Fax

Questa Engineering Corporation
319 East Sola Street; Suite B
Santa Barbara, California 93101
V: 805-966-2774
F: 805-966-2708
E: bdouglas@questaec.com

To:	Terrence Fleming, USEPA	From:	Bruce Douglas
Fax:	415-947-3549	Pages:	8
Phone:	(415) 972-3462	Date:	February 11, 2003
Re:	Nutrient TMDL for Malibu Creek Watershed (1/10/03 Draft)	CC:	Katie Lichtig; Vic Peterson; Rick Morgan; Larry Young; Rod Collins

☑ Urgent ☐ For Review ☐ Please Comment ☐ Please Reply ☑ For Your Use

Dear Mr. Fleming,

We are pleased to provide comments on behalf of the City of Malibu. Larry Young, the City of Malibu's Environmental Health Specialist and I collaborated with Victor Peterson, City of Malibu Building Official to develop these comments. We appreciate the effort that the United States Environmental Protection Agency – Region 9 (USEPA) has made to develop Total Maximum Daily Loads (TMDLs) for nutrients 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. We were grateful that you came down to Malibu last week for a frank discussion of the TMDL process and answer questions. We are filing a separate comment on the Bacteria TMDL for Malibu Creek Watershed.

However, we have serious concerns that the process has been short-changed by the rush to meet the consent order deadline. The City of Malibu is concerned that if septic systems are incorrectly characterized as a source of nutrients then the TMDL process will be seriously flawed and recommendations will be misdirected. Furthermore, since this TMDL will be generated by the USEPA, they will hold a certain level of respect and authority. We feel that the document should be edited to include additional facts that we are providing and, where appropriate, to 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 the following sections, the enclosed comments are focused on the contribution of septic systems in the following sections of the TMDL:

1. Source Assessment (Section 3);
2. Pollutant Allocation and TMDL (Section 5);
3. Implementation Recommendations (Section 6); and
4. Monitoring (Section 7).

Omission of comments are not intended to imply concurrence with the TMDL, only that the short timeframe allowed for comment on the TMDL, has limited the scope of our comments. Please do not hesitate to contact me or the City officials copied on this letter below if you have any questions.

Respectfully yours,

Bruce Douglas
Senior Project Manager

The City of Malibu's specific comments on the Nutrient TMDL are as follows:

1. Section 3 Source Assessment - Septic Systems.

Under "Source Assessment," regarding "Septic Systems," the assumptions made are mostly erroneous and, therefore, the TMDL allocations which follow are not based on facts as described below:

On page 26 first paragraph, the following statement is made: "The total number of septic systems in the watershed was estimated at 2,300 in the mid-1990s (NRCS, 1995)." While it is true that most of Calabasas, and much of Agoura Hills is sewered, the remainder of the watershed, i.e. the Los Angeles County part, is still unsewered. This includes the County part of Calabasas, Agoura, Lake Sherwood, Malibu Lake, Monte Nido, and all of Malibu. Clearly, there is likely to be considerably more than 2,300 septic systems in this area.

EPA RESPONSE: *No new information has been provided for EPA to modify our estimate of the number of septic systems in the Malibu Creek Waterhsed. The Tetra Tech report provides an additional line of evidence for the estimate of 2,400 total septic systems in the Malibu Creek watershed, which is data from the LVMWD on the number of customers who do not receive sewer bills (page 7-19 of Tetra Tech report). We encourage the City to provide any new information to the Regional Board for its use in developing implementation measures for the TMDL, or in future iterations of the TMDL.*

In the second paragraph on page 26 the statement that: "The City of Malibu has about 6,000 septic systems , of which about 200 are estimated to be with in the water shed boundaries based on information compiled by the Regional Board (LARWQCB, 2000). An estimated 70,000 to 80,000 gallons per day of septic effluent per day are discharged from 20 commercial septic systems in shopping centers and commercial areas in the vicinity of Malibu Lagoon. Several hundred thousand gallons per day are estimated to be discharged from private residences in the Malibu area of the lower watershed (LARWQCB, 2000)." This characterization is not supported by any facts and is contrary to the more detailed available data described below.

EPA Response: *This information is from citation notes above titled "The Regional Board Report on Wastewater Disposal Issues and Malibu Technical Investigation in the City of Malibu".*

It is acknowledged that phosphorus does not move great distances in the subsurface. The only commercial septic systems within 300 feet of Malibu Creek are located on the east side of Cross Creek Road. These include septic systems serving Cross Creek Shopping Center, 23351-61 Pacific Coast Hwy., and 3822-96 Cross Creek Rd. There are no multiple-family septic systems within 300 feet of Malibu Creek. The Adamson House currently utilizes a holding tank for wastewater and therefore does not discharge to the groundwater. There are no other discharging commercial septic systems, or multiple family septic systems, within 300 feet of Malibu Lagoon. (Young, 2003).

EPA Response: *The claim here is that we overestimated the impact of phosphorous loadings from septic systems. This information was not available to EPA at the time of this report. If indeed is shown that we have overestimated the phosphorous loadings then this information can be incorporated into a future model updates or TMDL revisions. The net effect of any potential overestimate of the source loadings would be that the reductions needed to implement the allocations would be less than indicated in the TMDL. The TMDL decision identifies the percent reductions for information only; they are not part of the formal decision to establish particular TMDLs, wasteload allocations and load allocations.*

The City of Malibu (Malibu) has been working with the LARWQCB since September of 2001 on the issue of developing a fact-driven understanding of the sources of nutrients, particularly nitrogen in the lower Malibu Creek Watershed. Malibu is implementing the project entitled, "Risk Assessment of Decentralized Wastewater Treatment Systems in High Priority Areas in the City of Malibu, California" (City of Malibu, 2001).This project is funded under Proposition 12 through the Santa Monica Bay Restoration Project (SMBRP) and the California Coastal Conservancy. Within this project, the City of Malibu is conducting a risk assessment to evaluate environmental impacts of current onsite wastewater management practices. This project has been specifically designed to accurately characterize the impact of septic systems on groundwater in the lower Malibu Creek and Malibu Lagoon watershed.

Data was submitted to the RWQCB in an interim report entitled: Malibu Preliminary Conceptual Model, prepared for the SMBRP and dated December 4, 2002, that should be cited in this TMDL. The TMDL unit of the Los Angeles Regional Water Quality Control Board had a draft of this report and provided comments in September of 2002. This report includes an estimate of permitted flows as shown in Table 2 (attached). This recent estimate is based on a parcel-by-parcel assessment of current land use. The City of Malibu is currently working with Los Angeles County Department of Public Works, Water District #29 to retrieve water level meter reading data on an area basis. The risk assessment project will also develop the first comprehensive water table map of the lower Malibu Creek Watershed in the City of Malibu to identify which septic systems are contributing to the Creek and Lagoon as well as to see if the Creek and Lagoon are discharging to groundwater at any time during the year. This investigation will allow us to develop an understanding of actual flows in the Lower Malibu Creek and Malibu Lagoon watershed and provide a fact-driven basis to objectively address the impacts of septic systems on the creek and lagoon.

EPA Response: *The text of the EPA TMDL has been modified to include a reference to this study. We encourage the Regional Board to incorporate this new additional data as appropriate if and when they revise the TMDL. New data that has become available may be incorporated into future updates of the model.*

The conceptual model report estimates that there is approximately 68,000 gallons per day of commercial and multifamily indoor water use from 25 septic systems in the alluvial aquifer in the vicinity of Malibu Creek and Malibu Lagoon. It should be noted that the groundwater beneath all of these systems is not likely to be flowing in to the Creek and Lagoon. There is an additional estimated commercial flow of 34,000 gallons per day discharging into the bedrock

aquifer and apparently upgradient of the alluvial aquifer near the creek and lagoon, though a considerable distance from the surface waters. All residential systems in the alluvium and bedrock areas account for an estimated 104,000 gallons per day of recharge to the groundwater in the vicinity of Malibu Creek and Lagoon.

EPA Response: *Again, we will encourage the Regional Board to review these results and incorporate them as appropriate if they revise the TMDLs in the future. These data do not support revision of the individual WLAs and LAs established with the TMDLs.*

2. Failure rates of septic systems and contribution of nitrogen and phosphorus from failed and short-circuited septic systems

The last paragraph on page 26 asserts the following:

- 13% of nitrogen and pathogens is taken up by grass
- 50% of remaining nitrogen for all septic systems is entering the waterway
- 100 % of remaining nitrogen from short-circuiting septic systems is entering the lagoon
- 10% of remaining phosphorus from normally operating septic system is entering the water ways
- 70% of remaining phosphorus from failing septic systems is entering the water ways
- 100% of remaining phosphorus from short circuiting septic systems is entering the water ways

Table 21 on page 27 quantifies these nutrient loads based on these percentages. The summary paragraph on page 27 states:

"We estimate that on an annual basis septic systems contribute about 10% of the nitrogen loadings and 10% of the phosphorus loadings. During the summer season, septic systems contribute about 22 % of the nitrogen and 21% of the phosphorus loadings."

The above percentages (from page 26) were not developed from cited references nor substantiated by EPA Region 9 when requested from USEPA-Region 9, by Bruce Douglas, Questa Engineering Corporation, on behalf of the City of Malibu. (Terry Fleming, Personal Communication, January 30, 2002).

EPA Response*: Please refer to the Tetra Tech report, page 7-19 (data sources and explanation) and page 8-5 (calibration) for a comprehensive discussion of how septics were handled in the model. The values for uptake of nitrogen and phosphorous by grasses is from Haith et al., 1992. GWLF, Generalized Loading Functions, Version 2.0, User's Manual. Department of Agricultural and Biological Engineering, Cornell University, Ithaca, New York. The short-circuited systems were defined as those systems not removing nitrogen. The issue of which systems are short circuiting is a separate one. The other values were derived during calibration of the model. Table 21 presents gross loads before the reductions as listed on page 26. The summary on page 27 gives the loads after calibration. These percentages*

refer to the contribution of nutrients by septics as a percentage of total nutrients loadings to the Lagoon.

The actual phosphorous loading could be less by an order of magnitude from the estimates given which would have a significant impact on the watershed loadings. This is a significant level of error and should be addresses

EPA Response: *We have no data to support the proposition that actual phosphorous loadings are an order of magnitude less than estimated. No new information has been provided to justify changing this estimate. If indeed the phosphorous loads are less than estimated, the amount of load reductions needed would also be less. The allocations themselves would not change.*

The nitrogen loadings need to be refined as we develop a better understanding of flows, system condition, and source areas for the lower Malibu Creek Watershed.

EPA Response: *The nitrogen loadings in this TMDL were based on the best available data.. Any new information should be provided to the Regional Board for consideration in future TMDL revisions.*

The note below Table 21 on page 27 states: "Estimates of septic system failure rates range from 20 to 30% in the Malibu Creek Watershed." At a February 4, 2003 briefing on these draft TMDLs in Malibu, Rod Collins of the LARWQCB stated that this estimate was from the Warshall Report and input from Los Angeles County Department of Health Services. We feel that there is not justification for using these sources for the purpose of estimating nutrients contribution to Malibu Creek and Malibu Lagoon. First of all the use of these sources was based on the interpretation that repairs of septic systems are equivalent to failures (Rod Collins, Personal Communication February, 2003). Septic systems are often repaired to fix broken or worn-out components, not because they are inadequately treating wastewater. Furthermore, since both of these sources are based on experience in the lower Malibu Creek watershed from 10 or more years ago –before incorporation of the City of Malibu – there is no consideration of the significant advancements in onsite septic system management in the City over the past 10 years. This note on Table 21 repeats the erroneous assumption that the septic systems sited close to Malibu Lagoon are too close to the "high ground water table," and are "short-circuited" when the water in the lagoon rises, as during the winter rain months. It should be pointed out that these septic systems were all approved, and installed under the jurisdiction of Los Angeles County, which required a proven 5 feet separation to groundwater pursuant to the Los Angeles County Uniform Plumbing Code. (Young, 2003).

EPA Response: *The information on number of failing and short-circuited systems was provided to EPA and Tetra Tech by the Regional Board. The modeling was based on data available at the time of the study. The Malibu Technical Investigation (LARWQCB, 2000) showed high pollutant concentrations in shallow groundwater, limited depths of leach fields due to a high water table, and short-circuiting to storm drain pipes. The conclusion was made*

in this report that septic systems sited close to Malibu Lagoon were short-circuited. If the City has evidence which contradicts the assumptions made in the model, we suggest that they provide the supporting documentation to the Regional Board so that this information can be incorporated into future TMDL reviews by the State

Furthermore, Mr. Larry Young was a Senior Deputy Health Officer for the Los Angeles County Department of Health Services in Malibu for 10 years (1981-90), and Environmental Health Specialist for the City of Malibu for 12 years (1991-03). He states: "This rate is certainly not true for the septic systems in Malibu, including the septic systems adjacent to Malibu Creek, and Malibu Lagoon." And yet, no one has ever asked him what the the failure rate for septic systems is, either prior to incorporation, or after (Young, 2003).

EPA Response: *We were not provided with a copy of the memo from Mr. Young. The rates were derived based on conversations with staff from the Los Angeles County Department of Environmental Health (Jack Petralia, personal communication).*

Notwithstanding the above fact that there is no justification for the number of failed septic systems in the lower Malibu Creek watershed, there is no justification given for the amount of nutrients that would reach the surface waters. A review of the Tetra Tech report indicates that it is a draft report that states: "Draft --Please do not quote or cite". Regardless, there is no specific justification of these numbers other than calibration of the model. Calibration of a model based on unsubstantiated data does not improve the quality of the conclusions. Documentation of the calibration approach and the basis for the assumptions of percentages of nutrients from failed, short circuited and commercial systems was requested from USEPA-Region 9 by Bruce Douglas, Questa Engineering Corporation, on behalf of the City of Malibu. (Terry Fleming, Personal Communication, January 30, 2002). It has not been provided.

EPA Response: *The "Draft" label was inadvertently left on the front of the report from an earlier version. In response to the statement 'Calibration of a model based on unsubstantiated data does not improve the quality of the conclusions', we respectfully disagree. On the contrary, calibration is often the only means by which we have to estimate site-specific parameters and data that are uncertain. The purpose of the model is to estimate the loadings to the surface water system based on the agreement between predicted and observed concentrations. If we knew the loadings beforehand, there would be no reason to use this tool. The calibration process is an iterative one, in which loadings are adjusted in a systematic manner until acceptable agreement is reached between predicted and observed concentrations in the streams.*

The same loading from septic systems was assumed year round. There was no consideration of seasonal changes in depths to groundwater relative to wet weather and dry weather conditions. Water tables fluctuate seasonally resulting in potential changes in soil treatment of nutrients, particularly phosphorus.

EPA Response: *Seasonal changes were in fact accounted for all septic systems except for those adjacent to the lagoon (see page 8-6 of Tetra Tech report). Failure rates were set to the maximum rate of 20% during the wettest months and to 2.5% during the driest months, with intermediate values for months in between. These percentages were set during the calibration process. This resulted in an average annual failure rate of about 8 percent. At the Lagoon, septics were not adjusted seasonally because a high groundwater table exists all year round (during summer from impounding of the lagoon and in winter from rains).*

4. Summary of source assessment

Page 34 summarizes the inaccurate information described above as quantified in Tables A-1 through A-4 in the appendix stating that septic systems provide a greater percentage of the load. We feel that due to the above mentioned flaws in the estimation of these numbers, Tables A-1 and A-4 references to septic systems cannot be considered accurate.

EPA Response: *The information in Tables A-1 to A-4 is as accurate as the assumptions that were provided to EPA and Tetra Tech by the Regional Board. We will encourage the Regional Board to incorporate any new information into future TMDL reviews.*

5. Load Allocations

Tables 29, 30 and 31 on pages 39 and 40 have summer and winter allocations for nitrogen and phosphorus by source category. These tables result in large reductions in nutrient loading from septic systems as noted on page 41. Again Malibu's efforts to manage septic systems above and beyond the Los Angeles Regional Water Quality Control Board's requirements should be noted here.

In the last paragraph on page 44 it is stated that: "There is uncertainty in *some* aspects of the TMDL analysis." It appears that based on the foregoing comments, that there is uncertainty in *all* aspects of how septic systems are considered in the TMDL analysis.

EPA Response: *The allowable seasonal loads for nitrogen and phosphorous were developed independent of the source assessment. The reductions in the three tables identified above are based on the estimates of source loadings from the source assessment section. If the City of Malibu has already made significant reductions in these sources it should get credit for these reductions.*

6. Implementing Load Allocations

The first three paragraphs on page 29 discuss implementation of the TMDL. Current requirements for commercial and multifamily septic systems should be mentioned here. Future efforts to implement load allocations should be done in full cooperation with the City of Malibu.

Specifically, in the second to last paragraph of page 45 the following statement is made: "The sites targeted for reduction by the Regional Board are commercial septic systems located in the Malibu Lagoon subwatershed; specifically in the areas of the Malibu Colony Plaza, Cross Creek Plaza, and Malibu Civic Center. These systems have been improperly sited. These

septic systems are located adjacent to the lagoon, in a groundwater table with historic levels that do not allow at least 10 feet between the groundwater and septic system." First, the Malibu Colony Plaza (Malibu Bay Company) septic system is located in Winter Canyon, which is about a mile from either Malibu Creek, or Malibu Lagoon. This septic system is in the approval process for renovation to a tertiary treatment system (i.e. a Xenon filtration system). It has been well established by subsurface geological work in Winter Canyon, that the seepage pits used for subsurface disposal in Winter Canyon do in fact have a 10 feet, or more, separation to groundwater. Secondly, the Malibu Civic Center belongs to, and is under the jurisdiction of Los Angeles County. The drainfield serving the Civic Center was installed pursuant to the Los Angeles County Uniform Plumbing Code, and does have a 10 foot separation to groundwater. The City of Malibu is not responsible for this septic system. This septic system is about ½ mile from Malibu Creek, and more than that from Malibu Lagoon. As noted in item #3 above, the Cross Creek Shopping Center septic system is scheduled for renovation to tertiary treatment in the near future (Young, 2003).

EPA Response: *The Text of the TMDL has been modified to include this information.*

7. Monitoring

The water quality monitoring section on page 47 should include mention of the ongoing risk assessment project as an ongoing special study that is being "…conducted for better certainty in the number of systems and the distribution of systems within the Malibu Creek Watershed." and groundwater elevation and quality monitoring in the lower Malibu Creek watershed that will help define the contribution of septic systems to the creek and lagoon in this area.

EPA Response: *The text of the EPA TMDL has been modified to include this information.*

References:

1. City of Malibu, 2001. Risk Assessment of Decentralized Wastewater Treatment Systems in High Priority Areas in the City of Malibu, California - Work Plan ; prepared for the Santa Monica Bay Restoration Project and California Coastal Conservancy.

2. Los Angeles Regional Water Quality Control Board, 2000; Malibu Technical Investigation.

3. Stone Environmental, Inc, December 4, 2002; Preliminary Conceptual Model; Prepared for the Santa Monica Bay Restoration Project

4. Tetra Tech, Inc.; December 31, 2002; Nutrient and Coliform Modeling for the Malibu Creek Watershed TMDL Studies - Draft; Prepared for US Environmental Protection Agency, Region 9 and Los Angeles Regional Water Quality Control Board;.

5. U.S. Environmental Protection Agency, Region 9; January 10, 2003; Total Maximum Daily Loads for Bacteria in the Malibu Creek Watershed – Public Review Draft.

6. U.S. Environmental Protection Agency, Region 9; January 10, 2003; Total Maximum Daily Loads for Nutrients in the Malibu Creek Watershed – Public Review Draft.

7. Warshall, Peter, and Robert Coats. 1992. Malibu Wastewater Management Study: A Human Ecology Of The New City; Peter Warshall and Assoc. Philip Williams & Assoc.; Prepared for the City of Malibu

8. Young, Larry. February 11, 2003; Memo Regarding: TMDL for Bacteria in the Malibu Creek Watershed.

Table 2: Geographic Distribution of Estimated Wastewater Flows in Study Area

2a. Flows in the Hydrogeologic Model Area

	Estimated Average Indoor Water Use (gallons per day)		
Aquifer	Residential	Commercial/ multifamily	Subtotals
Malibu Pier Beach	0	0	**0**
Malibu Pier Beach Bedrock	0	0	**0**
Malibu Lagoon/Surfrider Beach Alluvial	68,876	67,597	**136,473**
Malibu Lagoon/Surfrider Beach Bedrock	34,882	34,200	**69,082**
Winter Canyon Alluvial	312	67,022	**67,334**
Winter Canyon Bedrock	1,560	8,078	**9,638**
Amarillo Beach	0	0	**0**
	105,630	**176,898**	**282,528**

2b. Flows outside of the Hydrogeologic Model Area

	Estimated Average Indoor Water Use (gallons per day)		
Aquifer	Residential	Commercial/ multifamily	Subtotals
Malibu Pier Beach	0	17,878	**17,878**
Malibu Pier Beach Bedrock	1,902	0	**1,902**
Malibu Lagoon/Surfrider Beach Alluvial	0	0	0
Malibu Lagoon/Surfrider Beach Bedrock	0	0	0
Winter Canyon Alluvial	0	0	0
Winter Canyon Bedrock	0	0	0
Amarillo Beach	7,663	0	**7,663**
	9,565	**17,878**	**27,443**

2c. Total Study Area Flows

	Estimated Average Indoor Water Use (gallons per day)		
Aquifer	Residential	Commercial/ multifamily	Subtotals
Malibu Pier Beach	0	17,878	**17,878**
Malibu Pier Beach Bedrock	1,902	0	**1,902**
Malibu Lagoon/Surfrider Beach Alluvial	68,876	67,597	**136,473**
Malibu Lagoon/Surfrider Beach Bedrock	34,882	34,200	**69,082**
Winter Canyon Alluvial	312	67,022	**67,334**
Winter Canyon Bedrock	1,560	8,078	**9,638**
Amarillo Beach	7,663	0	**7,663**
	115,195	**194,775**	**309,970**

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