypically brackish natural character. Specifically, the TMDL relies on the Southern California Index of Biotic Integrity (SC-IBI) to verify the original impairment listing, relate impairment to potential human stressors, and justify the TMDL's proposed nutrient, algae and sediment targets. Further details may be found in the accompanying technical comments, but a short summary of concerns is useful here.

The SC-IBI used in the TMDL compares Malibu Creek's IBI scores to IBI scores from relatively unimpaired freshwater streams in southern California, which were used as reference streams in the TMDL. The TMDL then used the results of this comparison to conclude that a problem exists because scores are lower in Malibu Creek than in these natural reference streams. The error is that very few streams in southern California - or even the state - are as salty as Malibu Creek. None of the Santa Monica Mountain coastal reference streams that the EPA used in the TMDL are as salty as Malibu Creek, nor are any of the reference streams used to develop the SC-IBI as salty as Malibu Creek.

This might not matter if benthic macroinvertebrates were insensitive to salt and ionic strength, but our review and the EPA's own scientific guidance on ionic strength[5] finds that freshwater macroinvertebrates are not only sensitive to the ionic strength of water - its overall salt content - but also to the specific ions responsible for Malibu Creek's salt content. Research published by EPA scientists[6] shows that the ionic strength of Malibu Creek's water and the specific ions responsible for it are sufficient to cause low benthic macroinvertebrates scores in other regions.[7] Still other published, peer-reviewed research shows that the levels of Malibu Creek's major ions such as bicarbonate, sulfate, magnesium and chloride have adverse impacts on benthic macroinvertebrates.[8] There is no reason to expect that Malibu Creek can attain the SC-IBI scores found in other southern California streams with lower salt levels. This is why the

[5] http://www.epa.gov/caddis/ssr_ion_int.html

[6] Pond, G. J., M. E. Passmore, F. A. Borsuk, L. Reynolds and C. J. Rose. 2008. Downstream effects of mountaintop coal mining: comparing biological conditions using family- and genus-level macroinvertebrate bioassessment tools. *Journal of the North American Benthological Society*, 27(3): 717-737.

[7] In other EPA regions, benthic macroinvertebrates are used as biological indicators of excessive salt levels from mountaintop coal mining operations. Salt loads in Malibu Creek exceed these levels, yet the TMDL dismisses the creek's ionic strength as not affecting its IBI scores because the evidence for toxicity is limited. But the evidence linking nutrients and algae levels to those scores is even weaker.

[8] Mount, D. R., Gulley, D. D., Hockett, J. R., Garrison, T. D., Evans, J. M. 1997. Statistical models to predict the toxicity of major ions to *Ceriodaphnia dubia, Daphna magna, and Pimephales promelas* (fathead minnows), *Environmental Toxicology and Chemistry*, 16(10): 2009-2019.

authors of that method - who are also on the state's Biological Objectives Technical Team - are working on analytical modifications to extend those methods for use in Malibu Creek. The EPA should wait for these methods in the interest of scientific accuracy.

The JPA's technical comments detail serious problems in other areas of the draft TMDL. Errors in basic geology include the TMDL's finding that Malibu Creek drains Triassic age rock and glacial sediments, which it does not. Errors in basic hydrology include the TMDL's assumption that Malibu Creek today is a perennial stream, which it is not. In these examples, the TMDL authors overlooked important evidence contrary to their assumptions and findings.

Also of concern to the JPA is the draft TMDL's reliance for most of its key findings on data submitted by one of the environmental advocacy groups that was a party to the Consent Decree. Given the emphasis on this data for the analyses, the EPA should verify that the pollutants were analyzed using analytical methods approved by the EPA, State and Regional Boards. Laboratories performing such sample analyses should be certified through the California Department of Public Health Environmental Laboratory Accreditation Program (ELAP). Requirements for this certification include quality control/assurance data in reports, adherence to hold time requirements, completion of chain-of-custody documents and the routine calibration and maintenance of instruments. Reporting and calculations using the data should also conform to approved protocols.

5. **The TMDL is dismissive of the EPA's own guidance and other research on natural geologic impacts on benthic macroinvertebrates in Malibu Creek.**

As mentioned previously, an alternative explanation for Malibu Creek's low freshwater insect scores is that Malibu Creek is not a freshwater stream, even in a state of nature. The salt content of Malibu Creek is unusually high even among other streams in the xeric southern regions of the state. This is due, in turn, to unusually large exposures of an equally unusual geologic formation - the Monterey Formation - a petroleum source rock whose hazards to water quality for both human beneficial uses and aquatic life are sufficiently severe to merit their own U.S. Geological Survey website[9].

The EPA is well aware that Malibu Creek is an unusually salty water body, even for a southern California coastal stream. The draft TMDL acknowledges that the level of salt leaching into Malibu Creek is sufficient to maintain brackish

[9] U.S. Geological Survey, 2002. Hazardous trace elements in petroleum source rock: The Monterey Formation. Website: http://geomaps.wr.usgs.gov/env/monterey.html.

conditions in the creek year-round, yet its analysis of this condition in Section 7.3 never addresses or even acknowledges the substantial weight of evidence for its natural origin in the watershed's unusual geology. Similarly, the draft TMDL acknowledges that Malibu Creek's salt content "occasionally" exceeds the state's TDS objectives, based on a general rule of thumb for estimating TDS from conductivity. It dismisses without comment, evidence the JPA submitted previously[10] that the draft TMDL's general rule of thumb is known to underestimate TDS in Malibu Creek, and does not offer any rationale for not using the more accurate conversion factor specific for Malibu Creek, which was also provided. Using this more accurate conversion factor quickly shows that Malibu Creek *seldom* meets the state's TDS objective in summer, and often exceeds it in winter.

Regardless of which TDS conversion factor is used, the result is that Malibu Creek is brackish by any standard. In sections following Section 7.3, the draft TMDL appears to agree that this condition is a natural consequence of the watershed's drainage of Monterey Formation rock[11]. However, in other sections[12], it dismisses the creek's high salt content as a potential stressor of aquatic insects, and appears to argue that the creek's unusually high conductivity is due to urban stormwater runoff, stating:

> "As was discussed above, it appears most likely that IBI scores are responding primarily to urbanization and only to a lesser degree, if at all, to conductivity itself. It thus appears that conductivity enters these regressions primarily as a surrogate for urban stormwater input, as was also suggested by Walsh et al. (2001) for studies in Australia."

The draft TMDL ultimately dismisses high conductivity as a primary source of low aquatic insect scores in Malibu Creek, concluding:

> "Sites upstream of high-density development, but within the Modelo [Monterey[13]] formation, exhibit slightly lowered SC-IBI scores, but not as low as scores for sites impacted by urban development."[14]

As detailed in our Technical Comments, the authors of the draft TMDL mistakenly attributed SC-IBI scores at sites "impacted by urban development" as due to urban stormwater runoff, when nearly all of these sites also receive substantial stormwater runoff from the Monterey Formation within these

[10] In our comments on the pre-public release draft TMDL.
[11] Draft TMDL p. 8-16, 8-18.
[12] Draft TMDL p. 8-21.
[13] The draft TMDL throughout refers to local exposures of the Monterey Formation by its earlier Modelo Formation moniker. This reference is inconsistent with current usage in the scientific literature that specifically refers the Modelo Formation to the Monterey Formation.
[14] Draft TMDL p. 9-30.

drainages in addition to groundwater inputs from the Monterey Formation, both upstream and directly beneath these areas.

There is no question that Malibu Creek's high salt content is due to the Monterey Formation in its northern tributaries, and possibly other marine sedimentary rock as well, nor that its high salt levels predate urban development in the watershed[15]. It is a natural, if unusual condition. This is important not just for Malibu Creek's aquatic insects, but for all of its aquatic life; those species intolerant of salt will fare poorly in the creek in comparison with more tolerant species, whether they are benthic macroinvertebrates, diatoms, or fishes. It should not surprise anyone that at the base of the food chain, both Malibu Creek's benthic diatom community and its floating macroalgae is dominated by salt-tolerant species. Nor should it surprise anyone that at the top of the aquatic food chain, Malibu Creek's only native freshwater fish species, the arroyo chub, is very tolerant of salty and high-mineral waters. We do not find the draft TMDL's reasons for discounting similar effects on the creek's aquatic insect and macroinvertebrate community compelling for this reason alone. The EPA's own website warns that impacts on freshwater benthic macroinvertebrates are expected in waters of high ionic strength.

Yet high ionic strength (i.e. high specific conductivity) is only one of seven potential causes for low freshwater insect scores related to the presence of large exposures of the Monterey Formation[16]. The draft TMDL never addresses some of these potential stressors and dismisses others without good reason in its focus on establishing lower nutrient targets. In our technical comments we provide substantial evidence that each of these seven factors are relevant to aquatic insect health in Malibu Creek, in many cases citing EPA's own technical reports and guidance. The causal assessment included in the Linkage Analysis failed to consider these and other potential stressors identified in EPA guidance[17].

In short, due to the Monterey Formation and its impacts on native water quality and aquatic life, Malibu Creek is probably one of the hardest and most challenging places for the EPA to attempt to separate natural from human impacts on freshwater benthic macroinvertebrates. Even the state's biological objectives technical team has acknowledged that Malibu Creek's salt levels are almost unique in the state in comparison to the hundreds of streams where data on benthic macroinvertebrates have also been collected. This team has advised against applying the southern California Index of Biotic Integrity (IBI) to Malibu Creek - the very metric of benthic macroinvertebrate health relied upon in the draft TMDL.

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[15] See Section 3 in LVMWD Report No. 2475.00, previously submitted.
[16] See our technical comments for details.
[17] Cormier, S. Norton, S. B., Suter, G., Reed-Judkins, G. Stressor Identification Guidance Document, 2000. U. S. Environmental Protection Agency, Office of Research and Development.

6. The JPA offers its recommendations for TMDL development.

The JPA strongly recommends that the EPA take the time necessary to thoroughly vet the findings and conclusions in the draft TMDL, using methods appropriate for Malibu Creek. We understand the legal constraints to establish the TMDL and, accordingly, we ask that the EPA petition the court to extend the Consent Decree deadline for the TMDL so that it can be done correctly, using the right tools and data and in concert with other efforts by the state directly related to the use of benthic macroinvertebrates as indicators of water quality and aquatic habitat in Malibu Creek.

Absent an extension on the Consent Decree deadline, we believe the EPA can improve the draft TMDL's scientific validity as discussed above while meeting the Consent Decree's March 24, 2013 deadline with the use of a phased TMDL. EPA guidance specifically recommends a phased approach to TMDLs where "the use of additional data or data based on better analytical techniques would likely increase the accuracy of the TMDL load calculation," where the state "is using a surrogate to interpret a narrative standard," and where there are uncertain loadings from natural sources[18]. This guidance specifically recommends that phased TMDLs be used for TMDLs that, "for scheduling reasons need to be established despite significant data uncertainty and where the state expects that the loading capacity and allocation scheme will be revised in the near future as additional information is collected,"[19] which is clearly the case here. We ask that the EPA adopt a phased approach for this TMDL, deferring receiving water targets and load allocations for a later phase following the completion of the state's efforts to develop bio-objectives policy and macroinvertebrate assessment methods appropriate to Malibu Creek.

Attached are "Technical Comments" that provide additional recommendations for improving the scientific adequacy of the TMDL.

If you have any questions regarding these comments, please contact me at (818) 251-2122.

Sincerely,

David W. Pedersen, P.E.
Administering Agent General Manager

[18] Aug. 2, 2006 memorandum from Benita Best-Wong, Director EPA Assessment and Watershed Protection Division, to EPA regions I-X, clarifying the use of phased TMDLs.
[19] Ibid, p. 3.