City of Malibu

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Sent via email to lin.cindy@epa.gov

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Subject: City of Malibu's Comments on the Draft Malibu Creek and Lagoon TMDL for Sedimentation and Nutrients to address Benthic Community Impairments

Dear Dr. Lin:

The City of Malibu (City) has prepared this comment letter in response to the subject draft Total Maximum Daily Load (TMDL) document issued by the United States Environmental Protection Agency, Region 9 (USEPA) (hereinafter "draft TMDL"). We appreciate the effort USEPA has made to address water quality concerns regarding sedimentation and nutrients in connection with benthic community impairments in the Malibu Creek Watershed, California. The Malibu Creek watershed, the Creek itself, Malibu Lagoon and the surfzone in the vicinity of Surfrider Beach are vital resources in our community.

First and foremost, the City is concerned that certain sources of sedimentation and nutrients have been inaccurately characterized, and that the (waste) load allocations and associated recommendations are misdirected. The City requests that the draft TMDL be amended to (1) account for additional facts provided in this letter and, with respect to implementation recommendations, (2) emphasize the uncertainty in assumptions that the TMDL relies upon. Although we recognize the complex nature of the TMDL and the analysis that went into its development, the enclosed comments are focused on issues the City believes to remain unresolved. These first two requests establish the City's primary concerns and restate comments previously submitted to USEPA Region 9 in a letter dated May 3, 2010 (response to the April 12, 2010 solicitation of public comments on USEPA's proposal to amend the consent decree).

A. Malibu Lagoon should be removed from this draft TMDL and should be moved to the Category 4B for 303(d) listings being addressed by an action other than a TMDL

The proposed new TMDL targets for the Malibu Lagoon for benthic macroinvertebrates, nutrients, and sediment should be removed from this draft TMDL, and the constituents listed for the Lagoon

should be moved to Category 4B as being addressed by actions other than a TMDL. In 2008, the Los Angeles Regional Water Quality Control Board (RWQCB) recommended moving Malibu Lagoon to Category 4B because of the California Department of Parks and Recreation's (State Parks') then pending Malibu Lagoon Restoration project. However at that time, the State Water Resources Control Board (SWRCB) and USEPA rejected the recommendation as the project was too premature to justify the move. Based on the current extensive progress towards Malibu Lagoon restoration, the City's progressive wastewater management program (including pending construction of a Civic Center centralized wastewater treatment facility), and the City's strong commitment to preventing stormwater/runoff pollution through the construction of the Civic Center Stormwater Treatment Facility and Legacy Park, the City can better demonstrate that significant implementation measures are in place or are actively in progress. Therefore, the recommendation to move this action to Category 4B should now alleviate USEPA's initial hesitation. The move to Category 4B would eliminate the need for the proposed targets and allocations into the Lagoon.

Extraordinary circumstances and alternative actions need to be considered rather than imposing these new TMDL targets. Under a grant from the California State Coastal Conservancy, with participation of local non-profit organizations such as Heal the Bay, State Parks commenced the Malibu Lagoon Restoration Project in 2012. The disruption of the lagoon conditions caused by the construction activity will have long lasting effects for which municipal governments should not be held responsible. Conversely, since this project was intended to have overall long-term beneficial effects on the sedimentation rates and benthic macroinvertebrate communities in the lagoon and ecosystem, it would be prudent to address this 303(d) listed sediment impairment with a non-TMDL program, such as a study to determine the results of the Malibu Lagoon Restoration Project on sedimentation rates, nutrient cycling, and benthic macro invertebrate communities (such as the detailed long-term monitoring program for habitat, water quality during both open and closed lagoon mouth conditions, sediment quality, and lagoon topography/bathymetry studies included by the State as part of the Restoration project)[1].

As mentioned above, the City has committed to the construction of a centralized wastewater treatment facility for the Civic Center area surrounding Malibu Lagoon. This wastewater improvement effort, which will be completed in phases between 2015 and 2025, would eliminate the contribution of any harmful nutrients to the lower creek and Lagoon from all onsite wastewater treatment systems (herein referred to as OWDS to be consistent with EPA's chosen nomenclature). See also Additional Comments 5 and 6 in the letter.

The City (with generous State grant funding) has constructed the Civic Center Stormwater Treatment Facility in 2006 and the award winning Legacy Park in 2010. All of the runoff from the City's and Los Angeles County's municipal storm drain systems that would otherwise discharge to the Lagoon is diverted to these facilities. Together, these facilities have the ability to capture up to 8 acre feet of runoff and treat it through filtration and disinfection at a rate of 1,400 gallons per minute. Filtration has the dual benefit of reducing the sediment loading while simultaneously removing nutrients that would otherwise be conveyed with the sediments. Instead this treated water is stored until it is used for irrigation of Legacy Park and not discharged to the Creek or Lagoon. Only in limited instances is treated water discharged. Once again, it would be more prudent to

[1] California Coastal Commission Item w6a Staff Report 9/29/10 for 10/13/10 Hearing on Application 4-07-098. http://www.malibucity.org/index.cfm/fuseaction/DetailGroup/navid/550/cid/18117/

address this 303 (d) listed sediment impairment and eliminate the new nutrient targets with a program or mechanism other than a TMDL.

Since many macroinvertebrates have life cycles of a year or more and are relatively immobile, macroinvertebrate community structure generally is a function of past conditions in the specific waterbody[2]. It is then reasonable to assert that any past listing of the Malibu Lagoon for benthic community effects is based on conditions that may very well be very different now than 1998 (when the impairment was listed). Moreover, these conditions will have likely changed during and after the Lagoon Restoration project and construction of the City's wastewater treatment facility. It is clear that numerous issues and hurdles are imminent in implementation of the proposed TMDL. However, bear in mind that the draft TMDL is quite onerous in this tough economic climate, and these perceived impairments may be effectively mitigated through mechanisms other than a TMDL. There is no guarantee that the draft TMDL's proposed (waste) load allocations will achieve water quality standards for nutrients and sediment, let alone benthic macroinvertebrates.

B. **Malibu Creek sediment/siltation should be removed from this draft TMDL and should be moved to the Category 4B for 303(d) listings being addressed by an action other than a TMDL**

With respect to targets for Malibu Creek sediment/siltation in the TMDL, this listing should be addressed with a mechanism other than a TMDL and be moved to Category 4B. There are extraordinary circumstances that need to be considered. The Malibu Creek Watershed contains mostly undeveloped mountain areas, large acreage residential properties, and many natural streams reaches[3]. More than 75% of the Malibu Creek watershed is undeveloped land (open space) consisting primarily of chaparral, scrub, and woodlands, with smaller areas of grasslands and forests. Runoff from these areas contributes nutrients to the waterways in both particulate and soluble forms. Particulate forms generally predominate and are introduced through the erosion of soils that contain organic litter from the overlying vegetation[4]. As recognized by the two citations above, this watershed is highly *undeveloped.*

There is not sufficient information, and the City is not currently aware of any comprehensive studies in Malibu Creek, regarding sediment to demonstrate the sediment/siltation generated in the creek is of unnatural or even controllable sources. As a result, the scientific basis necessary to establish the water quality based controls through a TMDL is insufficient. In general, sediment loading is primarily due to natural sources from the steep and naturally erosive canyons and slopes in this relatively undisturbed watershed. Developed areas within this watershed are suburban and often very low-density, single family residences, and not massive-scale, large-acreage tract home construction projects that would cause sediment/siltation impairment.

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[2] U.S Environmental Protection Agency (USEPA). 2002. Consolidated Assessment and Listing Methodology: Toward a Compendium of Best Practices. Using Biological Data as Indicators of Water Quality. Chapter 5.

[3] State Water Resources Control Board. 2006. California's Critical Coastal Areas: State of the CCAs Report.

[4] USEPA. 2003. Total Maximum Daily Loads for Nutrients Malibu Creek Watershed. Pg 29.

Rindge dam construction was completed in 1924. It took a mere 25 years (by 1950) to be filled with sediment- well before the development of this watershed, which began over a decade later in the late 1960s. Since the USACE has been studying that dam for years in anticipation of removing it, that agency is likely to have sediment loading information. Any information from that project and related studies should have been considered while developing the draft TMDL. However, there is no reference in the TMDL to any USACE work. In addition, the US Army Corps of Engineers (USACE) has been working with other area agencies on a project to remove the Rindge Dam in this creek. Doing so would release the historic sediments trapped behind the dam. The disruption of the creek conditions during and post project will have unknown and potentially long lasting effects for which municipal governments not participating in the project should not be held responsible. The City therefore requests that the USEPA consider addressing this alleged impairment in the Malibu Creek in a mechanism other than a TMDL.

Notwithstanding the above comments and recognizing the requirements of the consent decree governing this area, if the USEPA determines that a TMDL is still necessary and the USEPA cannot move the listings to Category 4B, the City provides the following Additional Comments on the draft TMDL:

1. General Evidentiary Concerns

   Some of the key assumptions and facts cited to support the current pollutant allocations are not supported by evidence. Throughout the draft TMDL, the analysis appears to weigh unsupported opinions greater than scientific data. For example, in choosing reference streams, the TMDL cites Heal the Bay's biologic analysis of Solstice Creek when it supports USEPA's choice to use Solstice Creek as a reference stream for biologic integrity (Section 8.1.3), but the TMDL discounts Solstice Creek nutrient data citing Heal the Bay's unsubstantiated interpretation that existing development disqualifies Solstice Creek as a reference stream for nutrients (p. 7-14; opinion regarding the occurrence and impact of a leaky septic system). A similar preference for non-peer reviewed Heal the Bay observations was used in the TMDL to disqualify upper Las Virgenes Creek as a reference stream for nutrients (p. 7-15; opinion regarding the presence and impact of unstable stream banks and illegal dump sites). The TMDL also lacks references to new studies and data developed since the 2003 Nutrient TMDL was created. The 2003 TMDL specifically identifies follow-up nutrient diffuser studies that were undertaken in 2002, with the expectation that the final results would be available in 2003, after the release of the 2003 TMDL. The 2003 TMDL specifically states the study was expected to provide more definitive data regarding the relationship between nutrients and algal impairment. This draft TMDL relies on revised interpretations of that old data, and does not utilize the outcomes of new data for support.

   The draft TMDL also reached conclusions without considering which stressors are the predominate factors that cause low IBI scores or lower than expected numbers on inventories. Multiple factors play a role in ecological response. There remains significant scientific uncertainty as to whether natural conditions or anthropological factors govern attainability of the desired TMDL targets. The document lacks analysis of whether controllable actions would actually improve IBI scores.

2. Implementation

The record for this draft TMDL does not appear to recognize the practical impacts of this TMDL and the significant economic impacts the targets assigned to each constituent will create. During the public workshop held on January 14, 2012, Region 9 staff suggested that responsible agencies should not be overly concerned about the practicability of attaining compliance with the new TMDL's water quality targets because ultimately the implementation plan will provide long timeframes for compliance. This point of view is simply naïve. Water quality targets for each constituent in an adopted TMDL are applied by RWQCB to many individual and general permits for specific discharges preceding the development of TMDL implementation plans. MS4 permittees must spend millions of dollars in attempts to comply with these targets, while the targets ultimately may prove to be unattainable. Thus, the prospect of a long-term TMDL implementation plan does not resolve the City's concerns about economic impacts and feasibility of the meeting the objectives.

3. Load Allocations For OWDS Should Not Be Expressed As Concentrations

Concentration-based load allocations for nutrients from OWDS should be replaced by mass-based loadings. Concentration-based allocations create the impression that it is necessary for every OWDS in the watershed to produce the same exact level of effluent quality in order to protect aquatic life. In reality, individual OWDS actually contribute different nutrient mass loads to the receiving surface waters depending on site conditions, discharge quantity, effluent waste strength, and contaminant migration pathways. Risk-based onsite wastewater management would prioritize various OWDS type and use area categories for implementation of additional controls according to the categories' fractional mass load contributions. This is why the 2003 nutrient TMDL states that, "[t]he highest priority for implementation is to ensure that discharges from commercial septic systems do not cause nutrient discharges to surface waters, particularly in the Malibu Lagoon area." Ultimately, prioritization of various OWDS type and use area categories according to the degree of environmental risk and the cost effectiveness of nutrient load reductions is the only appropriate approach to implementation of additional control measures. Lastly, and perhaps most significant, is the fact that it's simply not technologically feasible for OWDS to achieve the concentration based load allocations shown in Table 10-5 of the draft TMDL.

4. OWDS Nutrient Mass Loading Estimates Are Flawed

In 2002 the City issued comments on the draft nutrient TMDL (adopted in 2003) for Malibu Creek and Lagoon. The City endeavored to have the USEPA correct its source assessment for OWDS with respect to a number of erroneous assumptions made in the underlying technical study by Tetra Tech. The most problematic assumptions were concerning the locations, numbers, and types of OWDS in the Malibu Civic Center area (or in the Malibu Lagoon subwatershed). USEPA dismissed the City's comments, suggesting that when the City's risk assessment study was completed, the situation could be re-examined. While the current draft TMDL has acknowledged several pieces of new information, the fact remains that the influence of OWDS on surface water quality, as affected by their locations, numbers, and types, is not known to a level of accuracy that justifies the OWDS source identification (assessed nutrient loadings), nor the OWDS load allocations, incorporated in this draft TMDL.

In particular, the City continues to note the following critical deficiencies in the Tetra Tech 2002 OWDS source assessment which forms the basis for this draft TMDL's OWDS load allocations.

a. The total number of OWDS in the watershed and in the City should have been updated in accordance with *Risk Assessment of Decentralized Wastewater Treatment Systems in High Priority Areas in the City of Malibu, California* (Stone Environmental, 2004).

b. Wastewater flows from existing OWDS in the City should have been updated in accordance with *Hydrology Study of Cumulative Impacts for the Civic Center Area, Malibu, California*. Final Report. (Stone Environmental, McDonald Morrissey Associates, and Earth Consultants International; 2010).

c. Failure rates of septic systems and contribution of nitrogen and phosphorus from failed and short-circuited septic systems should be updated using information from the Stone Environmental 2004 OWDS risk assessment report.

d. There is insufficient documentation of the calibration approach and the basis for the assumptions regarding percentages of nutrients from failed, short circuited and commercial systems.

e. Page 34 of the 2003 nutrient TMDL summarizes the inaccurate information described above. Due to the above mentioned flaws in the estimation of these baseline numbers, Tables A-1 and A-4 references to septic systems are not accurate.

Furthermore, the following critical deficiencies exist in the RWQCB 2009 spreadsheet model (Lai, 2009; cited in TMDL report) forming the basis for the draft TMDL's OWDS source analysis:

a. The RWQCB's CSTR spreadsheet model is not available for review (i.e., the equations, model parameters, and input values are included in the RWQCB publication);

b. The RWQCB's "validation" of the CSTR spreadsheet model results ignored the contributions of stormwater runoff, golf course fertilization, Tapia discharge, etc. to the total nutrient concentration measured in Malibu Lagoon. This is a serious error that leads to inflated estimates of OWDS' nutrient discharges.

c. The spreadsheet fails to consider the degree to which, historically, nitrogen concentrations in Malibu Lagoon have increased as a result of entrapment of fine sediments.

d. Malibu Lagoon mixing dynamics may improve with the Lagoon Restoration Project, with shorter residence times affording better mixing with greater attenuation of nutrient concentrations than represented in the RWQCB model. See also Malibu Lagoon Restoration comments below.

e. The trend lines in the chart shown on Figure 5-1 of the TMDL report are not labeled properly making the chart difficult to review;

f. The RWQCB's model-based estimates of OWDS nutrient discharges exceeded TMDL load allocation values. However, these calculations do not prove that OWDS discharge

results in excursions of the previous TMDL numeric target as suggested in the TMDL text.

g. Finally, it must be noted that during the RWQCB's 2009 Malibu Civic Center OWDS Prohibition proceedings, the City of Malibu commented to the RWQCB and objected to the analysis and findings of Technical Memorandum #4.[5] The proposed TMDL's source identification analysis of OWDS is heavily reliant on this same flawed technical memorandum.

5. (Waste) Load Allocations Should Apply Only to Major Stressor Sources

OWDS were not identified as a major stressor sources in Section 9.2.2 of the TMDL; yet, the draft TMDL assigns a specific load allocation to them. OWDS should not be given a specific load allocation unless technical analysis has shown them to be a significant source relative to major stressors to aquatic life.

6. TMDL Does Not Consider Effects of Malibu Civic Center OWDS Prohibition

Under the terms of the RWQCB's 2009 Civic Center OWDS Prohibition, and the subsequent 2011 Memorandum of Understanding between the RWQCB and the City, impacts from onsite wastewater discharges from the Malibu Creek and Lagoon contributory areas within the City will be eliminated in phases between 2015 and 2025. These regulatory mechanisms have already been put into place in order to eliminate potential impacts from OWDS discharges from the Malibu Civic Center area to Malibu Lagoon. Therefore, the portion of the OWTS nutrient load allocation established based on the OWDS source analysis for the Civic Center area drawn from the 2003 TMDL's is based on outdated information and should be deleted from the current TMDL.

7. TMDL Does Not Consider Effects of Malibu Lagoon Restoration

As mentioned above, according to the project description itself, the Restoration Project is intended to improve circulation, increase tidal flow, and enhance habitat diversity[6]. Thus, Malibu Lagoon mixing dynamics are intended to improve with the Lagoon Restoration Project, with shorter residence times affording better mixing with greater attenuation of nutrient concentrations than represented in the RWQCB model. As a result of the project, sediment ecology (O/E, IBI scores, species diversity) is changing, in particular due to the removal of the highly anoxic nutrient enriched sediments. The baseline of the Lagoon has been altered from when this impairment was first considered.

The TMDL's assumption (based upon comparisons to other natural coastal estuaries) that a doubling of the Lagoon species and richness could be attainable is also improbable. The systems compared to Malibu Lagoon were not comparable, as they had minor physical repairs with

[5] http://www.malibucity.org/download/index.cfm/fuseaction/download/cid/15865/; http://www.malibucity.org/index.cfm/fuseaction/DetailGroup/navid/493/cid/15819/

[6] California Coastal Commission Item W6a Staff Report 9/29/10 for 10/13/10 Hearing on Application 4-07-098. http://www.malibucity.org/index.cfm/fuseaction/DetailGroup/navid/550/cid/18117/

smaller increases to tidal flushing. The 2013 "baseline" benthic species counts for Malibu Lagoon are essentially all "zero," since the entire habitat was graded and disturbed. Projection of an attainable numeric response 10 or 25 years from now must be delayed at least until the 5-year post-construction project evaluation can be completed. Therefore, the City requests that the species diversity target of 35 in the Lagoon be removed, as there is no basis for that target and the baseline used is no longer valid.

Similarly, any listing, reference or comparison used for chemistry, sediment, eutrophication, algal cover or benthic community effects from before the Malibu Lagoon Restoration Project should no longer be used as a valid reference point.

The TMDL must, but does not, consider the Southern California Coastal Research Project's relevant research: *Sediments As A Non-point Source of Nutrients to Malibu Lagoon, California* prepared by Martha Sutula, Krista Kamer, Jaye Cable (SCCWRP Report to Los Angeles Regional Water Quality Control Board) - November 2004. [7]

The above mentioned SCCWRP study attributes degradation in Malibu Lagoon to these artificially created hydrological features, and characterizes the resulting entrapment of fine sediment as the main driver of the Lagoon's habitat health since 1983. The draft TMDL did not analyze the significance of State Parks' role in the 1983 hydro-modifications and the resulting water quality and ecological outcomes. Chemical, sediment, and nutrient inputs were chosen by the USEPA as the predominate stressors and attributed to a series of anthropogenic sources including but not limited to treated sewage, OWDS, land development, and construction of Pacific Coast Highway. Whereas, the draft TMDL document fails to fully analyze the significance of the ecological response to the State Parks' 1983 attempt to restore the site to a natural ecosystem without success. The TMDL text refers to hydro-morphological influence on Malibu Lagoon sedimentation and ecology on Page 9-20,

> *"The strength of the evidence supporting the causal pathway between increased sedimentation and reduced habitat quality leading to biological impairment is strong. Therefore, the complete causal pathway between altered hydrology and biological impairment is supported by the evidence."*

Yet, the draft TMDL source analysis, linkage analysis, and load allocations fail to thoroughly consider the hydro-morphological impacts from the 1983 creation of the three artificial channels in the Lagoon. At a minimum, the TMDL should acknowledge that the primary cause of ecologic changes leading to listing in the first place may be this 1983 anthropological change to the Lagoon's size and shape. The USEPA provides a reference system rationale to try to explain why doubling of the Lagoon species and richness is attainable. However, expectations that the 1983 modifications to the Malibu Lagoon, or the newly engineered Malibu Lagoon, will ever compare favorably to other natural systems which lack the same localized physical constraints is unrealistic. Protection of aquatic life in Malibu Lagoon can be better achieved through working with State Parks to control activities on those parklands, rather than imposing additional or new (waste) load allocations for perceived or alleged stressor sources. In summary, the critical uncertainties surrounding efforts to define realistically attainable biological targets for Malibu Lagoon, and the practical consequences of

[7] http://www.malibucity.org/index.cfm/fuseaction/detail/navid/493/cid/18446/.

proceeding to define these targets despite those uncertainties, are essentially ignored in the TMDL document.

The draft TMDL document also cites Ambrose et al. (1995), which notes that the distribution and abundance of floating species in the water column was influenced by the transitory and shallow environment of the Lagoon. RWQCB is cited as stating the source of the benthic community effects in the Lagoon impairment is the hydromodification (page 2-8). Yet, the TMDL draw conclusions and projections without citing the impacts from hydromodification in the Lagoon restoration project.

8. Choice of Reference Conditions

Use of Lachusa and Solstice as reference streams is nonrepresentative of natural background conditions in the Malibu Creek Watershed. Streams within the Malibu Creek Watershed, such as Las Virgenes Creek and/or Chesebro Creek, should be used as these share similar characteristics (i.e., Modello formation geology, degree of development).

Reference streams must have the same environmental characteristics as the regulated watershed – especially with respect to the noted primary stressors. This is not the case in Solstice or Lachusa for primary stressors such as geologic inputs, conductivity (ionic salt content), metals, soil composition, natural impervious coverage, sediment uplift and denudation and temperature variability (page 7-5). Lachusa is an extremely small watershed with few similar characteristics to the Malibu Creek tributaries. The Soltice Creek watershed has more potential development influence than either Cheseboro or Upper Las Virgenes.[8] Solstice Creek Park is used heavily by the public, has many trail crossings, stream bank alterations, paved and dirt roadways, visitor kiosks and other development with onsite wastewater inputs. Yet, it has some healthy habitat because it does not have the other stressors of Malibu Creek watershed. These factors did not prevent Solstice from being listed as a reference, so EPA should also consider candidate reference streams like Cheseboro and Upper Las Virgenes, which have more similar characteristics. Note that the 2003 TMDL provided rationale for using Upper Las Virgenes as reference and came to a higher target values for background conditions based upon a more appropriate reference site (See Page 20/21 of 2003 Nutrient TMDL).

9. Open Space Agencies must be included and considered responsible parties to the TMDL

The authors incorrectly state that as of 2010, the entire watershed is covered by a municipal stormwater permit (except Caltrans) and assumes that municipalities have control over the other 50% of the watershed that is parkland (Jurisdictions 4.2). Municipalities have no control over the management and development decisions made by the National Park Service, Santa Monica

[8] Sedimentation rates from natural geology and wildfire in Malibu Creek watershed are high but discounted throughout the draft TMDL. Beginning with Section 4.4, the document notes that uplift and denudation rates in the Santa Monica Mountains results in sediment yields that are noticeably greater than yields from surrounding portion of southern California and even from watershed to watershed in the Santa Monica Mountains, which varied as much as 5,000 tons per square kilometer per year in marine sediments of upper Malibu Creek to 1,000 tons in Solstice and Lachusa. Soil infiltration rates and slopes are also significantly different between the selected reference watersheds. These factors were discounted and the draft TMDL implies that increased development is the sole stressor on chemistry, benthic effects, sedimentation, and stream flow response to large and small storm events.

Mountains National Recreation Area, State Parks, Santa Monica Mountains Conservancy, or the Mountains Recreation and Conservation Authority. Thus each agency should be specifically named as a responsible agency in the Malibu Creek watershed TMDLs for all properties under their management. These open space agencies are not subject to either the Phase I or Phase II NPDES MS4 non-traditional permits. The draft TMDL fails to adequately evaluate and consider potential impacts from parkland management activities and intense public use of the natural areas as a potential causal effect. On page 1-4, the draft TMDL notes that nearly half of the watershed is parkland or conserved land; but the document fails to acknowledge the impact these lands have on sedimentation, runoff, use of irrigated water, roadways whether paved or graded soils, creek bank destabilization of trail cutting and intense use by hikers, bikers, and equestrians. Significantly, the draft TMDL document also fails to note that the second highest annual nitrogen and phosphorus loadings come from undeveloped lands, including from chaparral and coastal sage scrub on parklands. [9] Thus, these agencies' impacts must be considered.

10. Index of Biological Integrity

Index of Biological Integrity (IBI) scores were used, in part, in the draft TMDL to document the current biological integrity of Malibu Lagoon. IBI scores for an estuary are affected by salinity. The Malibu Lagoon salinity is highly variable and at times substantially lower than other estuaries which the IBI scoring methodology is based. The lagoon size is much smaller than historically noted and it remains closed much of the year, except during the winter when ocean influences breach the sandbar and Creek flows help maintain the opening. This had led to decreasing salinity or, at times, greatly fluctuating salinity which has disturbed efforts to restore the Lagoon[10].

The City of Malibu commissioned the United States Geological Survey (USGS) to conduct a study called "Sources of Fecal Indicator Bacteria and Nutrients to Malibu Lagoon and Near-Shore Ocean Water, Malibu, California" in July 2009 and the final report was published in September 2012. Several testing methods were used to provide for multiple lines of evidence. Some of the methods included sources of freshwater from groundwater or imported water, and also included salinity data that may be useful to Region 9's efforts. Data showed that ocean water entering Malibu Lagoon during high tide has higher salinity than lagoon water. As a consequence, ocean water is denser and will tend to sink to the bottom of the lagoon stratifying water in the lagoon by density[11]. Therefore, overall salinity may be highly variable in this system, and may affect biota differently in different areas of the lagoon. Access to this information, through a web link as well as direct access to the researchers, was provided to USEPA by the City during comments on an early draft of the TMDL (email from Jennifer Brown to Cindy Lin on October 22, 2012). However it does not appear that this information

[9] USEPA. 2003. Total Maximum Daily Loads for Nutrients Malibu Creek Watershed. Citation specifically to statements made by Tetra Tech on pages 43 and 65.

[10] State Water Resources Control Board (SWRCB). 2006. California's Critical Coastal Areas: State of the CCAs Report.

[11] P. Martin of U.S. Geological Survey (USGS). 2009. Preliminary Summary Letter Regarding Cooperative Water-Resources Study. Malibu, California.

been considered in this draft TMDL, as the primary references to USGS are flow gage data, and not Lagoon water quality monitoring. The City requests that the USEPA consider this data before approving this TMDL.

11. Use Attainability Analysis

The City desires to make progress toward reaching attainable goals. In other words, if there are significant problems, the City will play an active role in fixing the problem. But, the definitions of "impairment" and the water quality "targets" the ensuing implementation measures are intended to must reflect technologic practicability and economic realities. According to the USEPA's Use Attainability Analysis (UAA) web page, UAAs may be conducted prior to, concurrently with, or after the development and implementation of a TMDL. UAA is an essential part of the regulatory process establishing water quality objectives for this waterway, and the UAA must be completed prior to implementation of the current TMDL.

Under provisions of 40 CFR §131.10(g), states may use a UAA to remove a designated use which is not an existing use, as defined in §131.3, or establish sub-categories of a use if the state can demonstrate that attaining the designated use is not feasible. The draft TMDL does not, but should, recognize that there are multiple ways to define "protection of aquatic life." The biological objectives USEPA is striving to meet with this TMDL may be ideal in the context of protecting existing high-quality streams. However, the costs of TMDL implementation, relative to the choice of water quality targets expressed in the draft TMDL, far outweigh the benefits of attempting to achieve "wilderness-like conditions" in a waterway like this, where the level of biologic diversity has already been established for species better suited to challenging natural background conditions and/or subtle influences of the limited built environment.

Furthermore, the State is currently in the process of establishing state-wide biological objectives that take into consideration some of the points mentioned above (specifically, applicability to conservation of existing high quality streams versus restoration of altered streams or unique environments). It would be premature for the USEPA to assign biological objectives ahead of State action. With respect to the State's regional water quality objectives, the attainability of the objectives, given economics and all other factors which affect water quality in area, must be considered in the overall process of establishing the objectives. This is a legal requirement under Section 13241 of the Water Code, and the USEPA should wait to establish any objectives until after this analysis has been completed.

To our knowledge, there are no wastewater or stormwater treatment technologies currently in existence that, if implemented in the Malibu Creek Watershed, would restore the watershed streams and lagoon to the level of environmental quality specified by the proposed TMDL targets. Based on the City's review of the evidence, even in absence of all anthropogenic sources, the natural background conditions in the Malibu Creek Watershed would preclude the creek and lagoon from ever meeting the targets. USEPA Region 9 must account for these facts before establishing these unattainable "targets" for regulatory compliance.

12. Report Recommendations

The following are recommendations that should be considered and reflected within Section 11 of the TMDL report.

The data used to support the draft TMDL is insufficient to justify new targets and allocations for total nitrogen, total phosphorus, and biological diversity. Based on the above comments, the USEPA should wait to establish enforceable targets for biologic diversity until adoption of the impending statewide biological objectives policy. However, given Region 9's obligations under the consent decree, we understand this TMDL may have to be adopted before the statewide biological objectives policy is completed. Thus, given the significance of state policy options for considering economic and use attainability factors in setting these objectives, the USEPA should establish only interim targets for the TMDL at this time. The interim targets should be reconsidered upon the adoption of the state's policy to set the appropriate and feasible final targets and allocations.

Additionally, EPA has an opportunity now to benefit from the experience of a study that can validate many parameters of the TMDL affected by geologic influences. A team of highly qualified scientists from the United States Geologic Survey (USGS) have developed a watershed model, SPARROW (SPAtially Referenced Regressions On Watershed attributes) -- a nationally recognized decision support system used in all regions of the US. SPARROW can provide better estimates of total nitrogen and phosphorus loads in surface waters from point and nonpoint sources. The State Water Resources Control Board has been working with the USGS SPARROW team to increase the geologic influence on water quality analysis in California. The USGS SPARROW team has added Malibu Creek watershed as one of its water quality calibration sites in California. The USGS researchers are particularly interested in outlier conditions such as Malibu Creek. The model is a valuable tool because it can provide data that is missing in the current analysis, such as how the constituents move from land, to water and affect downstream conditions. The model also evaluates other potential sources, like air deposition, that were not considered in this TMDL as a potential stressor.

The draft TMDL is missing this critical analysis needed for reliable stressor evaluation. Relying only on the water quality analysis and biological assessments on a site-by-site and reference stream basis reduces the certainty of the recommendations. All available water quality results have been supplied and the SPARROW team recently finished the calibration for nitrogen and will soon complete the calibration for phosphorus and will begin the interpretation soon after. The team in California is lead by Joseph Domagalski in Sacramento who can be reached at 916-278-3077. EPA, SWRCB and RWQCB, and all responsible agencies should join in an effort to apply the SPARROW model to the Malibu Creek watershed for a more complete scientific analysis before any TMDL targets are applied.

In conclusion, all of these comments can be simply summarized as follows. As explained at the beginning of this letter, Malibu has provided substantial evidence for removing Malibu Lagoon and Malibu Creek sediment/siltation from this draft TMDL to Category 4B. Nevertheless, the City has also gathered and provided substantive comments on the draft TMLD itself that must

be considered before the TMDL is adopted. Given these important and highly technical issues that remain, the USEPA should delay in adopting this TMDL until this issues can be reviewed and resolved. At minimum, the new TMDL objectives should be delayed until at least two events occur (1) a valid watershed model can be applied to Malibu Creek to evaluate geologic influences and (2) the ecological effects of the current Malibu Lagoon restoration project can be evaluated in five years. USEPA should also wait to establish enforceable targets for biologic diversity until adoption of the impending statewide biological objectives policy. In the event that the EPA is compelled to adopt the TMDL before the State has adopted its policy, the USEPA should establish only interim targets for the TMDL at this time. The interim targets could then be reconsidered following the above-mentioned events and appropriate and feasible final targets and allocations could be set.

The City of Malibu appreciates the opportunity to provide comments on the draft TMDL document. If you have any questions about these comments please contact Dr. Andrew Sheldon on our staff at (310) 456-2489 or asheldon@malibucity.org.

Sincerely yours,

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