

Response to Comments – April 19, 2011

Lake Tahoe TMDL for Sediment and Nutrients

*(Comment deadline 12 noon March 18, 2011)*

## **7. County of El Dorado**

\*\*\*Note: These Responses commonly reference previous Response to Comments from the Lahontan Water Board, which can be found at [http://www.waterboards.ca.gov/lahontan/water\\_issues/programs/tmdl/lake\\_tahoe/respnse\\_comments091310.shtm](http://www.waterboards.ca.gov/lahontan/water_issues/programs/tmdl/lake_tahoe/respnse_comments091310.shtm)\*\*\*

(If printing Response to Comments, please print double-sided for best viewing)

# COUNTY OF EL DORADO

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Placerville, CA 95667  
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(530) 622-3645 Fax

SUZANNE ALLEN DE SANCHEZ  
Clerk of the Board



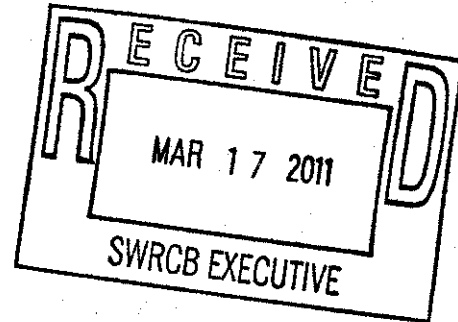
# BOARD OF SUPERVISORS

Public Comment  
Lake Tahoe TMDL  
Deadline: 3/18/11 by 12 noon

JOHN R. KNIGHT  
District I  
RAY NUTTING  
District II  
JAMES R. SWEENEY  
District III  
RON BRIGGS  
District IV  
NORMA SANTIAGO  
District V

March 15, 2011

Ms. Jeanine Townsend  
Clerk to the Board  
State Water Resources Control Board  
P.O. Box 100  
Sacramento, CA 95812-2000



Dear Ms. Townsend:

The County of El Dorado submits the attached seven page technical report prepared by our staff as a response to Lahontan's proposed Lake Tahoe TMDL and Basin Plan Amendment Lahontan Board Resolution R6T-2010.

The County has and will always be committed to continuing its role as a key player in helping to protect Lake Tahoe and will work hard within our resources to remain doing so. However, aside from El Dorado's continued commitment, we are very concerned over the economics, science and fairness presented in the Water Boards TMDL and BPA through Resolution R6T-2010.

Respectfully, we again ask the Water Board to consider and respond to all of our comments and questions so that we can be better informed to make key management decisions during this difficult economic period.

Sincerely,

Ray Nutting  
Chairman, Board of Supervisors  
El Dorado County

Enclosures:

Technical Report Letter Dated March 15, 2011  
November 15, 2010, Lahontan Regional Water Quality Control Board

## Comment

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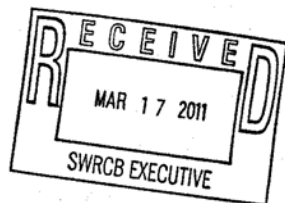
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El Dorado County

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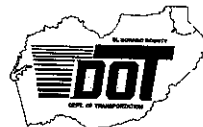


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March 15, 2011

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P.O. Box 100  
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**RE: County of El Dorado Comment Letter - Lake Tahoe TMDL and Basin Plan Amendment  
Lahontan Board Resolution R6T-2010**

Dear Ms. Townsend:

The County of El Dorado (County) appreciates the opportunity to review and comment on the Lahontan Regional Water Quality Control Board's (Lahontan) Basin Plan Amendments (BPA) and the Final Lake Tahoe Total Maximum Daily Load (TMDL) Report to the State Water Resources Control Board (Water Board). This letter addresses concerns and questions that the County believes were not adequately responded to from the Lahontan staff during the development of the TMDL and Basin Plan Amendment and recites the County's concerns within the letter dated November 15, 2010, to the Lahontan Board (enclosed).

The adoption of the BPA and the TMDL, along with the upcoming amendments to the next municipal NPDES permit will bring about unprecedented changes to the way that storm water is managed in the Tahoe Basin. Therefore, the County believes that it is imperative that the Water Board carefully considers all comments, questions, and feedback received from stakeholders on the Lake Tahoe TMDL prior to moving forward with approval and subsequent adoption by the Environmental Protection Agency (EPA).

In general, the County is supportive of the majority of the proposed amendments including the new approach of replacing numeric effluent limits with pollutant loads. However, the County does have outstanding comments and questions that were not properly addressed or responded to as part of our previous letters to Lahontan; hence, we offer this formal comment submittal to the Water Board for your review and formal response. The comments and questions have been separated out into several subject matters for ease of review.

#### A. Scientific Analysis

The County appreciates the enormous efforts with respect to the scientific analysis related to the TMDL and believes that the supporting documents and extensive modeling efforts provide a great opportunity to move forward with the County's storm water program. With that said, we are still concerned with some aspects of the scientific analysis and the modeling efforts behind the development of the TMDL, which is now being embedded into the Basin Plan Amendment. These concerns are related to the following subjects within the June 2010 Final Lake Tahoe Total Maximum Daily Load Technical Report (Report):

## Comment

## Response

### COUNTY OF EL DORADO

### DEPARTMENT OF TRANSPORTATION



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## 1. Land Use Hydrology Analysis

The Report provides a thorough analysis with respect to land uses related to hydrology within the Tahoe Basin. The hydrologic component of this analysis appears to be in line with standard engineering principles, in that, within the urban areas for typical annual storm events the storm water peaks and volumes have higher values per watershed area than the non-urban or forested land use areas. This is a well known hydrologic impact from development, which is mostly related to impervious coverage percentages and efficient storm water conveyance system connectivity. However, the hydrologic analysis also shows a shift to greater storm water peaks and volumes per acre of watershed from the non-urban land uses during greater storm event intervals (i.e. 10 year, 25 year, 50 year, 100 year etc...). This is also a well known hydrologic result, which is based on watershed connectivity and size. Furthermore on this topic, the Report provides a thorough analysis on the percentage of annual flow volumes per land use. Within Table 4-30 of this Report there is a summary of the land use volumes with a sum total for urban land use of 10% or  $4.58 \times 10^7 \text{ m}^3$  and 90% or  $4.02 \times 10^8 \text{ m}^3$  for non-urban land use of the total annual volume entering Lake Tahoe. This percentage difference appears to be in line with standard engineering principals, in that, the non-urban watershed areas contribute the majority of the annual hydrograph flows based on the ratio of non-urban to urban watershed size being greater than a factor of 10.

## 2. Land Use Pollutant Loading Analysis

The Report provides a thorough analysis with respect to land uses related to pollutant concentrations within the Tahoe Basin. Table 4-23 within the Report provides various land use areas and their corresponding Event Mean Concentrations (EMC's). For most of the urban land use areas, EMC's ranged from 56.4 mg/l to 951.5 mg/l of Total Suspended Sediment (TSS), whereby most of the non-urban land use areas had EMC's that ranged from 14 mg/l to 1,015.2 mg/l (TSS). Therefore, the average EMC's are roughly the same within this range for both urban and non-urban. The Report further estimates, within Table 4-40, a total fine load % from urban land uses of 49% and 51% from the non-urban land uses.

Within the Report (Figure 4-3) and as quantified within the BPA in Table 5.18-1, the percentage of fine particles coming from the Urban land uses is estimated at 72% or  $348 \times 10^{18}$  particles and the percentage coming from the non-urban land uses is estimated at 9% or  $41 \times 10^{18}$  particles of the total fine sediment entering Lake Tahoe.

Based on the annual flow volumes entering the Lake (Item 1) and related land use concentrations with associated % allocations of loads (i.e. 49% from Urban and 51% from non-urban) (Item 2), the County is unclear how the TMDL analysis reconciled the relationship between the non-urban fine sediment loads to 9% from a land use that produces 90% with 51% of the fine sediment load of the annual storm water flows. Conversely how only 10%, with 49% of the fine sediment loads for the annual storm water flows, produces 72% of the fine sediment loads from the urban land use. The County requests that this hydrologic water quality loading conundrum be resolved, which is not clear in the Report nor has this issue been properly addressed by Lahontan staff. Furthermore, the County would like to understand the sediment characterization with respect to the TMDL and BPA allocation of 72% of fine particles as estimated in the Report. Does the 72% include the entire spectrum of the sediment mass from the watersheds with the differentiation of naturally occurring and anthropogenic? If so, what is the sediment characterization percentage of each source?

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## Response

**EIDo(StBd)-1:** It is not simply a matter that the ranges were the same since a range only defines the maximum and minimum and the ranges do not reflect the number of acres of various land uses. Table 4-23 is an important data feature in the TMDL Technical Report, highlighting that the TSS EMC's differ greatly between urban and non-urban land uses and is supported by numerous examples. TSS increases as land use transitions from single family residential parcels to multiple family parcels (e.g. condos, apartments) to commercial property (CICU). In Table 4-23 the TSS concentrations follow this expectation as they increase from 56.4 to 150.0 to 296.4 mg/L, respectively. The TMDL modeling expressly recognizes the difference between disturbed and non-disturbed land use in its assignment of TSS concentrations for the five levels of vegetated lands use, which range from 14.0 mg/L to 726.6 mg/L as the erosion potential increases. The vegetated turf category was given a very low EMC for TSS (12.0 mg/L) recognizing the difference between disturbed and undisturbed.

**EIDo(StBd)-2:** The information in Table 4-40 (i.e. 49% from urban and 51% from non-urban) refers to the mass of sediment particles <63  $\mu\text{m}$  in diameter. The mass numbers are not the same as the number of fine sediment particles <16  $\mu\text{m}$  that the TMDL identified as the primary pollutant influencing deep water transparency. Table 4-67 summarizes fine sediment particle loading from all sources. In that table, sediment is reported as three categories, total suspended sediment (expressed as mass), the fraction of suspended sediment <63  $\mu\text{m}$  (expressed as mass) and the number of particles <16  $\mu\text{m}$ . It is the number of fine sediment particles <16  $\mu\text{m}$  that is a pollutant of concern, as stated throughout the TMDL Technical Report. The labeling in Table 4-40 may have been confusing when taken on its own. Table 4-67 presents the values for the <16  $\mu\text{m}$  particle numbers as it shows  $34.8 \times 10^{19}$  particles versus  $4.1 \times 10^{19}$  particles coming from the urban and non-urban portions of the upland runoff respectively. These percentages (72 and 9) were calculated based on the relative contribution from each of these sources as compared to the total from all sources. Additional information of the specific size distribution of particles in the <16  $\mu\text{m}$  fraction is provided in Table 5-14.

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## Response

**EIDo(StBd)-3:** The 72% includes fine sediment particles <16 µm expressed in term of number, not mass. When considering transparency and principles of lake optics, it is the individual particles and not their combined mass that affects light scattering. The values for particle number as well as nutrient loading from the urban land uses does not distinguish between naturally occurring and anthropogenic sources within the urban category. The land use mapping done in support of the TMDL made these distinctions to the extent possible. The stormwater monitoring established to support the Tahoe TMDL was the most extensive program at Lake Tahoe to quantify this urban source. The stormwater monitoring data used in the TMDL analysis demonstrates that as urbanization increases, the associated TSS concentration also increases. The TSS increases as land use transitions from single family residential parcels to multiple family parcels (e.g. condos, apartments) to commercial property (CICU). In Table 4-23 of the TMDL Technical Report, the TSS concentrations follow this expectation as they increase from 56.4 to 150.0 to 296.4 mg/L, respectively. This demonstrates that as the urbanization increases, the associated TSS loading increases further highlighting that most of the TSS (or translated to fine sediment particles) is associated with urbanization and is an anthropogenic source and not naturally occurring. To estimate the natural, or non-anthropogenic load, the Lake Tahoe Watershed Model was run with no developed land uses. This model run showed that with no developed land uses (i.e. all natural or non-anthropogenic conditions), the loading was roughly 10% of the 2004 basinwide upland fine sediment particle load.

### 3. TMDL Lake Model

It is our understanding that the Secchi Disk measurements (Transparency) over the course of 36 years (1968 to 2004) provided the basis for the clarity challenge. The TMDL clarity challenge is the first type of TMDL in the country, which is based on the aesthetic-recreation beneficial use requirements within the Clean Water Act. The current regulated threshold was set at 97.4 feet, which represents the average lake transparency value measured between 1968 and 1971 from the Secchi Disk. Within the Report, and within the BPA, this threshold is recited and that a reduction of fine sediment from the urban areas will need to be set at 71% of the total baseline amount or  $0.71 \times 348 \times 10^{18}$  equal to a  $247 \times 10^{18}$  particle reduction. The Lake Clarity Model estimated that the TMDL attainment will take approximately 65 years. As depicted in figure 1-1 of the Report, the trend analysis from the Secchi Disk measurements provides the depth reductions over the 36 year period. Further evaluation of this trend shows a decline of approximately 1 foot per year during the first 25 years, then a gradual increase rate of clarity per year, yet still declining during the next 11 years. The first regression analysis completed for this trend provided a linear relationship over time with an average rate of decline of 1 foot/year. However, after further peer review and analysis, the regression was updated to reflect a best fit curvilinear regression over the entire 36 year period. This curvilinear regression better represents the trend. The interesting trend within this analysis is the flattening of the rate of decline over the last 11 years. Another interesting trend within this analysis is the result of clarity loss from large annual events such as in 1983 and 1996. During these large annual event years, the Secchi Disk measurements depicted an approximate 10 foot loss of depth in Lake clarity. Thence, following the large annual event years a gradual increase in clarity depth.

Based on the Secchi Disk analysis, the County would like to understand what percentage of the large event year loss of clarity measurements are attributed to the non-urban land use volumes and load and what percentage of this loss of clarity measurement is attributed to the urban land uses? Also, based on the last 11 years of Secchi Disk measurement, can the flattening of the curve related to the rate of clarity be attributed to the extensive water quality and erosion control projects that the County and other jurisdictions have constructed over the last 20 years? If so, what is the percentage that can be contributed to the urban land use water quality erosion control projects and what is the percentage related to the non-urban land uses?

The County would like to know from the State Board, what is the ideal aesthetics of the lake clarity value that is economically, physically, and politically feasible, which still satisfies the regulations and is based on a quantifiable sedimentation measurement approach? For instance, would achieving sustained 70 feet annual lake clarity be acceptable, if this is the best we can achieve? This subject was brought to the attention of Lahontan during their extensive peer review of the Report.

### 4. Lake Clarity Model and Watershed Model Linkage

As part of the TMDL scientific analysis both models were utilized and calibrated using actual monitoring data from which a direct linkage was accomplished per se. This was truly an enormous accomplishment with respect to providing a watershed model that can be used to further calibrate from field measurements and link this to the Lake Clarity Model in order to assess the attainment threshold values that can be quantifiable. The County agrees with this model approach and ability to provide direct inputs into the Lake Model, which was one of several stated goals within Section 4.3.2 of the Report. From this analysis, using the watershed model, a further loading breakdown of the 72% urban fine sediment estimate was provided with respect to % load allocations to each jurisdiction.

## Comment

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### 3. TMDL Lake Model

It is our understanding that the Secchi Disk measurements (Transparency) over the course of 36 years (1968 to 2004) provided the basis for the clarity challenge. The TMDL clarity challenge is the first type of TMDL in the country, which is based on the aesthetic-recreation beneficial use requirements within the Clean Water Act. The current regulated threshold was set at 97.4 feet, which represents the average lake transparency value measured between 1968 and 1971 from the Secchi Disk. Within the Report, and within the BPA, this threshold is recited and that a reduction of fine sediment from the urban areas will need to be set at 71% of the total baseline amount or 0.71 times  $348 \times 10^{18}$  equal to a  $247 \times 10^{18}$  particle reduction. The Lake Clarity Model estimated that the TMDL attainment will take approximately 65 years. As depicted in figure 1-1 of the Report, the trend analysis from the Secchi Disk measurements provides the depth reductions over the 36 year period. Further evaluation of this trend shows a decline of approximately 1 foot per year during the first 25 years, then a gradual increase rate of clarity per year, yet still declining during the next 11 years. The first regression analysis completed for this trend provided a linear relationship over time with an average rate of decline of 1 foot/year. However, after further peer review and analysis, the regression was updated to reflect a best fit curvilinear regression over the entire 36 year period. This curvilinear regression better represents the trend. The interesting trend within this analysis is the flattening of the rate of decline over the last 11 years. Another interesting trend within this analysis is the result of clarity loss from large annual events such as in 1983 and 1996. During these large annual event years, the Secchi Disk measurements depicted an approximate 10 foot loss of depth in Lake clarity. Thence, following the large annual event years a gradual increase in clarity depth.

Based on the Secchi Disk analysis, the County would like to understand what percentage of the large event year loss of clarity measurements are attributed to the non-urban land use volumes and load and what percentage of this loss of clarity measurement is attributed to the urban land uses? Also, based on the last 11 years of Secchi Disk measurement, can the flattening of the curve related to the rate of clarity be attributed to the extensive water quality and erosion control projects that the County and other jurisdictions have constructed over the last 20 years? If so, what is the percentage that can be contributed to the urban land use water quality erosion control projects and what is the percentage related to the non-urban land uses?

The County would like to know from the State Board, what is the ideal aesthetics of the lake clarity value that is economically, physically, and politically feasible, which still satisfies the regulations and is based on a quantifiable sedimentation measurement approach? For instance, would achieving sustained 70 feet annual lake clarity be acceptable, if this is the best we can achieve? This subject was brought to the attention of Lahontan during their extensive peer review of the Report.

### 4. Lake Clarity Model and Watershed Model Linkage

As part of the TMDL scientific analysis both models were utilized and calibrated using actual monitoring data from which a direct linkage was accomplished per se. This was truly an enormous accomplishment with respect to providing a watershed model that can be used to further calibrate from field measurements and link this to the Lake Clarity Model in order to assess the attainment threshold values that can be quantifiable. The County agrees with this model approach and ability to provide direct inputs into the Lake Model, which was one of several stated goals within Section 4.3.2 of the Report. From this analysis, using the watershed model, a further loading breakdown of the 72% urban fine sediment estimate was provided with respect to % load allocations to each jurisdiction.

## Response

**EIDo(StBd)-4:** This question was not within the scope of the TMDL development and, consequently, was not asked nor answered by the TMDL. In years 1983 and 1997, the annual average Secchi depth showed considerable deviation from the observed trend. Both years were wet with high precipitation; 1997 had an extraordinary rain-on-snow event in January. The relative contribution from urban and non-urban areas during high flow years was not examined. The deviation from the observed trend is likely due to a number of factors including the degree of annual precipitation and the depth of mixing in the lake. Interannual variability, such as the deviation noted above, is expected in all waterbodies. These extreme events do not appear to influence long-term trend in Lake Tahoe transparency even though such events can have a large effect in interannual variability. Implementing strategies to address extreme events would not be cost effective, and the requirements are based on annual average loads. While the County raises an interesting question, it does not change the fact that the transparency of Lake Tahoe is about 30 feet less than the numeric target, that science demonstrates that loading from urban areas is the most important factor, that loads from the urban areas can be reduced and that lake transparency will improve based on reduced loading.

**EIDo(StBd)-5:** In regard to the "flattening" of the Secchi curve in recent years, in their 2008 State of the Lake Report, the UC Davis Tahoe Environmental Research Center reported that the rate of decline of water clarity in Lake Tahoe slowed since 2001. From 1968 to 2000 there was a near-uniform decline in lake clarity. In some years it seemed to improve, in other years it appeared worsened but invariably the trend was best defined by a straight line with an average loss in Secchi depth of 0.9 feet each year. However, in the years since 2001, clarity has consistently been better than predicted by the historic data. For example, based on the data available from 1968-1982, Professor Charles Goldman predicted in 1985 that by 2007 the average annual Secchi depth in Lake Tahoe would be approximately 54 feet, unless there was a change in the rate of clarity loss. During the period 2001-2007 the actual annual Secchi depth measurements ranged from 68-73 feet.

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## Response

**EIDo(StBd)-5: (continued from previous page)-** While these data can not pinpoint a specific cause for the recent improvement they do suggest that water quality improvement efforts may be showing a benefit, but the length of the data base (since 2001) is too short to statistically support this. Faced with how best to represent this change, UC Davis researchers decided on the use of a more sophisticated statistical approach known as a *generalized additive model* (GAM). This approach shares features with the multiple regression technique but provides the potential for a better fit to data than other methods. GAMs also contain a data smoothing function that has the fortunate property of placing greater weight on the data closer to the period of interest, i.e. the modeled fit during the 1970s is a reflection of that time period while the fit in the 2000s reflects that period's data. A straight line, by contrast weighs each year equally and recent trends are influenced by measurements taken 30-40 years ago. Applied to the Secchi depth record for Lake Tahoe, the GAM supported the hypothesis that the rate of decline in transparency has recently slowed since 2001.

However, precipitation since 2001 has been lower than the average since the first annual average was measured in 1968. As a result, it is difficult to state with certainty that the implementation of erosion control and water quality treatment projects alone has caused the Secchi curve to increase less rapidly than in the past. It would be erroneous to use the apparent "flattening" of the curve to predict what Lake Tahoe's clarity might be in the future. The trendline developed by the current analysis describes the existing data only and could change depending on what future measurements show. The response of the Secchi depth to a series of normal and above normal precipitation years will be instructive. This underscores the important of continued environmental monitoring. The percentage that can be contributed to urban land use water quality erosion control projects and non-urban land uses related to the "flattening" of the curve was not analyzed in the TMDL.

**EIDo(StBd)-6:** The deep water transparency standard cannot be changed without first going through a federal anti-degradation analysis. To change the water quality standard, the Lahontan Water Board would need to demonstrate that the existing standard is not achievable. The TMDL has shown that, while implementation will take significant time and resources, the established transparency standard can be met. If it can be clearly demonstrated that technology and fiscal resources cannot meet targeted pollutant load reductions, the State and Lahontan Water Boards could re-evaluate whether the deep water transparency standard is appropriate.

The County's portion of the 72% baseline load estimate was set at 12% or  $348 \times 10^{18}$  particles times 0.12 equal to  $417 \times 10^{17}$  particles. From which, based on the proposed BPA, we would be required to reduce by 71% over 65 years or  $297 \times 10^{17}$  particles. After several iterations of comments and a thorough peer review of the Report, Lahontan eliminated the baseline % allocations to each jurisdiction and required each jurisdiction to calculate their own baseline load using the Report land use values and our own model or water quality loading methodologies. This was mostly due to inconsistencies with the watershed model some of which have been commented herein.

#### 5. Pollutant Load Reduction Model (PLRM)

Within Section 11 – Implementation Actions by Source Category of the July 2010 Final TMDL Report, more specifically Section 11.3.1 – Urban Uplands, and included within the BPA, the Lahontan Board is requiring all implementing agencies, other than the USFS, to use a pollutant load reduction model as developed by a private consultant under contract with Lahontan and NDEP or an approved equivalent to generate the baseline loads and future credits for load reductions. This model is still being tested by the implementing agencies, has not been thoroughly calibrated, and includes additional load parameters that were not included within the original water shed model, has not been linked to the Lake Clarity Model, and has not been approved by the EPA. The County is unclear why the previous water shed model is now being abandoned, which was approved by the EPA and used as the basis to estimate the initial baseline load allocations with direct linkages to the Lake Clarity Model from which the County is now being regulated.

The County would like the State Board to clarify the issues raised within items 4 and 5, for it has huge ramifications on the County and other jurisdiction with respect to providing justifiable and quantifiable numbers to comply with current BPA load reduction numbers. This inquiry was mentioned at the November 16, 2010 Lahontan Board meeting by Board Member Amy Horne, Ph. D from Truckee. She posed the question to Lahontan Staff with respect to using a different model to generate the baseline loads, which will be different from the baseline loads within the BPA and included within the Lake Clarity Model, and how the new numbers, if considerably different, will change the Lake Clarity Model estimates for overall reductions to meet the TMDL desired conditions. Unfortunately, this question was not adequately addressed by the Lahontan staff or their scientific consultants, who developed the Lake Clarity Model. In essence, the implied answer is, the baseline load from the surrounding water sheds, which drain into the Lake, do not matter. What matters is that the Lake Clarity Model estimate says we need to reduce all pollutants causing the clarity decline by x percentage amount, end of discussion. Therefore, the County would like to know what, if the Lake Clarity Model is wrong? Will the County be required to increase its storm water load reduction efforts to make up the difference? Will the State provide additional funding to assist the County with respect to this difference or allow the County to keep to the current reduction levels without change or regulatory consequence?

#### B. Fairness

1. There are various items being required of the County within this BPA, such as the Pollutant Load Reduction Model (PLRM), Rapid Assessment Measurement (RAM) tools, and monitoring protocols as developed by the State, which have not been thoroughly vetted to determine costs, staffing levels, efficiencies, and accuracies in coordination with achieving the desired conditions within the BPA. Yet these tools are being mandated by Lahontan in order to obtain load reduction credits for which the County will be held responsible.

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## Response

**EIDo(StBd)-7:** The Lahontan Water Board has responded previously to this comment in responses EIDo-5 and EIDo-8. The Lake Tahoe Watershed Model is not being abandoned and is the appropriate tool for assessing pollutant loading rates at a large (i.e. basin-wide) scale. However, the Lake Tahoe Watershed Model is not capable of simulating the loading of fine sediment particles <16 µm in diameter from the landscape to a receiving waterbody. The Lake Clarity Model requires the particle size distribution to be resolved in the following categories – 0.5-1 µm, 1-2 µm, 2-4 µm, 4-8 µm and 8-16 µm. Consequently, the most reasonable approach was to directly measure particle concentrations (by the various required size classes) in stream flow and stormwater runoff using advanced laser techniques. Chapter 5 in the Lake Tahoe TMDL Technical Report (June 2010) provides detail on the fine sediment particle loading analysis. As a result, linkage to the Lake Clarity Model is essentially independent of whether the PLRM or watershed model is used. Chapter 6 in the Lake Tahoe TMDL Technical Report details the linkage analysis.

**EIDo(StBd)-8:** When this comment was raised during the Lahontan Water Board hearing on November 16, 2010, the Lahontan Water Board considered the responses, including public testimony and staff oral responses in its decision and found the response adequate to adopt the Basin Plan Amendment as proposed. The Lake Tahoe TMDL Report and the associated Basin Plan Amendment include a detailed adaptive management process to evaluate future scientific findings and monitoring data to evaluate what, if any, changes are needed in future load reduction requirements.

**EIDo(StBd)-9:** The Lahontan Water Board has responded previously to this comment. See EIDo-10. The Lake Tahoe TMDL does not require the use of any specific numeric model, nor does it require implementing agencies to use any particular "tool" to verify the effectiveness of actions. Similarly, the TMDL does not specify different monitoring protocols for different land uses. The TMDL implementation plan describes expected actions from both urban and forest land managers. Due to the relative magnitude of the pollutants generated by urban land uses, and the federal requirement to include TMDL waste load allocations into applicable federal permits, the Lahontan Water Board has developed more detailed accounting and tracking mechanisms for urban land uses.

2. Within the current BPA, the TMDL requirements for utilizing the extensive models, tools, and monitoring protocols are not being required of the United States Forest Service, who manages the majority of the non-urban land use. The opinion taken on this exclusion is that the Lake Tahoe Basin Management Unit Forest Practices will be able to achieve the TMDL goals based on their land management practices as it relates to natural storm water runoff. The County is unclear as to the full rationale behind this exclusion.

If the County is required to use the un-tested/un-calibrated and non EPA approved PLRM, RAM tools, and monitoring protocols to achieve the desired conditions within the BPA, will the County be held responsible? How will the State mandate PLRM, RAM tools, and monitoring protocols provide direct measurable linkages to Lake Clarity Model in order to achieve the desired conditions? Also, will the State provide funding assistance to the County in order to use the State required PLRM, RAM tools, and monitoring protocols to achieve the desired conditions within the BPA? Or, must the County make a mandates claim against the State so as to obtain the necessary additional funds to achieve the requirements for the TMDL desired conditions using State mandated models, tools, and monitoring protocols?

Based on the non-urban land use percentages for fine sediment reductions, which are still in question, and given the fact that all government agencies are required under the Clean Water Act to comply with the storm water regulations, will the State Water Board place the same requirements within the BPA on the USFS and other Federal or State land owners?

#### C. Economic Impacts

1. As depicted within the Report and with the BPA, the estimated costs associated with achieving the TMDL desired conditions for Lake Clarity are at levels that the Basin has not realized yet for the Storm Water program, over \$100 million/year for 15 years. For instance, the County has received funding from State and Federal grants with local funding for the past 10 years (2000-2010) to the sum of approximately \$35 million or an average of \$3.5 million per year. During the peak EIP Storm Water Program funding years (FY 03/04 to FY 07/08) the County received approximately \$5 million per year. During these peak years the California Tahoe Conservancy, United States Forest Service, and TRPA mitigation funds with County funding was flush with cash. Therefore, if the total TMDL load reduction estimates are correct, and the County % load reduction allocations are correct, and the associated costs to comply with the requirements are correct, we would need approximately \$10 million/year to achieve the Lake Clarity Challenge goal within the 15 years. The County is under the opinion that even in the best of financial times between the State, Federal, and local governments, that this funding expectation is not feasible. Furthermore, in this current State, Federal and local economic crisis, the feasibility of obtaining this level of funding is drastically diminished.
2. William W. Lewis Jr. completed a thorough peer review of the TMDL documents as part of the Lahontan peer review efforts. One of his comments echoes the County's concerns with respect to the financial burden being placed on the implementing agencies to achieve the desired conditions. From his peer review he states "My overall concern about the implementation phase of source control is its enormous cost. Given the financial realities of the current economy, it might be good to have a companion document, of small size, outlining the results that could be obtained for expenditures of 50 percent or 25 percent of the proposed expenditure. Thus, in the event of a financial hardship, source control could proceed, and still could be meaningful."



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## Response

**EIDo(StBd)-10:** refer to response EIDo(StBd)-9 on the previous page. The Lahontan Water Board has not "excluded" the use of various stormwater management tools for forest management actions. The tools were developed for urban stormwater management and are not applicable to forest management actions.

**EIDo(StBd)-11:** As noted in previous response to comments (EIDo-5, EIDo-12, EIDo-25) the Lake Tahoe TMDL and associated Basin Plan Amendment do not require the County to use any particular load estimation model or facilities condition verification method. The Lahontan Water Board is not "mandating" the PLRM, RAM, or any particular monitoring protocols. The referenced tools have not been subject to formal EPA review, so thus have not been formally "approved." The EPA has, however, supported the development of these tools and has provided positive feedback regarding their utility for estimating pollutant loads in urban stormwater and for verifying facilities conditions. The County's statement that the tools are "un-tested/un-calibrated" is inconsistent with fact that the referenced tools have been extensively tested and calibrated against field monitoring data during tool development.

The Lake Clarity Model provides estimates of how deep water transparency will respond to expected load reductions. Monitoring efforts to calibrate and validate load estimation tools will ensure that implementation actions are achieving expected load reductions.

**EIDo(StBd)-12:** See response EIDo(StBd)-10 above. The Lake Tahoe TMDL does not require or otherwise "mandate" the use of any particular load estimation tool, condition verification method, or monitoring protocol. The Lake Tahoe TMDL was developed pursuant to Federal Clean Water Act requirements. The TMDL is a federal mandate, and thus it is unlikely the requirements to implement the TMDL can be considered an unfunded state mandate. A TMDL or basin plan amendment is not self-implementing. Such policies are implemented through waste discharge requirements and permits. Specific permit conditions may or may not be considered "unfunded mandates".

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#### C. Economic Impacts

1. As depicted within the Report and with the BPA, the estimated costs associated with achieving the TMDL desired conditions for Lake Clarity are at levels that the Basin has not realized yet for the Storm Water program, over \$100 million/year for 15 years. For instance, the County has received funding from State and Federal grants with local funding for the past 10 years (2000-2010) to the sum of approximately \$35 million or an average of \$3.5 million per year. During the peak EIP Storm Water Program funding years (FY 03/04 to FY 07/08) the County received approximately \$5 million per year. During these peak years the California Tahoe Conservancy, United States Forest Service, and TRPA mitigation funds with County funding was flush with cash. Therefore, if the total TMDL load reduction estimates are correct, and the County % load reduction allocations are correct, and the associated costs to comply with the requirements are correct, we would need approximately \$10 million/year to achieve the Lake Clarity Challenge goal within the 15 years. The County is under the opinion that even in the best of financial times between the State, Federal, and local governments, that this funding expectation is not feasible. Furthermore, in this current State, Federal and local economic crisis, the feasibility of obtaining this level of funding is drastically diminished.
2. William W. Lewis Jr. completed a thorough peer review of the TMDL documents as part of the Lahontan peer review efforts. One of his comments echoes the County's concerns with respect to the financial burden being placed on the implementing agencies to achieve the desired conditions. From his peer review he states "My overall concern about the implementation phase of source control is its enormous cost. Given the financial realities of the current economy, it might be good to have a companion document, of small size, outlining the results that could be obtained for expenditures of 50 percent or 25 percent of the proposed expenditure. Thus, in the event of a financial hardship, source control could proceed, and still could be meaningful."

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2. Within the current BPA, the TMDL requirements for utilizing the extensive models, tools, and monitoring protocols are not being required of the United States Forest Service, who manages the majority of the non-urban land use. The opinion taken on this exclusion is that the Lake Tahoe Basin Management Unit Forest Practices will be able to achieve the TMDL goals based on their land management practices as it relates to natural storm water runoff. The County is unclear as to the full rationale behind this exclusion.

If the County is required to use the un-tested/un-calibrated and non EPA approved PLRM, RAM tools, and monitoring protocols to achieve the desired conditions within the BPA, will the County be held responsible? How will the State mandate PLRM, RAM tools, and monitoring protocols provide direct measurable linkages to Lake Clarity Model in order to achieve the desired conditions? Also, will the State provide funding assistance to the County in order to use the State required PLRM, RAM tools, and monitoring protocols to achieve the desired conditions within the BPA? Or, must the County make a mandates claim against the State so as to obtain the necessary additional funds to achieve the requirements for the TMDL desired conditions using State mandated models, tools, and monitoring protocols?

Based on the non-urban land use percentages for fine sediment reductions, which are still in question, and given the fact that all government agencies are required under the Clean Water Act to comply with the storm water regulations, will the State Water Board place the same requirements within the BPA on the USFS and other Federal or State land owners?

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## Response

**EIDo(StBd)-13:** The Lahontan Water Board has responded to this comment previously – see EIDo-10 and EIDo-28. El Dorado County has not provided any information to suggest that the pollutant load estimates provided by the Lake Tahoe TMDL research effort are not representative of actual conditions. The TMDL and associated BPA include specific load reduction requirements for runoff from urban and forest land uses. Although the magnitude of the pollutant source and the related required load reductions differ, the TMDL prohibits all land owners from causing load increases on a catchment, or subwatershed, basis, and all land owners must comply with applicable stormwater regulations.

The USFS and other Federal or State land owners are not currently subject to coverage under National Pollutant Discharge Elimination System permit program and thus the Lahontan Water Board cannot place "the same requirements" on these dischargers. The Lahontan Water Board has the authority to issue waste discharge requirements or implement other regulatory tools to compel Federal and State land managers to comply with TMDL load reduction requirements.

**EIDo(StBd)-14:** The Lahontan Water Board addressed these concerns about implementation cost at it's November 16, 2010 hearing. As discussed then, the Lahontan Water Board's implementation cost estimates are rough, and initial planning efforts underway by other municipalities suggest that implementation costs may be much less than anticipated. Until El Dorado County and other implementation partners complete Pollutant Load Reduction Plans describing how initial load reduction targets will be met, detailed implementation costs can not be determined. Once load reduction plans and costs estimates are prepared, the El Dorado County can more thoroughly evaluate fiscal and implementation constraints. Until that time, El Dorado County's referenced cost estimates are purely speculative. The Lahontan Water Board committed to considering amendments to the implementation and load reduction schedules should funding and implementation constraints impact the ability to meet load reduction milestones.

Expanding on William W. Lewis Jr.'s recommendation, the County would like to know, if the State would be willing to accept a tiered pollutant reduction plan with milestone goals dependant on the financial abilities of the County to achieve the required goals? Also, will the State assist the County during the financial hardship times in order to meet the required goals of the Lahontan Basin Plan Amendment?

The following County comments and concerns were provided to Lahontan on November 15, 2010, as part of the comment period related to the Lahontan Board process to adopt the TMDL and BPA on November 16, 2010. The comments and concerns were not adequately addressed by Lahontan, which deferred the responses until the development of the NPDES Permit, with the exception of the associated costs within the \$100 million/year price tag.

#### D. Future NPDES Permit / TMDL Concerns

##### 1. Future NPDES Permit / TMDL Responsibilities

The County is unclear as to the level of responsibility we will be required to undertake for managing storm water within our jurisdictional boundaries.

- a. There are many parcels that are owned and managed by the State and Federal governmental entities that discharge directly into the County's public rights-of-way. Will the County be responsible to manage this off-site storm water?
- b. The County is concerned with respect to the level of data collection and reporting requirements identified within the BPA and TMDL documents. Will the County be responsible to report on all storm water activities within our jurisdiction? Will the County be responsible to use the accounting, tracking and crediting tools as developed by Lahontan or can the County provide the necessary accounting, tracking and crediting data using our own storm water management tools, which we feel are equivalent? Who will be the responsible party to gather, house, and evaluate all the data?
- c. The County is concerned with the monitoring responsibilities as identified within the BPA and TMDL documents. Who will be the responsible party to calibrate, update, and disseminate the data collected as part of the Regional Storm Water Monitoring Program (RSWMP)? Will the County be responsible to comply with all storm water monitoring protocols and reporting as defined within the RSWMP?

##### 2. Future NPDES Permit / TMDL Liability

The County is very concerned with respect to the future liability placed upon the County under the future NPDES Permit and consequences of non-compliance.

- a. If the County is unsuccessful in obtaining Local, State and Federal funding to comply with the future NPDES Permit conditions, will the County be afforded a variance or a phased implementation approach to the permit conditions commensurate with the available funding?

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## Response

**EIDo(StBd)-15:** The Lake Tahoe TMDL Report, Appendix B describes the Lahontan Water Board responses to scientific peer review comments. In Appendix B, response WL-42 is a direct response to Professor Lewis's peer review comment the City cites, and that response is reproduced in entirety, below:

**WL-42:** The Water Board and NDEP estimate that the resources necessary to achieve required load reductions from the urban uplands will be roughly \$100 Million per year for the next fifteen years. While the Water Board and NDEP acknowledge the challenge of dedicating such resources in the current economic climate, the magnitude of the commitment is similar to the amount spent during the past ten years of erosion control, stormwater treatment, and restoration efforts in the Tahoe Basin. The TMDL Implementation Plan requires each implementer to assess its baseline load and devise its own pollutant load reduction strategy to meet the load reduction requirements. Therefore, each implementer can weigh cost as a factor when choosing its load reduction actions for each year.

The Basin Plan Amendment includes language stating that the Lahontan Water Board will consider revising the Lake Tahoe TMDL implementation schedule if financial constraints affect the ability to meet load reduction requirements. See previous Response EIDo-32.

**EIDo(StBd)-16:** The National Pollutant Discharge Elimination System program holds the municipal jurisdictions responsible for all runoff within it's legal jurisdiction regardless of property ownership. State and Federally owned lands are not within the County's legal jurisdiction, thus the County is not responsible for reducing pollutant loads from those lands. Once stormwater leaves federal and state lands and enters the County's stormwater collection, conveyance, and treatment facilities the County becomes responsible for the runoff.

The Lake Tahoe TMDL requires each municipality to reduce pollutant loading from its entire jurisdiction and requires each municipality to annually demonstrate on a catchment basis that no increased loading will result from any land disturbing activity permitting in the catchment. Though the municipality is not responsible for reducing pollutant loads from the lands owned by State and Federal government entities, the municipality must manage its catchment scale loading to meet its load reduction requirements.

Expanding on William W. Lewis Jr.'s recommendation, the County would like to know, if the State would be willing to accept a tiered pollutant reduction plan with milestone goals dependant on the financial abilities of the County to achieve the required goals? Also, will the State assist the County during the financial hardship times in order to meet the required goals of the Lahontan Basin Plan Amendment?

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- a. If the County is unsuccessful in obtaining Local, State and Federal funding to comply with the future NPDES Permit conditions, will the County be afforded a variance or a phased implementation approach to the permit conditions commensurate with the available funding?

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## Response

**EIDo(StBd)-17:** These comments are not new and are essentially repeats that El Dorado County submitted to the Lahontan Water Board on September 13, 2010. These comments were previously responded to in responses EIDo-5, EIDo-8, EIDo-12, and staff oral responses at the November 16, 2010 hearing. The Lake Tahoe TMDL and associated Basin Plan Amendment do not establish specific data collection and reporting requirements.

**EIDo(StBd)-18:** The Lake Tahoe TMDL and the associated Basin Plan Amendment do not define Lahontan Storm Water Monitoring program responsibilities. The County is encouraged to be an active participant in RSWMP development and should continue to provide constructive feedback regarding monitoring protocols, data management procedures, and other RSWMP elements.

**EIDo(StBd)-19:** The Basin Plan Amendment includes language stating that the Lahontan Water Board will consider revising the Lake Tahoe TMDL implementation schedule if financial constraints affect the ability to meet load reduction requirements. See previous response EIDo-32.

Additionally, the Lahontan Water Board has discretion in enforcing NPDES permit violations. While the Lahontan Water Board acknowledges the County's concern, it is too speculative to anticipate how the Lahontan Water Board may respond to future NPDES permit violation. Many factors, such as the significance of the violation, efforts to avoid the violation, and a number of external factors, must be considered.

3. Future NPDES Permit / TMDL Cost Implications

The County is very concerned with the costs associated with the future NPDES Permit conditions under the current BPA and TMDL proposal.

- a. Based on the estimated costs within the "Lake Tahoe TMDL Pollutant Reduction Opportunity Report" as developed by Lahontan and NDEP, the County would need to expend up to \$10 million per year over the course of 15 years in order to comply with the Lake Clarity Challenge numbers for reducing fine sediment, phosphorus, and nitrogen. This number also includes the operations and maintenance costs associated with the capital improvements. However, this number does not include the costs associated with planning, design, construction, and post construction costs for capital improvements and the long term costs for the storm water management thereof.

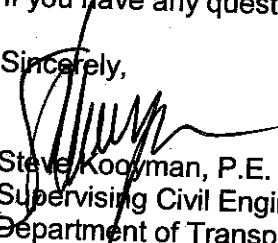
At the November 16, 2010, Lahontan Board meeting, the comment related to inclusive costs of planning, design, construction, and post construction was answered by the Lahontan staff, with the exception of the long term costs for storm water management. Therefore, the County would like the State Board to address the cost issues related to long term storm water management. This is a significant associated cost, which if not funded will result in failure for the County to sustain the level of compliance with respect to the TMDL desired condition.

- b. The costs associated with using the specific Lahontan created tools have not been thoroughly addressed within the BPA and TMDL documents. The County would like a cost analysis completed with the data collection operation, data management, and implementation of the tools so as to understand the cost implications to the County's current Storm Water Management Program.
- c. Will the State provide funding assistance to the County in order to achieve the goals within the BPA and TMDL? Or, must the County make a mandates claim against the State?
- d. Will the Federal Government through the Environmental Protection Agency (EPA) provide funding assistance in order to achieve the goals within the BPA and TMDL?

Respectfully, we again ask the Water Board to consider and respond to all of our comments and questions so that we can be better informed to make key management decisions during this difficult economic period.

If you have any questions on this submittal please don't hesitate to call me at (530) 573-7910.

Sincerely,

  
Steve Kooyma, P.E.  
Supervising Civil Engineer  
Department of Transportation, El Dorado County

Enclosure – November 15, 2010, Letter to Lahontan Regional Water Quality Control Board



## Comment

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### 3. Future NPDES Permit / TMDL Cost Implications

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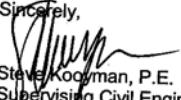
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Enclosure – November 15, 2010, Letter to Lahontan Regional Water Quality Control Board

## Response

**EIDo(StBd)-20:** As noted in previous response to comments and at the Lahontan Water Board hearing on November 16, 2010, the Lahontan Water Board's cost estimates included planning, design, construction, and post construction maintenance costs for stormwater management infrastructure. It is unclear what the County considers to be "stormwater management costs" that have not been considered, thus the Lahontan Water Board cannot provide any additional cost estimates to address the County's concern. Note that the first TMDL implementation phase includes actions taken since 2004. Consequently, the County and other implementation partners have the opportunity to include resources spent from 2004 through the present when planning to meet the first load reduction milestones.

**EIDo(StBd)-21:** The Lahontan Water Board responded to the County's concerns about the referenced tools in previous response EIDo-5. With federal funding, private consultants developed the tools which the Lahontan Water Board actively supported and provided comments during development. The load estimation and condition verification methods developed by others do, however, support the TMDL goals of accounting and tracking pollutant load reductions from urban land uses. Through the Lake Clarity Crediting Program (LCCP) Support Services effort, the Lahontan Water Board is working to provide the County and other partners with preliminary cost estimates for implementing the LCCP, including the effort needed to document and verify load reductions using the Pollutant Load Reduction Model and Rapid Assessment Methodologies. With the availability of these tools and costs estimates, the municipal jurisdictions can more easily compare the results of various load reduction proposals and should realize cost savings during the implementation.

**EIDo(StBd)-22:** The TMDL is a federal mandate under the Federal Clean Water Act, and thus it is unlikely that requirements to comply with the TMDL would be considered an unfunded state mandate. The State of California has been an active partner in providing resources to local government to implement erosion control and stormwater treatment projects through various grant funds and bond measures, and the County is welcome to continue pursuing those funds through the competitive process. A TMDL or basin plan amendment is not self-implementing. Such policies are implemented through waste discharge requirements and permits. Specific permit conditions may or may not be considered "unfunded mandates".

3. Future NPDES Permit / TMDL Cost Implications

The County is very concerned with the costs associated with the future NPDES Permit conditions under the current BPA and TMDL proposal.

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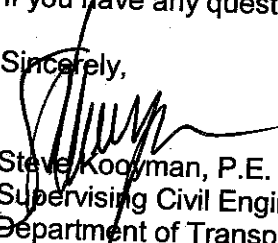
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## Comment

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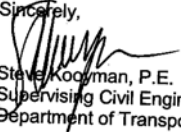
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Enclosure – November 15, 2010, Letter to Lahontan Regional Water Quality Control Board

## Response

**EIDo(StBd)-23:** The federal government has long been a partner in funding stormwater management and environmental restoration efforts at Lake Tahoe. President Clinton signed the Lake Tahoe Restoration Act of 2000 into law on November 13, 2000. The Lake Tahoe Restoration Act specified these three main items:

- Designated Federal lands in the Lake Tahoe Basin as a National Scenic Forest and Recreation Area.
- Required the Forest Service to develop an annual priority list of environmental restoration projects and authorizes \$200 million over 10 years for the Forest Service to implement these projects on Federal lands.
- Authorized \$100 million over 10 years in payments to local governments for erosion control activities on non-Federal lands

The proposed Lake Tahoe Restoration Act of 2011 was introduced to the US Senate as Bill S. 432 on March 2, 2011, and continues the authorization that sets the stage for future federal funding support. S. 432 is currently being discussed in US Senate subcommittee.