

Amendment to the Basin Plan for the Control of Nutrients in Clear Lake Response to Public Comments

The Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) has provided opportunities for the public to submit written comments on the April 2006 Staff Report. This document contains written responses to comments received as of 8 June 2006.

Written Comments received prior to the 5 May 2006 Hearing from:

- A. Chuck March, Lake County Farm Bureau. Comments 1-4.
- B. Robert Lossius, County of Lake, Public Works Department. Comments 5-14

Written comments received by 8 June 2006

- C. Michael Flake, California Department of Transportation. Comments 15-21
- D. Thomas A. Contreras, U.S. Forest Service Mendocino National Forest. Comments 22-25
- E. Robert Lossius, County of Lake, Public Works Department. Comments 26-28
- F. Maria Rea, U.S. Environmental Protection Agency. Comment 29

1. *Comment: It appears that the Regional Board is unnecessarily melding the Interim Irrigated Lands Waiver (Interim Waiver) as a vehicle for the monitoring and reporting of nutrient loading into surface waters flowing into Clear Lake.*

Response: The proposed program avoids unnecessary duplication by taking advantage of an existing regulatory program to implement the Basin Plan Amendment. This is a common practice that has been used with other pollutant control programs that have been adopted by the Regional Board. Dischargers have typically preferred to be regulated through one coordinated program, rather than having to respond to requirements from different programs with overlapping jurisdiction

We have provided alternative basin plan language for Board consideration that would take advantage of the existing watershed/water quality framework that exists in the county. Under this approach, the county would coordinate the program elements and interact with the Interim Waiver program, as needed.

2. *Comment: Agricultural operations subject to the Interim Waiver within the Clear Lake Basin are interspersed with a multitude of other land uses. For instance, it is common to have in one sub area family farms, rural residences with septic tanks, family gardens, aesthetic ponds with high concentrations of wildlife, horse pastures, and other nutrient potential sources. As a practical matter, this makes it financially infeasible and impractical to individually*

evaluate any potential source contributions from our family farms and ranches. We therefore believe that the monitoring and estimations of load content that will be conducted by the County of Lake will include those irrigated agricultural lands currently enrolled as participants in our watershed group.

Response: The phosphorus loading estimates can be done using either monitoring or computer modeling or a combination of the two. In this case computer modeling may be more appropriate. This would reduce the costs associated with estimating loads. The Regional Board has funding for Tetra Tech to estimate the phosphorus loads from the different identified responsible parties. This baseline study will provide the initial information needed for the estimation of source contributions. The loading estimates will need to be updated as practices are implemented to control erosion. Regional Board staff will work with the Farm Bureau to ensure that the results of the Tetra Tech study are available and that the model can be updated as necessary. We are interested in figuring out how to evaluate contributions from all significant sources.

3. Comment: *We have major concerns with this type of program being required for our watershed group as a whole. Many of our members do not farm within the drainage of Clear Lake. We would be presented an unworkable program to separate those growers from ones whose operations do flow into the lake. The management of such a program would not be economically feasible, as monitoring costs would need to be increased to unbearable levels due the limited acreages within the different sub-watersheds of the Clear Lake basin.*

Response: As mentioned in the response to Item #2 above, Regional Board staff has a contract with Tetra Tech to conduct a baseline estimate of phosphorus loading from each source. The requirements of the Basin Plan Amendment could be met by working within this modeling framework. Extensive water quality monitoring likely would not be required unless the modeling approaches do not provide the information needed for us to make reasonable decisions about the algae problems in the lake.

4. Comment: *Lake County's irrigated agricultural lands are interspersed with many rural residential ranchettes that do not irrigate for the purpose of marketing their commodity. Out of 2027 parcels zoned agriculture, over 600 are 5 acres and less. The majority of these parcels and owners are not currently included in our waiver program, as they do not irrigate a commercial agricultural commodity. We see this proposed implementation program as a penalty for those that have worked to stay in production agriculture.*

Response: The implementation program was not designed to be a penalty for any responsible party. The program was designed to work within the existing regulatory framework. See also the response to Item #1 above. We are

interested in all the potential discharges from agricultural lands. However, if we request information under the Irrigated Lands Waiver Program, we would only expect information from lands that are part of the waiver.

5. *Comment: The County's major concern is the information utilized to justify the TMDL does not reflect the current conditions in Clear Lake. The clarity of the lake has increased significantly since 1990*

Response: Lake levels have been average or above average for most years since the early 1990s. The historical monitoring data show that some of the worst algae blooms were observed during drought or below average lake level years. Therefore, until we have a series of low water years, it is premature to assume that the problem has been fixed. Even in this era of relatively few blooms, some years are significantly worse than others and there might not be total agreement that the existing water quality conditions are unimpaired. The proposed Basin Plan Amendment recommends additional studies to define the conditions in Clear Lake that constitute impairment.

6. *Comment: Review of available data collected by the Department of Water Resources (DWR) through 2001 indicated in-lake levels of phosphorus have not changed significantly from the pre-1990 period but the lake is clearer*

Response: Previous research and studies on the lake have acknowledged that there are multiple factors that influence the occurrence of nuisance blooms in the lake. However, all those studies also concluded that phosphorus was one of the factors and that the most reasonable control program was to reduce phosphorus loads. The peer reviewers for the proposed amendment echoed the same conclusion and one recommended that we also look at other factors.

The proposed amendment recognizes the need to continue to look at the other factors that influence algae growth in the lake. It does not require anyone to immediately change practices to accomplish phosphorus reductions. The proposed amendment requires responsible parties to submit to the Regional Water Board information on the practices that are being implemented, an assessment of their effectiveness, estimates of the phosphorus loading, and monitoring in the lake to confirm present conditions. It also recognizes the need for studies to evaluate the roles of other factors in influencing the incidence of nuisance blooms. This information will be used to determine whether any reductions are needed and to verify whether assumptions made in the TMDL are accurate.

The Central Valley Water Board will be considering alternative Basin Plan Amendment language during the June hearing. It states that the phosphorus load and waste load allocations would only apply if the results of the studies

confirmed that phosphorus is indeed the driving factor behind algae growth in the lake. If it were found that there is another cause, the phosphorus load and waste load allocations would no longer apply.

7. *Comment: Without an update of the Clean Lakes Study ...it is difficult to determine whether Clear Lake, a naturally eutrophic lake, is water quality limited and whether a Total Maximum Daily Load is required or that phosphorus limitation will increase the lake clarity.*

Response: Staff agrees that an update of the Clean Lakes study would be useful. Both the original Basin Plan Amendment and the alternative Basin Plan Amendment call for further study to gain a better understanding of the factors that affect algae growth in Clear Lake. In the interim, staff believes that a focus on controlling phosphorus makes sense based on the reasons discussed in #5 and #6 above.

8. *Comment: The Target Report (Tetra Tech Report) also appears to draw erroneous conclusions on when the lake was in "compliance". The Target Report lists the "compliance period" to be between 1985 and 1989 and the non-compliance period to be 1990 and 1992. In reality, there have been significantly fewer nuisance, blue-green algal blooms since 1991. DWR secchi depth data for the Upper Arm of Clear Lake confirm this, with secchi depths averaging 0.9 meters during 1985 through 1990, and averaging 1.7 meters during 1991 through 1992, the "non-compliant" years ... Since 1991, the Upper Arm secchi depth has averaged 2.1 meters. How is a lake with double the clarity of the "compliant" lake "non-compliant"?*

Response: The non-compliant years were 1985-1989 and the compliant years were 1990-1991. Severe algal blooms were documented in 1990 and 1991 (Richerson et. al., 1994), even though Secchi depth measurements during 1991 were higher than previous years. Water clarity cannot be expected to track perfectly with average algae density or modeled chlorophyll values, especially over a short period and with clarity measurements occurring only at monthly intervals. Nuisance algae blooms may only last several days and may occur in patches located away from the established sampling sites. It would be easy to miss a significant bloom if sampling was not conducted at the exact time and location where the bloom was occurring. The simulated chlorophyll-a values during the "compliant" and "non-compliant" years were based on a calibrated water quality model that considered multiple factors such as nutrient cycling, dissolved oxygen levels, mixing and residence time. These values are our best estimate of daily conditions in the lake.

9. *Comment: The Target Report also recommends that chlorophyll-a be utilized in determining whether Clear Lake is in compliance. There is very little historical data on chlorophyll-a levels in Clear Lake, therefore, the models*

used in preparation of the Target Report are unverifiable and we are unable to determine whether the recommended target is appropriate.

Response: Limited chlorophyll-a data do exist for Clear Lake. A study of the algae conducted in 1975 (Horne, 1975) measured chlorophyll-a levels as high as 15,000 ug/L during blooms. The proposed target of 73 ug/L represents an improvement on these conditions. Regional Water Board staff collected chlorophyll-a data from April through October 2005. The past summer was generally considered a low nuisance bloom year. Chlorophyll-a levels were below 73 ug/L except for the month of August when a peak of 103 ug/L was measured in the Upper Arm. We are committed to working with the County to determine whether chlorophyll-a is the best parameter to use as a target or whether some other parameter would be a better measure of impairment (i.e., clarity, algae density or nuisance bloom frequency). When the Regional Water Board reevaluates the program in five years, staff will re-consider the appropriateness of the chlorophyll-a target.

10. Comment: *Without a good understanding of the causes of the changes in lake clarity that occurred in 1991, it is not clear how much, if any, change in phosphorus inputs will change lake clarity and the frequency and magnitude of blue-green algal blooms. Regional Board staff understood our concerns with the Target Report and included the need to update the understanding of Clear Lake limnology in Action No. 7 of the proposed Basin Plan Amendments.*

Response: Additional studies are recommended as part of the original Basin Plan Amendment and the alternative Basin Plan Amendment. These studies would be designed to determine if factors other than phosphorus levels have an impact on algae growth in the lake.

11. Comment: *The county concurs with the recommendations of Regional Board staff that reducing erosion within the Clear Lake watershed is probably beneficial to Clear Lake, however we feel any numeric targets are inappropriate until further studies are completed.*

Response: Staff recognizes that there is some uncertainty regarding the chlorophyll-a target. For that reason staff chose not to incorporate the target into the Basin Plan as a water quality objective. The target represents a goal that will be evaluated over the years as new information is gathered on the lake. Staff believes that the numeric target represents a reasonable goal for Clear Lake. It is based on a modeling exercise that utilized over 30 years of water quality monitoring data from the lake. The models are part of the EPA's "TMDL Toolbox" and have been used to develop TMDLs throughout the country. This target would be reevaluated when the Regional Board reviews the program five years after adoption of the Basin Plan Amendment.

12. Comment: *Since the County began implementing erosion control measures in 1981 with the passage of the Grading Ordinance and the Surface Mining Ordinance, erosion and sediment delivery to Clear Lake has probably been reduced (the County did not monitor sediment and phosphorus concentrations in Clear Lake tributaries prior to 1991 and does not have data). This may be one of the causes of the increased clarity in Clear Lake since 1991.*

Response: Staff is in agreement that the County's actions may have improved clarity in Clear Lake. Hopefully, no additional actions are needed and nuisance algae blooms will not be a problem in the future. However, we are not convinced that the nuisance algae bloom problem in the lake has been eliminated. (See responses to Items #5 and #6 above). We still need to quantify the improvements in phosphorus loading and determine the impairment status of the lake during different water year types.

13. Comment: *Studies by UC-Davis researchers have indicated there may be other causes to changes in lake clarity.*

Response: Staff agrees with this statement. The original Basin Plan Amendment and the alternative Basin Plan Amendment call for further study to better understand the factors affect algae growth in the lake. See response to #10 above.

14. Comment: *The County is concerned about the ability of a small rural county to fund the mandates of the proposed Basin Plan Amendments ... Some specific concerns include ... the monitoring costs to demonstrate the phosphorus loading are significant ... the implementation of BMP's is estimated at \$4 to \$18 million. These costs are substantial ... The costs for updating the Clear Lakes study are significant ...*

Response: We have been working with the county and responsible parties to keep the monitoring and reporting as reasonable as possible. We want to implement a program that is as efficient and as cost effective as possible. As was mentioned in Item #6, we are not asking anybody to immediately change practices to accomplish reductions. The County and other organizations have already implemented practices that may go a long way toward addressing the problems.

The proposed Basin Plan Amendment requires responsible parties to submit information on the practices that are being implemented, an assessment of their effectiveness, estimates of the phosphorus loading and monitoring in the lake to confirm present conditions. This information will be used to determine whether any reductions are needed and to verify whether our TMDL assumptions are accurate. No reports are due until five years after the adoption of the Basin Plan Amendment and most of the information requested

is already planned to be collected. The County has a Proposition 13 grant to monitor for mercury and nutrients in the Clear Lake watershed. DWR conducts ongoing monitoring in the lake to document trends in water quality. If for some reason this monitoring does not continue, then we will work with the county and local stakeholders and figure out how to get this information. The Regional Board has funding for Tetra Tech work to conduct a baseline estimate of phosphorus loads from each of the responsible parties.

The original Basin Plan Amendment language states that the Executive Officer will request information from the responsible parties (County, Stormwater permittees, BLM, Forest Service, Caltrans and irrigated agriculture) individually using the authority in Porter-Cologne. The alternative Basin Plan language directs the responsible parties to work together to address implementation of the Basin Plan Amendment. This alternative approach could be more cost effective because it would allow the responsible parties to leverage resources and reduce duplication.

The County estimated that the cost of additional studies to investigate the role of other constituents in promoting algae blooms in the lake to be \$400,000. Regional Board staff will work with the County and other responsible parties to identify funding for this work.

Best Management Practices (BMPs) would only be required if it is determined that additional implementation actions are necessary to achieve beneficial uses in Clear Lake. If that were the case, staff would work with the responsible parties to identify funding for BMP implementation.

15. Comment: Recent Improvements in Water Clarity: According to data gathered over the past 15 years, water clarity in the lake has significantly improved. Therefore this TMDL may not be necessary.

Response: See response to Comment #5 above.

16. Comment: Monitoring responsibility and funding: The Total Maximum Daily Load (TMDL), as currently written, does not clearly specify who will conduct the monitoring or how it will be funded.

Response:

In response to this comment we have modified the proposed changes to the monitoring and surveillance chapter of the Basin Plan. It has been modified to clarify the type of monitoring that would be conducted. It now states that the Regional Board will work with the responsible parties to estimate nutrient loadings from activities in the watershed. Loading estimates can be conducted using water quality monitoring, computer modeling or a combination of the two methods. Funding for monitoring or modeling would

be the responsibility of the responsible party. However, Regional Board staff will work with the responsible parties to identify funding for these activities.

The Department of Water Resources currently conducts water quality monitoring about ten times a year in the lake. It is expected that this monitoring will continue. The data produced by this monitoring effort can be used to assess conditions within the lake. Also the Regional Board has funding for Tetra Tech to conduct a baseline modeling exercise to estimate phosphorus loads from each responsible party.

17. Comment: *Appropriateness of the Chlorophyll-a target: Chlorophyll-a may not be the appropriate indicator of the lake's health. Monitoring conducted by the Department of Water Resources shows that, in recent years, chlorophyll-a levels remain high, even though the lake clarity significantly improved. Our perspective is that the main source of water quality contamination in Clear Lake is invasive non-native plants and not the algae blooms considered in the TMDL.*

Response:

It is our understanding that DWR does not measure chlorophyll-a levels in the lake. As part of the development of the technical report Regional Board staff and Tetra Tech worked closely with the County to obtain all existing data from DWR and other sources. Staff is unaware of any long term chlorophyll-a records from Clear Lake.

Staff agrees that water clarity or some other estimate of algae growth may turn out to be a better estimate of lake health than chlorophyll-a. Under both the original and alternative Basin Plan Amendment language the Regional Board would review the results of the studies conducted and determine if the target and load allocations are appropriate for Clear Lake. Also the alternative Basin Plan Amendment language states that the responsible parties will work together to define appropriate indicators of lake health. During these evaluations the chlorophyll-a target could be reviewed and modified if necessary.

Staff is interested in working with the responsible parties to evaluate the beneficial use impacts associated with the recent increases in the abundance of attached aquatic plants. Control programs for phosphorus and other nutrients, and erosion control programs may help limit growth of the attached aquatic plants.

18. Comment: *Internal vs. External Loading: The clarity of the lake largely depends on existing phosphorus in the lake bottom and washout over time. The relative importance of internal vs. external loading should be studied further. Residence time of phosphorus in the lake should be evaluated to better estimate how to using external load reduction could potentially reduce*

the amount of algal blooms in the lake. Furthermore, the implementation plan should clearly specify how allocation requirements would change as the clarity of the lake improves.

Response: The water quality model that was used to model the processes occurring within the lake (EFDC¹) considers both the internal loading and the residence time of phosphorus. The allocations were derived based on the results of this model.

It is expected that the clarity of the lake will improve as loading allocations are met. The load allocations specified in the Basin Plan Amendment would not change unless information gathered from continued studies shows that the existing allocations are inappropriate.

19. Comment: *Limiting Nutrients: The roles of nitrogen and iron in the occurrence of blue-green algal blooms in the lake are unclear at this time, but should be considered as part of the management practice implementation.*

Response: Staff agrees that the role of nitrogen and iron need to be investigated as part of the continued studies being called for in the proposed Basin Plan Amendment.

20. Comment: *Sediment vs. Nutrient Focus: The TMDL implementation focuses on reducing sediment loads to the lake. Although most sediment-controlling BMPs will decrease nutrient loading, it may be helpful to clarify the extent of nutrient reduction that can be expected.*

Response: The ultimate goal of the implementation plan is to reduce phosphorus inputs to the lake. The focus of the plan is on reducing erosion because most sources of phosphorus to the lake are sediment driven. Other non-sediment sources of phosphorus (such as sewer and septic system overflows) may be important and will be evaluated during implementation.

The overall goal is to reduce inputs of phosphorus to 87,100 kg/year. However, the alternative Basin Plan Amendment language contains a provision that states that the phosphorus loading allocations would not apply if Clear Lake is attaining its beneficial uses and excess phosphorus is determined not to be the cause of impairment.

21. Comment: *Caltrans Load Allocation: Allocations to point source dischargers are loosely based on relative land area rather than potential sediment contribution to the lake and current efforts to control sediments. Estimates of the potential phosphorus loading from Department roadway varies from 289*

¹ Environmental Fluid Dynamics Computer Code. More information about EFDC can be found on the internet at: <http://www.epa.gov/athens/research/modeling/efdc.html>

kg to 1038 kg per year. These estimates assume that all runoff enters the lake directly and are overly conservative. As such, limiting the Department's waste load allocation (WLA) to 100 kg/yr could require reducing phosphorus loads by 65% to 95%. Such reduction requirements are technically and economically infeasible and would have a significant impact on roadway operations and maintenance. Regional efforts to control sediments and phosphorus loading may be more beneficial than implementing individual BMPs. With the increased development in the region, opportunities for coordination will increase. The TMDL should provide a formal process by which point source and non-point source dischargers may trade pollutant credits for BMP implementation. For example, allowing the Department to fund a wetland outside of its right-of-way could be more economically feasible than site-specific BMPs, and more effective in reducing phosphorus loading to the lake.

Response: The original and alternative Basin Plan Amendments both state that the Regional Board will review the load allocations five years after adoption of the Amendment. Staff will consider data submitted by Caltrans regarding estimated loading during this review. It is staff's understanding that Caltrans implements enhanced management practices in watersheds that affect impaired waterbodies (i.e. 303(d) listed). Staff does not intend to require additional practices beyond the enhanced practices that are already required. During the five year review, load allocations can be adjusted to be consistent with loads that would be expected with implementation of the enhanced management practices.

The proposed alternative Basin Plan Amendment directs the responsible parties to work together to conduct studies and implement a nutrient control program for the lake. Part of this effort will be to identify the locations where BMP implementation will be most effective. This process is not a formal pollutant trading program but it would achieve similar results.

22. Comment: *Our first concern is related to the size of the proposed phosphorus reductions for the Middle/Scotts watershed. We believe that some reductions in erosion-related phosphorus export from the Mendocino National Forest (MNF) can probably be achieved. We will not know precisely how much until we complete some of the required TMDL tasks. However, for two key reasons, we question whether a 20% reduction in total phosphorus (and therefore total erosion) could be achieved on MNF. First, TMDL's for other watersheds on the MNF (e.g., Upper Main Eel River Sediment TMDL) concluded that the forest was already below the sediment standards, which were set at 25% over natural background levels. This part of the forest resembles the Upper Main Eel watershed, so it is likely that current loading on the MNF lands in the Middle Creek watershed is less than 25% over background. Since MNF is not responsible for addressing natural erosion*

(State Water Board Resolution 2005-0050²) and complete control of human-caused erosion is rarely feasible, a 20% reduction in overall loading from lands managed by the MNF is unlikely. Secondly, water chemistry data indicates phosphorus concentrations are naturally high and extremely variable and that recovery after soil disturbing events occurs relatively quickly³. An important consideration for the Regional Board is that if a 20% reduction is not possible on MNF, to meet the TMDL, larger reductions from other sources in the Middle/Scotts watershed would be necessary. This may or may not be feasible.

Response: The percent reductions discussed in this comment are based on the watershed-specific load allocations that were developed in the original Tetra Tech report. The proposed Basin Plan amendment does not include these watershed allocations. Instead, all of the non-point sources throughout the greater Clear Lake watershed were given an allocation of 85,000 kg P/yr. Staff decided on this approach because it would allow for greater flexibility to implement an adaptive management strategy. As the adaptive management strategy is implemented, one of the areas that we would want to focus on is making sure that there are programs in place to assure that design, construction and maintenance activities for paved and unpaved roads are implemented in a manner that keeps erosion to an absolute minimum. Staff would work with the responsible parties to identify where the main non-natural and controllable sources of phosphorus and sediment are. These areas would be prioritized for phosphorus and sediment control. In this way reasonable and achievable sediment control goals for the MNF would be developed, if necessary.

23. Comment: Our second concern is related to prescribed fire and other fuel reduction activities. We understand that these activities can cause some relatively small increases in phosphorus export for short periods of time. However, when evaluating potential load reductions from MNF lands, we believe the long term benefits of these activities needs to be considered. Besides reducing wildfire risk to life and property, fuels reduction activities reduce the risk of large wildfire-induced increases in sediment and phosphorus export.

Response: Staff agrees that the long term benefits to prescribed fire should be considered. These considerations would be part of the adaptive management process. As part of the implementation plan we might want to

² Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options.

³ Water chemistry information collected by Lake County after the 1996 Fork Fire showed phosphorus levels spiking after the first early rains in January, but recovering shortly thereafter. Specifically, on January 1, 1997, total P was 1.48 parts per million (ppm). These levels dropped to 0.25 ppm by January 22nd and 0.91 ppm on January 25th. In 1998, total P levels ranged from 0.16 to 0.91 ppm.

investigate modifying operational practices to reduce the impact of these activities on phosphorus loading to the lake while maximizing their value to reduce fuel loadings.

24. A third issue relates to monitoring. The MNF believes it is reasonable for land managers to evaluate the effectiveness of restoration activities through on-site, hillslope erosion control monitoring such as that conducted through the Forest Service Best Management Practice Evaluation Program. The MNF is also not opposed to conducting some limited trend monitoring of instream phosphorus levels, as specified by the TMDL, on or immediately downstream of its lands. However, we wish to illuminate the fact that it is highly unlikely that this monitoring will detect statistically significant trends in phosphorus loads. This is largely due to the fact that even if a 20% reduction were achievable, this amount is relatively small when compared to the high natural variability in phosphorus loading. Binkley (2001), for example, concluded that given high natural variations in streamwater chemistry between streams and within the same stream over time, very intensive sampling designs are needed to detect any changes that are less than about two-fold.⁴

Response: Staff recognizes the difficulties inherent in monitoring natural systems. As an alternative, the US Forest Service can estimate their load reductions using computer modeling (or a combination of computer modeling and water quality monitoring). Staff is also interested in making sure that erosion and phosphorus loading from paved and unpaved roads is kept at a minimum.

25. Comment: Our largest concern regarding monitoring is related to the proposed lake monitoring program. The MNF understands the benefits of the proposed program. However, the Forest Service would not be able to implement or fund this work because the agency is typically only allowed to allocate National Forest System (NFS) funding towards activities on national forests. In some limited circumstances, monies can be expended on private lands (e.g., Widen Amendment, 16 U.S.C. § 1011(a) and P.L. 105-227 § 323). However, this can only occur when the projects benefit NFS lands or resources. The proposed lake monitoring does not meet these criteria because, due to the lake's significant distance from the forest boundary (11 miles), monitoring results would not provide any additional information regarding the effectiveness of its land management practices, nor total phosphorus loading from its lands.

Response: As mentioned in Response #16 above the Department of Water Resources currently conducts water quality monitoring about ten times a year in the lake. This program provides useful information and it is expected to

⁴ Binkley, D. 2001. Patterns and processes of variation in nitrogen and phosphorus concentrations in forested streams. National for Air and Stream Improvement, Technical Bulletin No. 836.

continue. Under the alternative Basin Plan Amendment the responsible parties would work together to determine the appropriate monitoring strategy for the lake and implement that strategy. The monitoring costs would be the responsibility of the responsible parties, but the Regional Board would work with them to identify funding opportunities. The US Forest Service may be able to participate by providing in-kind services, technical assistance or other support.

26. Comment: The County disagrees with the Target Report prepared by Tetrattech. The Target Report recommends that chlorophyll-a be utilized in determining whether Clear Lake is in compliance. There is very little historical data on chlorophyll-a levels in Clear Lake, therefore, the model is unverifiable. The modeled chlorophyll-a levels do not reflect the changes in secchi depth as noted at the May Board workshop, see Attachment 1. The main assumption behind the TMDL is that phosphorus levels in the lake cause increased blue-green algal blooms. Data collected by the Department of Water Resources does not support this assumption, see Attachment 2. Measured lake phosphorus levels do not reliably predict the chlorophyll-a levels (26% correlation), based on data collected by DWR in 2005-2006 for the Regional Board, see Attachment 3.

Response: The appropriateness of the chlorophyll-a data is addressed in response #9. The chlorophyll-a and secchi depth comparisons are addressed in response #8. The discrepancy between phosphorus concentrations and algae growth is discussed in response #6.

27. Comment: The County recognizes that control of phosphorus and sediment is likely to have beneficial impacts on water quality and will continue to work to reduce the phosphorus loading to Clear Lake, however, we would like to be on record as objecting to the numerical loadings proposed.

Response: This TMDL would be implemented through an adaptive management process. The numerical load allocations are our best current estimate of the load limits that are needed to protect beneficial uses. Both the original and the alternative Basin Plan Amendments require a review by the Regional Board five years after adoption. At that time the load allocations may be revised.

28. Comment: We appreciate the revised language that establishes a working group to reevaluate the conditions on Clear Lake to refine the TMDL by conducting additional studies, reevaluation of the monitoring plan and development of impairment criteria. The County recognizes that this is an expensive process and the required additional studies and monitoring are not funded.

Response: Regional Board staff would work with the County and other responsible parties to identify funding for the required studies and other implementation actions.

29. Comment: *We have reviewed the draft Total Maximum Daily Load (TMDL) to address nutrient impairment for Clear Lake. Based on our review we have concluded that the TMDL adequately addresses the pollutant of concern, and the current implementation plan will result in attainment of water quality standards.*

Response: Staff appreciates this comment.

References:

Horne, A.J. 1975. The Ecology of Clear Lake Phytoplankton. Lakeport: Clear Lake Algal Research Unit. 116 pp.

Richerson, Peter J. et. al. 1994. The Causes and Control of Algal Blooms in Clear Lake, Clean Lakes Diagnostic/Feasibility Study for Clear Lake, California. Report prepared for Lake County Flood Control and Water Conservation District, California State Water Resources Control Board, and the US Environmental Protection Agency.