

**California Regional Water Quality Control Board  
Santa Ana Region**

**September 17, 2004**

**Item: 13**

**Subject: Public Workshop: Proposed Basin Plan Amendment – Incorporation of Total Maximum Daily Loads for Nutrients for Lake Elsinore and Canyon Lake**

**DISCUSSION**

On May 21, 2004, staff of the California Regional Water Quality Control Board, Santa Ana Region (Regional Board) issued a staff report entitled “Lake Elsinore and Canyon Lake Nutrient Total Maximum Daily Loads”. The report proposed that the Regional Board consider amendment of the Implementation Plan of the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) to incorporate the proposed TMDLs, which require actions to reduce nutrient discharges to Lake Elsinore and Canyon Lake.

On June 4, 2004, the Regional Board held a public workshop to receive evidence and testimony on the proposed Lake Elsinore and Canyon Lake Total Maximum Daily Loads (TMDLs). Based on both written and oral comments received from the public, staff have revised the proposed TMDLs (Attachment A to Tentative Resolution No. R8-2004-0037). Attachment B contains staff responses to comments received prior to, during and after the June 4, 2004 public workshop. Copies of the written comments are included in Attachment D.

Attachment B includes comments received from Dr. Michael Josselyn, who provided the requisite scientific peer review. It should be noted that Dr. Josselyn found no significant flaws in the technical approach used to develop the proposed TMDLs (see Comments 93 – 104).

The Board will conduct an additional public workshop on September 17, 2004 to receive further testimony on the revised TMDLs. A public hearing to consider the adoption of the proposed TMDLs as a Basin Plan amendment is scheduled for the December 17, 2004 Board meeting.

In summary, the proposed TMDLs include:

- Interim and final numeric targets;
- Wasteload Allocations (WLAs) for point source discharges and Load Allocations (LAs) for nonpoint source discharges;
- An Implementation plan and schedules for compliance with the TMDLs, numeric targets, WLAs and LAs; and,
- A monitoring plan and schedule to assess the effectiveness of the TMDLs.

Based on the comments received on the proposed nutrient TMDLs, staff proposes the following major changes to the TMDLs/Basin Plan Amendment.

Revisions to the interim and final numeric targets for nitrogen, and  
Revisions to the nitrogen TMDLs, WLAs and LAs

In the May 2004 TMDL Report, staff originally proposed total nitrogen numeric targets based on a 10:1 total nitrogen (TN) to total phosphorus (TP) ratio. Based on comments received

regarding nitrogen and phosphorus limitation (see Attachment B, Comments 54 and 79) staff proposes to revise the nitrogen targets using a TN to TP ratio of 15:1. The interim and final total phosphorus targets proposed for both Lake Elsinore and Canyon Lake are 0.1 and 0.05 mg/L, respectively. The interim and final total nitrogen targets initially proposed were 1 mg/L and 0.5 mg/L, respectively. The re-calculated interim and final total nitrogen targets now proposed, based on the 15:1 ratio, are 1.5 and 0.75 mg/L, respectively. The revised targets are shown in Table 5-9n in Attachment A to Tentative Resolution No. R8-2004-0037.

These re-calculated total nitrogen targets were then used to re-calculate the total nitrogen load capacity (TN TMDL) to Lake Elsinore and Canyon Lake using a simple mass loading formula:

$$\text{TN load capacity} = \text{Inflow} * \text{TN target}$$

To meet the revised proposed interim total nitrogen numeric target, the calculated total nitrogen load capacity is greater than the simulated existing nitrogen loads. Thus, there is no apparent need for interim total nitrogen targets, or interim total nitrogen WLAs and LAs. Therefore, staff proposes to specify only a final total nitrogen target of 0.75 mg/L, to be achieved in both lakes as soon as possible, but no later than 2020.

Using the revised final total nitrogen targets, the total nitrogen load capacity was also re-calculated using the equation shown above. In turn, using the revised total nitrogen load capacity, the final total nitrogen WLAs and LAs were re-calculated for both lakes. The revised nitrogen TMDLs, WLAs, and LAs are shown in Tables 5-9q and 5-9r in Attachment A to Tentative Resolution No. R8-2004-0037.

#### Ammonia Numeric Targets, TMDLs, WLAs, LAs; Consideration of Site-Specific Objectives for Un-ionized Ammonia

In the May 2004 TMDL Report, Section 4.3, staff indicated that the US EPA national ammonia criteria (acute and chronic) would serve as final ammonia numeric targets, to be met no later than 2020. However, these numeric targets were inadvertently omitted from the proposed Basin Plan Amendment. Staff has corrected this oversight in the revised proposed Basin Plan amendment. The recommended ammonia numeric targets are consistent with US EPA's national criteria and are intended to protect against ammonia toxicity. This addition is shown in Table 5-9n in Attachment A to Tentative Resolution No. R8-2004-0037.

The inclusion of these numeric targets also reflects consideration of comments by two parties (see Attachment B, Comments 54 and 93). One of these parties, Dr. Josselyn, the scientific peer reviewer, suggested that it might be more appropriate to propose a TMDL for ammonia, rather than for nitrogen, to reduce potential ammonia toxicity. Staff does not propose to establish ammonia TMDLs, WLAs or LAs to meet the proposed ammonia numeric targets because of the significant complexity of ammonia and nitrogen dynamics in the lake systems. The EPA ammonia criteria are temperature and pH-dependent and the nitrogen cycling processes in the lakes are not well understood. Therefore, it is not feasible to determine ammonia TMDLs and allocations at the present time. The proposed total nitrogen TMDL, WLAs and LAs should ensure compliance with the ammonia numeric targets. Staff also recommends that the Review and Revision of Water Quality Objectives

task proposed in the TMDL implementation plan (now included as Task 12) be revised to include evaluation of the need for site-specific un-ionized ammonia objectives.

#### Revision of Dissolved Oxygen Targets

It was suggested (see Attachment B, Comment 71) that the dissolved oxygen (DO) target should be revised to 5 mg/L throughout the water column. The commenter indicated that high benthic DO would reduce fish kills and reduce the release of toxic ammonia.

Based on consideration of this comment, staff proposes to revise the DO targets initially recommended. As shown in Table 5-9n of Attachment A to Tentative Resolution No. R8-2004-0037, the final DO target for Lake Elsinore and the interim DO target for Canyon Lake would be revised to delete references to the 2mg/L concentration goal. The Basin Plan specifies that the dissolved oxygen for waterbodies designated WARM, including Canyon Lake and Lake Elsinore, shall not be depressed below 5 mg/L. The Basin Plan does not identify the depth over which compliance with this objective is to be achieved, nor does it reflect seasonal differences that may result in DO variations associated with stratification in the lakes. The revised proposed targets are consistent with the Basin Plan DO objective and take into account the conventional sampling protocol (i.e., dissolved oxygen is measured at 1 m intervals). The revised targets also reflect uncertainty about the efficacy of proposed aeration projects, and about the degree to which nutrient reductions will result in dissolved oxygen increases. As the relationship between nutrient input and dissolved oxygen levels in the lakes is better understood, the TMDL targets for dissolved oxygen can be revised appropriately to ensure protection of aquatic life beneficial uses.

#### Revisions to compliance dates for certain dischargers.

Based on comments received (Attachment B, Comments 16 and 21), staff proposes to modify the compliance dates for proposed implementation plan requirements for on-site disposal systems (Section E. TMDL Implementation, Task 5), and urban dischargers, including Caltrans, March Air Reserve Base and the MS4 permittees (municipalities and Riverside County) (Task 6). Revision of these compliance dates would allow additional time for these dischargers to develop appropriate plans, develop agreements, work within their fiscal budgeting process, etc. These revised compliance dates are shown in Table 5-9s in Attachment A to Tentative Resolution No. R8-2004-0037.

#### Addition of pollutant trading language

Comments were received concerning pollutant trading (Attachment B, Comments 18 and 57). It was suggested that the TMDLs should include a pollutant trading framework that specifically addresses critical questions such as credit banking and tracking. It was also suggested that pollutant trading proposals should be approved by the Regional Board, based on the evaluation of whether water quality improvements are demonstrated.

Board staff supports pollutant trading programs that result in meaningful water quality/beneficial use improvements. We believe that responsible parties can work on projects that directly benefit conditions in the lakes, in lieu of implementing costly projects in the upper watershed area. Staff believes that the stakeholders in the watershed should be responsible to develop pollutant trading proposals/programs that take into account the critical issues, such as credit banking and tracking. Staff proposes that Section E. TMDL Implementation of the proposed amendment be revised to include a specific task for the responsible agencies to develop a pollutant trading plan (new Task 11). Language

acknowledging pollutant trading as an option for meeting allocations, has also been added to the requirements specified for agricultural dischargers (Task 4), on-site disposal systems (Task 5), urban dischargers (Task 6), Forest Area (Task 7) and development of a Lake Elsinore Sediment nutrient reduction plan (Task 8). Finally, additional language in each of these Tasks is proposed to specify that all pollutant trading proposals must be approved by the Regional Board.

#### Monitoring Program Requirements – Flexibility Language Added

It was recommended that flexibility be allowed to move or remove monitoring stations, rather than the prescriptive approach proposed in Section E. TMDL Implementation, Task 3 of the amendment (Attachment B, Comment 39). In response to this comment, staff proposes that language be added to the monitoring program requirements in Task 3 that would allow the responsible parties to propose alternative monitoring stations, in lieu of one or more of those identified in the amendment for consideration. Any proposed modifications to the list included in the proposed Basin Plan amendment would need to be adequately justified.

#### Modifications to Task 5 – On-site Septic Systems Management Plan Requirements

The Riverside County Flood Control and Water Conservation District suggested (Attachment B, Comment 21) that it is premature to impose the requirements regarding on-site septic systems management (proposed in Section E. TMDL Implementation, Task 5) since the State Water Resources Control Board has not adopted the regulations required under AB885<sup>1</sup>. Staff agrees and recommends modifying the compliance date for implementation of the proposed Septic System Management Plan requirements to reflect uncertainties regarding the date of adoption of the AB885-required regulations and the completion of agreements, if required, between the Regional Board and Riverside County to implement the regulations.

### **Additional Cost Information Associated with the Implementation of the Nutrient TMDLs for Lake Elsinore and Canyon Lake**

Comments were received from various parties regarding the economic implications of the proposed TMDLs (Attachment B, Comments 3, 7, 12, 23, 35, 36, 53, 61, 66, 68, 69, 83, 85, 89, 91). Staff has responded to these comments in detail. The comments focus largely on the arguments that 1) a cost-benefit analysis needs to be completed when establishing the TMDLs, and 2) establishing numeric targets in the TMDLs is essentially equivalent to setting water quality objectives, for which analysis of the factors specified in Water Code Section 13241 is required. The Section 13241 factors include economics. It was also suggested that priorities should be established so that funds are expended where they will have the most water quality benefit. And it was recommended that the cumulative costs of multiple TMDLs, and the ability of stakeholders to provide the requisite funds to implement them, needed to be considered.

Board's staff certainly agrees that TMDL implementation efforts should be focused on nutrient reduction projects on a priority basis. This type of strategy can be proposed by the watershed

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<sup>1</sup> AB 885 amended the California Water Code to add Section 13290 – 13290.7 to require the State Board, in conjunction with the State Department of Health Services, the California Coastal Commission and county and/or city environmental health agencies to adopt regulations for the permitting, maintenance, monitoring and oversight of on-site disposal systems. The State Board is currently in the process of working with various stakeholders to develop the appropriate regulations.

stakeholders, either collectively or individually, as they develop their proposed implementation programs (see Response to Comment 61). Staff also acknowledges the cumulative cost and effort that may be required to address all the TMDLs required in the watershed. The fact that work on these nutrient TMDLs has proceeded in advance of other TMDLs (within and outside of this watershed) reflects the priority that the Board has assigned to this problem. In proceeding with work on other TMDLs required in the watershed, Board staff will make every effort to assure that the future TMDLs are complimentary and do not impose redundant or unnecessary requirements. Also, the nutrient TMDLs proposed include 10 and 15 year compliance schedules in part to allow stakeholders to identify funding solutions.

With regard to the major economics issues raised (items 1 and 2, above) it is worth reiterating staff's responses (see, in particular, the responses to Comments 3 and 68). First, federal law mandates that TMDLs be set at a level that will ensure attainment of the existing water quality standards. The economic feasibility to the dischargers of achieving the standards is neither relevant nor authorized when setting the TMDL. Second, numeric targets are not water quality standards. They are an interpretation of existing water quality standards. Thus, analysis of the factors specified in Section 13241 is not required when establishing the targets or TMDLs.

While economic considerations are not relevant in establishing TMDLs that will achieve water quality standards, the Regional Board does have specific obligations to consider economics related to the adoption of the TMDLs in the Basin Plan. These obligations do not require a cost-benefit analysis. As discussed in the May 2004 TMDL Report, Section 13141 of the California Water Code requires the Regional Board to estimate the cost and identify potential financing sources for any proposed agricultural water quality control program. Potential agricultural costs are discussed below; funding sources for implementation of agricultural programs were discussed in the May 2004 staff report.

As was also discussed in the May 2004 TMDL Report, the California Environmental Quality Act (CEQA) requires that the Board consider the environmental effects of reasonably foreseeable methods of compliance with Basin Plan amendments that establish performance standards or treatment requirements, such as TMDLs. The costs of the methods of compliance must be considered in this analysis. Staff indicated in the TMDL Report that this cost information would be solicited from the stakeholders. In response to this request, the Riverside County Flood Control and Water Conservation District (RCFCD) and Eastern Municipal Water District provided cost information at the June 4, 2004 public workshop. RCFCD provided this information in writing as well. In addition to the information provided by the Riverside County Flood Control and Water Conservation District and EMWD, staff also compiled additional information on compliance methods and potential costs for agriculture and urban nutrient sources.

Implementation of agricultural water quality control programs includes both development of an agricultural nutrient management plan and implementation of specific Best Management Practices (BMPs) to reduce nutrients. Potential cost estimates for the development of a nutrient management plan (including providing technical assistance, testing of soils, manure, and plant tissues) are estimated at \$5 per acre for basic service up to \$30 per acre for extensive consultation on high value crops. (US EPA, 2003).

Table 1 summarizes costs for the implementation of the following management practices to control nutrient runoff based on data and information from the Chesapeake Bay Area. Many of

these control measures can be used for control of agricultural nutrient releases, as well as nutrient releases from other sources.

Table 1. Agriculture Nutrient Reduction BMP Costs

<b>BMP</b>	<b>Median Annual Costs (\$ per acre per year)</b>	<b>Practical Life Span of BMP (years)</b>
Nutrient management	\$2.40	3
Strip-cropping	\$11.60	5
Diversion	\$52.09	10
Sediment Retention Water Control Structures	\$89.22	10
Grassed Filter Strips	\$7.31	5
Cover Crops	\$10.00	1
Permanent Vegetative Cover on Critical Areas	\$70.70	5
Conservation Tillage	\$17.34	1
Grassed Waterways	\$1.00	10
Animal Waste System	\$3.76	10

Source: US EPA, 2003

Cost estimates for implementing urban water quality control management practices were compiled from US EPA's Urban Storm Water BMP document. The typical base capital construction costs for BMPs, assuming a base year of 1997, are shown in Table 2.

Table 2. Urban Nutrient Reduction BMP Costs

<b>BMP</b>	<b>Typical Costs (\$ per cubic feet of runoff)</b>
Constructed Wetland	\$0.60-1.25
Infiltration Trench	\$0.60-1.25
Infiltration Basin	\$0.60-1.25
Sand Filter	\$0.60-1.25
Bioretention	\$0.60-1.25
Retention and Detention Basins	\$0.50-1.00
Grass Swale	\$0.60-1.25
Filter Strip	\$0.60-1.25

Source: US EPA, 1999

For treating urban runoff, RCFCD provided estimates based on reducing nutrient levels through implementing wetland treatment. Costs for land acquisition alone are estimated at \$18,000,000 up to \$84,000,000,000. (see more discussion of these costs in the RCFCD comment letter in Attachment D and Attachment B (Response to Comments), Comments 2 and 13).

To reduce nutrient levels in recycled water discharges to meet the proposed numeric targets, EMWD estimated the cost to be \$37,000,000. However, as discussed in the Attachment B Comment 69, staff believes that the most accurate costs for treating recycled water are reflected in the LESJWA studies discussed below.

Recently, the Lake Elsinore and San Jacinto Watershed Authority (LESJWA) funded several studies to investigate potential projects to improve the water quality of Lake Elsinore and Canyon Lake. These studies include the "Lake Elsinore Nutrient Removal Study" by CH2MHill (2004), the "Lake Elsinore and Canyon Lake Nutrient Management Plan" by Tetra Tech (2004)", and the "Draft Lake Elsinore Fisheries Management Plan" by EIP Associates (2004). These studies identify potential projects that are beneficial to lake water quality improvement, and include the estimated costs associated with each potential project.

Table 3 lists the project alternatives identified by CH2MHill in the Nutrient Removal Study. It should be emphasized that the focus of this study was to identify potential strategies for removal of nutrients (primarily phosphorus) in the reclaimed water used to supplement low lake levels in Lake Elsinore. Thirteen (13) project alternatives, including treatment wetlands, biological and physical-chemical treatment technologies, were evaluated. Of the 13 alternatives, a Preferred Project Alternative (PPA) based on a cost benefit analysis and stakeholder input, was identified. The amount of phosphorus removed by the alternatives ranges from 20,000 to 58,000 lbs (9,080 to 26,332 kg). To meet the proposed interim WLA for supplemental water, removal of 11,612 kg of phosphorus is needed; to meet the proposed final WLA, removal of 14,139 kg of phosphorus is required – both amounts are within the achievable range identified by CH2MHill for 12 of the 13 alternatives (note that phosphorus removal is not applicable to the imported water alternative – Alternative 7).

Table 3. Lake Elsinore Nutrient Removal Study Project Alternatives and Cost Estimates

<b>Alternative</b>	<b>Facility Description</b>	<b>Estimated Construction Cost</b>	<b>Estimated Capital Cost Totals</b>	<b>Estimated Annual O&amp;M Cost (\$/yr)</b>
<b>1A</b>	Chemical Phosphorus Treatment at RWRFs (EMWD & EVMWD)	\$3,534,000	\$4,418,000	\$311,000
<b>1B</b>	Biological Phosphorus Treatment at RWRFs (EMWD & EVMWD)	\$8,877,000	\$11,096,000	\$295,000
<b>2A</b>	350-Acre Back Basin Treatment Wetland	\$19,621,000	\$24,526,000	\$1,510,000
<b>2B</b>	EVMWD RWRf Chemical Phosphorus Treatment and 350-Acre Back Basin Treatment Wetland	\$12,180,000	\$15,225,000	\$1,640,000
<b>3A</b>	600-Acre Back Basin Treatment Wetland	\$18,169,000	\$22,711,000	\$2,243,000
<b>3B</b>	EVMWD RWRf Chemical Phosphorus Treatment and 600-Acre Back Basin Treatment Wetland	\$20,997,000	\$26,246,000	\$5,581,000
<b>4</b>	350-Acre Littoral Treatment Wetland	\$18,622,000	\$23,278,000	\$710,000
<b>5A</b>	Remote Treatment at EVMWD RWRf	\$12,779,000	\$15,974,000	\$553,000
<b>5B</b>	Remote Treatment at Lake Elsinore	\$19,985,000	\$24,981,000	\$598,000
<b>6</b>	Calcium Treatment at Lake Elsinore	\$8,084,000	\$10,105,000	\$362,000
<b>7</b>	Imported Water	\$0	NA	\$5,994,000
<b>8A</b>	Chemical Phosphorus Treatment at EVMWD RWRf, Imported Water and 107-Acre Treatment Wetland	\$6,749,000	\$8,436,000	\$767,000
<b>8B</b>	Chemical Phosphorus Treatment at EVMWD RWRf, Remote Granular Filtration and 107-Acre Treatment Wetland	\$12,296,000	\$15,370,000	\$850,000
<b>PPA</b>	Island wells, 107 acre Back Basin treatment wetland, chemical treatment of reclaimed water, etc.,	\$12,737,000	\$15,921,000	\$728,000

Source: (CH2MHill, 2004)

As discussed in the May 2004 TMDL Report, Tetra Tech Inc. received funding from LESJWA to develop the Lake Elsinore and Canyon Lake Nutrient Management Plan (NMP). Nineteen projects were identified in the NMP (Table 4). Potential projects include continued watershed and in-lake monitoring and development of specific project plans. Note that for most of the projects, actual construction and capital costs are not known at this time. Actual projects can only be identified as data gaps are filled and as the hydrology and nutrient source dynamics in the San Jacinto River Watershed are better understood.

Table 4. San Jacinto Nutrient Management Plan Projects and Cost Estimate

Project Alternative	Project Description	Estimated Construction Cost	Estimated Capital Cost	Estimated Annual O&M Cost (\$/yr)	Project Cost <sup>a</sup>
1	Lake Elsinore In-Lake Nutrient Treatment	See Table 1 (in Tetra Tech Report)			
2	Lake Elsinore Destratification		\$1,800,000	\$150,000	
2A	Lake Elsinore Aeration		\$1,300,000	\$100,000	
3	Aeration/Destratification of Canyon Lake		\$400,000	\$35,000	
4	Dredging of Canyon Lake		\$2,500,000		
5	Water Quality Monitoring at Lake Elsinore			\$200,000	
6	Development of a Dynamic Water Quality Model of Lake Elsinore				\$100,000
7	Water Quality Monitoring at Canyon Lake			\$200,000	
8	Development of a Dynamic Water Quality Model of Canyon Lake				\$83,000
9	Structural Urban BMPs (in Hemet and Moreno Valley)*				\$110,000
10	Sewer and Septic Improvements				
11	Control of Trash in the San Jacinto River (including the acquisition of approximately 300 acres for habitat protection)				\$6,139,000
12	Interception and Treatment of Nuisance Urban Runoff (study)				\$150,000
13	Riparian Habitat Restoration and Development of Agricultural Buffers				\$150,000
13A	Salt Creek from Lindenberger Rd to Winchester Area				\$80,000

Project Alternative	Project Description	Estimated Construction Cost	Estimated Capital Cost	Estimated Annual O&M Cost (\$/yr)	Project Cost <sup>a</sup>
13B	Perris Valley Storm Drain				\$100,000
13C	San Jacinto River				\$60,000
14	Determination of Crop-Specific Agronomic Rates for Guidance in Fertilizer and Manure Application Management				\$120,000
15	Assessment of Nutrient Loads to the San Jacinto Watershed as a Result of Flooding in Agricultural Areas				\$200,000
16	Regional Organic Waste Digester (feasibility study)				\$300,000
17	Development of a Pollutant Trading Model				\$250,000
18	Data Collection for Mystic Lake to Support Development of Future Projects				\$250,000
19	Continued Monitoring of Streamflow and Water Quality Throughout the Watershed			\$250,000	

Source: Tetra-Tech, 2004

<sup>a</sup> The cost estimates are for study and project plan development only.

\* The cost to develop 30% design plan and construction cost estimates for 3 high priority urban BMPs is approximately \$50,000. Second phase completion of the design plans, along with more detailed cost estimates is approximately \$60,000.

Finally, EIP Associates developed a Fisheries Management Plan aimed at providing a strategy for improving and enhancing sport fishing in Lake Elsinore. The Draft Fisheries Management Plan identified measures including carp removal, carp control, fish stocking, enhancing lake spawning and rearing habitats, and monitoring. These measures would provide additional nutrient reductions in Lake Elsinore. For example, carp removal and control reduces sediment re-suspension and subsequent nutrient release from the lake sediment. Even though the amount of phosphorus that may be reduced by fisheries management has not yet been quantified for Lake Elsinore, a literature review indicates that there is a linear relationship between carp population and phosphorus release rates (Lougheed V.L., et. al., 1988). EIP Associates estimates that the total cost to implement fishery enhancement measures is \$2,560,200 of which carp removal costs are \$780,000 (EIP Associates, 2004).

### Costs Associated with Impacts of Nutrient Discharges

As discussed in the May 2004 TMDL Report, fish kills resulting from elevated inputs of nutrients have long plagued Lake Elsinore. Canyon Lake has also been impacted by elevated nutrient levels. As a result, the Regional Board added both Lake Elsinore and Canyon Lake to the 303(d) list of impaired waterbodies, thereby prompting the need to address nutrients via the establishment of TMDLs. At the June 4, 2004 public workshop, several agencies expressed

concern about the benefits to the community if the TMDL were to be adopted, given the potential costs for implementation of reduction strategies (Comments 3, 7, 14, 35, 36, 61, 68, 69, 87 and 91). While a cost-benefit analysis is not required, the following information concerning the costs of failure to implement nutrient controls is provided to assure a broad perspective of the total costs to the community.

The impact of excessive nutrient loading to the communities of Canyon Lake and Lake Elsinore can be substantial, particularly if there is a fish kill. Tangible costs include those costs to collect and dispose of dead fish. As an example, in August of 2003, a fish kill occurred in Lake Elsinore, most likely due to low dissolved oxygen levels, high water temperatures and elevated ammonia concentrations. LESJWA spent approximately \$17,000 to collect and dispose of the fish. The city of Lake Elsinore also estimates that costs including labor and disposal range between \$0.15 to \$0.20 per pound of fish. For the 200 ton fish kill that occurred in 1998, costs for clean-up ranged between \$60,000 to \$80,000.

Further, when a fish kill occurs, there are also intangible costs associated with the impacts. Lake Elsinore receives local and/or statewide publicity usually only when there is a massive fish kill. City staff indicate that the actual direct cost cleanup from a fish kill is probably minor compared to the wider indirect economic loss to development and overall Lake use. They note that when a fish kill occurs, use at Lake Elsinore decreases in comparison to Lake Perris (Kilroy, personal communication). As a result, businesses in Lake Elsinore, including restaurants and boating and fishing suppliers, lose considerable revenue when people choose not to recreate in Lake Elsinore because of fish kills and/or because of the significant algae blooms.

### **CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REQUIREMENTS**

The basin planning process has been certified by the Secretary of Resources as functionally equivalent to the requirement for the preparation of an Environmental Impact report or Negative Declaration. The Regional Board is required to complete an environmental assessment of any changes the Board proposes to make to the Basin Plan. Staff prepared an Environmental Checklist (Attachment B to the May 2004 TMDL Report), determining that there would be no significant adverse environmental impacts from the proposed Basin Plan Amendment. Based on comments received, staff has revised the environmental checklist to indicate that there may be environmental impacts to aesthetics and/or biological resources if certain urban discharge projects are implemented (Attachment C). However, any such impacts from specific projects would be subject to a complete environmental review.

### **STAFF RECOMMENDATION**

Direct staff to prepare a Basin Plan amendment and related documentation to incorporate the TMDLs for nutrients for Canyon Lake and the Lake Elsinore that are shown in Attachment A to Tentative Resolution No. R8-2004-0037 for consideration at a future public hearing.

## **ATTACHMENTS**

- Attachment A – Tentative Resolution No. R8-2004-0037, with attached proposed (revised) Basin Plan amendment
- Attachment B – Responses to comments received from the scientific peer reviewer and from the public
- Attachment C – Environmental Checklist
- Attachment D – Comment Letters

## **REFERENCES**

- US EPA, National Management Measures for the Control of Nonpoint Pollution from Agriculture (EPA – 841-B-03-004), 2003
- US EPA, Urban Storm Water Best Management Practices (EPA – 821-R-99-012), 1999.
- CH2MHill, Lake Elsinore Nutrient Removal Study, April 2004.
- Tetra-Tech Inc., San Jacinto Nutrient Management Plan, May 2004.
- EIP Associates, Fisheries Management Plan for Lake Elsinore, Riverside County, Draft, May 2004.
- Lougheed V.L., Crosbie B, and Chow-Fraser P., Predictions on the Effect of Common Carp (*Cyprinus carpio*) Exclusion on Water Quality, Zooplankton, and Submergent Macrophytes in a Great Lakes Wetlands. Can. J. Fish. Aquat Sci. 55 (5): 1189-1197, 1998.
- Kilroy, Pat, Personal Communication, August 2004.